

Notice to Plan Purchasers

and Plan Rooms

The list of Plan Purchasers and all addenda will be posted to our bid site for your use.

www.thomasprintworks.com/bids

Please check this site regularly to keep up-to-date on the latest revisions.

Although we endeavor to notify all plan purchasers via email as updates are issued, it is your responsibility to verify that you have the most upto-date bid information for this project. For all intents and purposes, you will be considered notified when any new files are posted to this site. DALLAS INDEPENDENT SCHOOL DISTRICT CONSTRUCTION SERVICES

Project Manual

VOLUME 1 OF 2

CSP 207459

ORG 220 – MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED - RENOVATION



A/E FIRM JMA JOHNSON, LLC

MEP: SIMS ENGINEERING, INC.

CIVIL ENGINEER: SIMON ENGINEERING

COST ESTIMATING: RIDDLE & GOODNIGHT, INC. STRUCTURAL ENGINEER: CHARLES GOJER & ASSOCIATES, INC.

ACCESS MONITORING CEDRICK FRANK & ASSOCIATES

August 16, 2024

DALLAS INDEPENDENT SCHOOL DISTRICT CONSTRUCTION SERVICES

Project Manual

VOLUME 1 OF 2

CSP 207459

ORG 220 – MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED - RENOVATION



A/E FIRM JMA JOHNSON, LLC

August 16, 2024

ARCHITECT AND CONSULTANT'S SEALS PAGE

ARCHITECT:

5

JMA Johnson, LLC 13355 Noel Rd., Suite 1100 Dalłas, Texas 75240 214-745-7070



08/14/24

YOHANNES OKUBAY

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okannes Okubay 8/14:2024

CIVIL ENGINEER:

Simon Engineering 15443 Knoll Trail Drive Suite 140 Dallas, Texas 75248 214-466-7870, Ext 230

STRUCTURAL ENGINEER:

Charles Gojer & Associates, Inc. 11615 Forest Central Drive, Suite 303 Dallas, Texas 75243 214-340-1199



MEP ENGINEER;

Sims Engineering, Inc. 11700 Preston Rd. 660, #194 Dallas, Texas 75230 214-295-9571



- 00 01 00 Project Manual Cover
- 00 01 01 Project Title Page
- 00 01 07 Seals Page
- 00 01 10 Table of Contents
- 00 01 15 List of Drawing Sheets
- 00 11 13 Advertisement for CSP

Proposal Requirements

- 00 11 17 Intention to Propose Form
- 00 21 13 Instructions to Proposers

Project Information

- 00 31 00 Available Project Information
- 00 31 18 School Operation Parameters Statement

Proposal Documents

- 00 41 10 Overall Proposal Packaging Checklist
- 00 41 11 (a) Materials Escalation Price Reconciliation Form
- 00 41 11 Proposal Form Base Bid (Part 1-A of the CSP)
- 00 41 12 Proposal Form Alternates and Unit Pricing (Part 1-C of the CSP)
- 00 41 13 Technical Proposal (Part 1-B of the CSP)
- 00 43 13 Proposal Guarantee Bond (Part 1-A of the CSP)
- 00 45 00 DISD Required forms combined (Part 1-A of the CSP)
- 00 45 20 Certificate of Non-Discrimination (Part 1-A of the CSP)
- 00 45 22 Notification of Hazardous Materials Affidavit (Part 1-A of the CSP)
- 00 45 23 Family Conflict of Interest Questionnaire (Part 1-A of the CSP)
- 00 45 39 MWBE Compliance Guidelines and Forms (Part 2 of the CSP)

Contract Forms

- 00 43 43 Prevailing Wage Rates Schedule
- 00 52 10 Standard form of Agreement between Owner and Contractor
- 00 52 11 General Conditions of the Contract for Construction
- 00 55 00 Notice to Proceed Forms
- 00 61 13 Performance Bond Form
- 00 61 16 Payment Bond Form
- 00 73 19 Dallas Independent School District Construction Minimum Safety Program Guidelines Manual

Division 1

General Requirements

- 01 10 00 Summary of Work
- 01 21 00 Allowances
- 01 22 00 Unit Prices
- 01 23 00 Alternates
- 01 25 00 Substitution Procedures
- 01 29 00 Payment Procedures
- 01 29 73 Schedule of Values
- 01 31 00 Project Management and Coordination

Dallas ISD Construction Services

- 01 32 00 Construction Progress Documentation
- 01 32 16 Construction Progress Schedule
- 01 32 33 Photographic Documentation
- 01 33 00 Submittal Procedures
- 01 35 43 EPA Lead-Based Paint Renovation, Repair, and Painting Program
- 01 40 00 Quality Requirements
- 01 42 00 References
- 01 45 23 Testing Adjusting and Balancing for HVAC (updated 1-28-2020 Final)
- 01 50 00 Temporary Facilities and Controls
- 01 52 14 Temporary Facilities for Students
- 01 60 00 Product Requirements
- 01 73 00 Execution
- 01 77 00 Closeout Procedures & Checklist
- 01 78 23 Operation and Maintenance Data
- 01 78 39 Project As-Builts & Record Documents
- 01 79 00 Demonstration and Training
- 01 91 00 General Cx Requirements (1-28-20 Final)
- 01 92 00 Hazmat Report
- 01 93 00 Geotechnical Report

Existing Conditions

- 02 01 50 Selective Demolition
- 02 20 00 Site Preparation
- 02 22 00 Site Demolition

Division 3

Concrete

- 03 20 00 Concrete Reinforcement
- 03 30 00 Cast In-Place Concrete

Division 4

Masonry

- 04 05 11 Masonry Mortar and Grout
- 04 20 00 Concrete Unit Masonry
- 04 20 01 Brick Veneer Masonry
- 04 72 00 Cast Stone Masonry

Division 5 – "NOT USED"

Division 6

Wood, Plastics, and Composites

- 06 10 00 Rough Carpentry
- 06 20 00 Finish Carpentry/Millwork
- 06 41 00 Plastic Laminate Clad Cabinets

Division 7

Thermal and Moisture Protection

07 19 00 Water Repellents

Dallas ISD Construction Services 00 01 10 Revised 10/18/2022

- **Openings** 08 11 13 Hollow Metal Doors, Frames and Windows
- 08 14 16 Flush Wood Doors
- 08 31 00 Access Doors and Panels
- 08 70 11 Door Hardware
- 08 80 00 Glazing

Division 9

Finishes

- 09 21 16 Gypsum Board Assemblies
- 09 22 16 Non-Structural Metal Framing
- 09 30 00 Tiling
- 09 50 00 Acoustical Ceilings
- 09 64 00 Resilient Flooring
- 09 68 13 Tile Carpeting
- 09 90 00 Paints and Coatings

Division 10

Specialties

- 10 11 01 Visual Display Boards
- 10 14 00 Signage
- 10 14 63 Marquee Sign
- 10 21 23 Cubicle Curtains
- 10 26 01 Wall and Corner Guards
- 10 28 00 Toilet Accessories

Division 11 – "NOT USED"

Division 12

Furnishings

- 12 21 13 Horizontal Louver Blinds
- 12 30 00 Millwork
- 12 36 00 Countertops

Divisions 13 – 20 "NOT USED"

Division 21

Fire Suppression

- 21 05 00 Common Work Results for Fire Suppression
- 21 13 00 Fire Suppression Sprinklers

Division 22

Plumbing

- 22 05 53 Identification for Plumbing Piping and Equipment
- 22 07 19 Plumbing Piping Insulation
- 22 08 00 Commissioning of Plumbing Systems
- 22 10 05 Plumbing Piping
- 22 10 06 Plumbing Piping Specialties
- 22 11 16 Domestic Water Piping
- 22 42 00 Plumbing Fixtures

Dallas ISD Construction Services

Heating, Ventilating, and Air-Conditioning (HVAC)

- 23 00 10 Basic Mechanical Requirements
- 23 05 00 Common Work Results For HVAC
- 23 05 13 Common Motor Requirements for HVAC Equipment
- 23 05 29 Hangers and Supports for HVAC Piping and Equipment
- 23 05 53 Mechanical Identification
- 23 07 13 Duct Insulation
- 23 08 00 Commissioning of HVAC Systems
- 23 09 00 Instrumentation and Control for HVAC
- 23 21 13 Hydronic Piping
- 23 21 23 Hydronic Pumps
- 23 25 00 HVAC Water Treatment
- 23 31 00 HVAC Ducts and Casing
- 23 33 00 Air Duct Accessories
- 23 34 26 Centrifugal HVAC Fans
- 23 36 00 Air Terminal Units HW Heat
- 23 37 00 Air Outlets and Inlets
- 23 74 13 Modular Outdoor Air Handling Units
- 23 81 26 Mini-Split-System Air Conditioners

Divisions 24 – 25 "NOT USED"

Division 26

Electrical

- 26 05 00 Common Work Results for Electrical
- 26 05 19 Low-Voltage Electrical Power Conductors and Cables
- 26 05 26 Grounding and Bonding for Electrical Systems
- 26 05 29 Hangers and Supports for Electrical Systems
- 26 05 34 Raceways
- 26 05 37 Boxes
- 26 05 53 Identification for Electrical Systems
- 26 08 00 Commissioning of Electrical Systems
- 26 09 23 Lighting Control Devices
- 26 27 26 Wiring Devices
- 26 28 13 Fuses
- 26 28 18 Enclosed Switches
- 26 51 00 Exterior Lighting
- 26 56 00 Exterior Fixtures

Division 27

Communications

- 27 05 00 Common Work results for Communications
- 27 15 01 Premise Wiring Guide
- 27 51 23 Ip Integrated Electronic Communications Network

Electronic Safety and Security

28 05 00 Common Work Results for Electronic Safety and Security

28 20 00 Electronic Surveillance

28 31 00 Fire Detection and Alarm

Divisions 29 – 30 "NOT USED"

Division 31

Earth Moving

- 31 10 00 Site Clearing
- 31 23 34 Excavation and Backfill for Conduits
- 31 25 00 Erosion and Sedimentation Controls
- 31 63 29 Drilled Piers

Division 32

Landscaping

- 32 12 30 Flexible Base (Crushed Stone)
- 32 13 14 Sidewalks
- 32 16 00 Concrete Curbs and Gutters
- 32 17 23 Pavement Marking

Division 33 – "NOT USED"

END OF CONTENTS

The list below is a description of the documents provided to the contractor as part of this Request for Competitive Sealed Proposal - 207495

1.01 Drawing List with Revision Number and Date: 08/16/24

1.01.A Project Manual List with Revision Number and Date: 08/16/24

ORG 220 - MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED - RENOVATION

Drawings:

Civil:	
C04 01 Demolition Plan	08/16/24
C05 01 Paving Plan	08/16/24
	00/10/21
Structural:	
S101 General Notes and Abbreviations	08/16/24
S201 Foundation and Framing Plans	08/16/24
S301 Foundation Details	08/16/24
S302 New Marguee Sign Sections and Details	08/16/24
S402 Roof Top Units Plan	08/16/24
S501 Typical Details	08/16/24
Architactural	
<u>Al Childectural.</u> GO 00 Cover Sheet	08/16/24
G0.01 Sheet Index Scope of Work General Notes	08/16/24
G0.02 Accessibility Details	08/16/24
G0.02 Accessibility Details	08/16/24
AS100 Site / Reef Dian	00/10/24
AS 100 Sile / ROOI Flat	00/10/24
ASD 100 Sile Entry Demonitori Plan	00/10/24
AS101 Sile Entry Pavement Plan	08/16/24
AS102 Marquee Sign and Details	08/16/24
AD100 Composite Demolition Plan	08/16/24
AD101 Enlarged Demolition Floor Plan	08/16/24
AP100 Composite Floor Plan	08/16/24
AP101 Floor Plan Area 'A'	08/16/24
AP102 Floor Plan Area 'B'	08/16/24
AP103 Floor Plan Area 'C'	08/16/24
AP104 Floor Plan Area 'D'	08/16/24
AP105 Floor Plan Area 'E'	08/16/24
AP106 Millwork Details	08/16/24
AC001 Composite Ceiling Demolition Plan	08/16/24
AC002 Ceiling Demolition Plan Area 'A', 'B', 'D'	08/16/24
AC100 Composite Reflected Ceiling Plan	08/16/24
AC101 Reflected Ceiling Plan Area 'A', 'B', 'D'	08/16/24
AE100 Exterior Elevations	08/16/24
AE101 Exterior Elevations	08/16/24
Mechanical:	
M001 Details and Schedules Mechanical	08/16/24
M002 Details and Schedules Mechanical	08/16/24
M101 Mechanical Demolition Plan Area 'A', 'B'	08/16/24
M102 Mechanical Demolition Plan Area 'C'	08/16/24
M103 Mechanical Demolition Plan Area 'D'	08/16/24
M104 Roof Mechanical Demolition Plan	08/16/24
Dallas ISD Construction Services	CSP 20
00.01.15 Page 1 of 2	August 16

M201 Floor Plan Mechanical Area 'A','B' M202 Floor Plan Mechanical Area 'C' M203 Floor Plan Mechanical Area 'D' M204 Roof Mechanical Plan M211 Floor Plan Mechanical Piping Area 'A', 'B' M212 Floor Plan Mechanical Piping Area 'C' M213 Floor Plan Mechanical Piping Area 'D'	08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24
Electrical: E001 Schedules and Details Electrical E100 Site Plan Electrical E101 Site Plan Photometric Calculations E201 Floor Plan Areas 'A &B' Lighting E202 Floor Plan Area 'C' Lighting E203 Floor Plan Area 'D' Lighting E204 Floor Plan Area 'E' Lighting E205 Roof Plan Power E301 Floor Plan Areas 'A&B' Power E302 Floor Plan Areas 'C' Power E303 Floor Plan Areas 'D' Power E304 Floor Plan Areas 'E' Power	08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24
Plumbing: P001 Schedules and Details Plumbing P101 Underfloor Plumbing Demolition Areas 'A & B' P102 Underfloor Plumbing Demolition Areas 'C' P103 Underfloor Plumbing Demolition Areas 'D' P104 Underfloor Plumbing Demolition Areas 'E' P111 Floor Plumbing Demolition Areas 'A & B' P112 Floor Plumbing Demolition Areas 'C' P113 Floor Plumbing Demolition Areas 'E' P201 Underfloor Plan Plumbing Areas 'A & B' P202 Underfloor Plan Plumbing Area 'C' P203 Underfloor Plan Plumbing Area 'E' P211 Floor Plan Plumbing Area 'E' P211 Floor Plan Plumbing Area 'C' P213 Floor Plan Plumbing Area 'C' P213 Floor Plan Plumbing Area 'C' P214 Floor Plan Plumbing Area 'E'	08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24
Iecnnology:T201 Floor Plan Areas 'A & B" TechnologyT202 Floor Plan Area 'C' TechnologyT203 Floor Plan Area 'D' TechnologyT204 Floor Plan Area 'E' TechnologyT301 Floor Plan Areas 'A & B' Fire AlarmT302 Floor Plan Areas 'C' Fire AlarmT303 Floor Plan Areas 'D' Fire AlarmT304 Floor Plan Areas 'E' Fire AlarmT305 Roof Plan Fire Alarm	08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24 08/16/24



Procurement Services

The Dallas Independent School District ("District") is soliciting Competitive Sealed Proposals ("CSP") from qualified sources relative to the provision of the following request For Competitive Sealed Proposals ("CSP"). This procurement will be managed under the Dallas ISD Construction Services department.

For information on how to obtain the CSP documents, go to the District's **Construction Services** website http://<u>www.dallasisd.org.</u> **Click on "Departments;" click on "Construction Services/Bond Office;" click on "Bond Vendor Opportunities;"** then click on the bid package number. Follow the Document Distribution instructions to obtain the CSP documents. The CSP documents contain the necessary information to submit a CSP to the District, including construction documents, selection criteria, estimated budget, project scope, schedule, and other information that contractors may require to respond to the request.

Please return the "Intention to Propose" form (Specification Section 00 11 17) to the Construction Services Procurement Director listed on the form.

CSP #	Description	Closing Date	Buyers Initials
207459	ORG 220 – MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED - RENOVATION	10/02/24	TL

A pre-proposal meeting will be held at on 09/09/24 via Zoom for all interested parties. This meeting is not mandatory, but information discussed will be extremely helpful in preparation of the proposal.

Join Zoom Meeting https://us05web.zoom.us/j/82896540881?pwd=Gn8ySjC0gWiduwuHtuI4BcTiaxLlfE.1

Meeting ID: 828 9654 0881 Passcode: as1s2b

All general contractors and sub-contractors are encouraged to attend this meeting. Contractors will meet A/E(s) and PM at the school to start site tours. The first site tour will take place immediately following the pre-proposal. The following is the schedule for each site tour:

School Org#	School Name	Date	Time	School Address, Location of Meeting
220	MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED	09/09/24	4:00 PM	724 GREEN COVE LANE, DALLAS, TEXAS 75232

All Construction Services procurements must be physically delivered to the Construction Services office, at the Linus D. Wright Dallas ISD Administration Building 9400 North Central Expressway, Suite 800 Dallas, TX 75231. (Call 972.925.7200 for directions). Delivery to other locations will result in rejection of a CSP.

Completed CSP Package Part 1-A, 1-B and 1-C are due on Wednesday, 10/02/24 at 2:00 PM (local time).

Completed CSP Package Part 2 is due on Thursday, 10/03/24 at 3:00 PM (local time).

Any materials received after the respective closing dates / times will not be considered.

The District will open and read the names of the proposers and prices submitted in responsive CSPs beginning at 3:00 P.M. local time <u>upon submittal of Part 2</u> of the Package, via zoom at Dallas ISD Construction Services, Linus D. Wright Dallas ISD Administration Building 9400 North Central Expressway, Suite 800 Dallas, TX 75231.

Join Zoom Meeting https://us05web.zoom.us/j/83481812712?pwd=TWF5p5AUZyA4q9s6sYKZkiKRbn5vmA.1

Meeting ID: 834 8181 2712 Passcode: tGw7Yv

No further information will be officially released until after the date the Agenda is publicized for the Board of Trustees briefing.

The right is reserved to reject any or all bids, proposals, CSPs or statements of qualification and to waive technicalities.

The Dallas Independent School District is committed to the ideals of equal opportunity in all its business endeavors.

The Dallas Independent School District's Construction Services projects have a 30% Minority and Women-Owned Business Enterprise (M/WBE) construction goal.

RUN TWO TIMES ONLY AS FOLLOWS: 08/25/24 and 09/01/24



DALLAS INDEPENDENT SCHOOL DISTRICT

PROCUREMENT SERVICES – CONSTRUCTION SERVICES

DOCUMENT DISTRIBUTION

CONSTRUCTION SERVICES

CSP 207459 ORG 220 - MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED - RENOVATION J220_P0406_1

SOLICITATION TIMELINE:

Issue Date:	08/25/24
First Advertisement Date	08/25/24
Second Advertisement Date	09/01/24
Preproposal Meeting	09/09/24 10AM
Question Deadline	09/13/24
Question Responses from the District	09/18/24
CSP Response Due Dates Pt 1-A and Pt 1-B	10/02/24 2PM
CSP Response Due Date Pt 2	10/03/24 3PM
CSP Evaluation	10/10/24
Anticipated Board Approval	11/21/24

1. DOCUMENT DISTRIBUTION:

The attached "Document Distribution" page details how documents and addenda will be distributed.

2. ESTIMATED CONSTRUCTION BUDGET INCLUDING ALLOWANCES:

Total Estimated Construction Budget (CCL + Allowances) for CSP 207459 \$5,948,529.30

3. Scope of Work. The Work consists of:

ORG 220 – MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED - RENOVATION - Project consists of the following:

- 1. Provide security updates including cameras, card access readers, and door contacts.
- 2. Provide secure front vestibule.
- 3. Replace exterior waterproofing/sealant joints.
- 4. Replace fire alarm system.
- 5. Replace exterior lights with LED lighting and controls.
- 6. Partial Interior LED light replacement and controls.

Dallas ISD Construction Services

- 7. Replace teaching surfaces at each classroom.
- 8. Provide new marquee sign located at front entry.
- 9. Remove and replace concrete pavement and sidewalks.
- 10. Mechanical/HVAC improvements include new split system, central station, rooftop and fan coil units, water pumps and piping, VAV boxes, ductwork, and controls on pumps and units.
- 11. Plumbing improvements include grease waste and waste piping replacement, new hot water heater and hose replacement.
- 12. Provide/replace IDF/MDF air conditioning.
- 13. Replace Sanitary Sewer Lines
- 14. Update and relocate Nurse Clinic
- 4. Contact Information:

<u>Technical</u> questions and all other questions related to this solicitation are to be referred to:

Attention: Email: Dallas ISD Procurement Services ProcurementCS@dallasisd.org

Please notate the solicitation number 207459 in the subject line of your email.

Documents will be distributed as follows:

Hard copy and file distribution are provided, beginning 08/26/24

Printing Company Name:	Thomas Printworks
Attention:	Jon Sauve
Address:	P.O. Box 830768
City, State and Zip	Richardson, Texas 75083
Phone:	972-231-7227
Email:	jon.sauve@thomasprintworks.com

Any addendum issued will be listed or posted at the **Dallas ISD Construction Services** website <u>http://www.dallasisd.org/</u> **Click on "Departments"; click on "Construction Services/Bond Office"; click on "Bond Vendor Opportunities"**; then click on the bid package number. Any and all addenda that are too large in size for the website will not be posted on the District website. However, all such addenda will be listed on the website with the date of issuance of each addendum, and instructions to proposers for procuring such addenda from Thomas Printworks.

Documents are available as follows:

- Full size sets of plans and specifications and USB drives of the same information and details are available for purchase at the Printing Company noted above. Purchase price must be obtained directly from the Printing Company.
- The purchases of additional USB drives of proposal documents in PDF format are available only to purchasers of at least one (1) full size plans and specifications. Purchase price must be obtained directly from the Printing Company.
- Addenda will be available from the Printing Company for purchase. Purchase price must be obtained directly from the Printing Company.

Delivery pricing can be obtained from Thomas Printworks.

The bidder or proposer is responsible for obtaining all Addenda prior to submitting a bid or proposal to the District.

A list of Plan Rooms and other entities that have documents available for viewing are as follows: DRAWINGS AND SPECIFICATIONS ARE AVAILABLE AT THE FOLLOWING:

Dallas/Fort Worth Minority Supplier Development Council Sha'Ron Richardson

construction@dfwmsdc.com

Regional Hispanic Contractors Association John H. Martinez john@regionalhca.org

Regional Black Contractors Association of North Texas, Inc. John Proctor info@blackcontractors.org

Fort Worth Hispanic Chamber of Commerce Gilbert Juarez gilbert@pic-printing.com https://www.fwhccplanroom.com/

Greater Dallas Hispanic Chamber of Commerce Gabriela Carvallo gabriela@gdhcc.com

Construction Connect Michael Stubbs Content@ConstructConnect.com 214-630-0747 8828 N. Stemmons Freeway, Ste. 550 Dallas, TX 75247

> 972-786-0909 3918 North Hampton Rd. Dallas, TX 75212

214-565-8946 2627 Martin Luther King Jr. Blvd, Dallas, TX 75215

> 817-625-5411 1327 N. Main Street Fort Worth, TX 76164

214-521-6007 1402 N. Corinth St., Ste 225 Dallas, TX 75215

800-364-2059 30 Technology Parkway South, Ste 100 Norcross, GA 30092

Dodge Data & Analytics formerly McGraw-Hill Construction Dodge

support@construction.com

877-784-9556 4300 Beltway Place, Ste. 180 Arlington, TX 76018

Dallas Black Chamber of Commerce Tigist Solomon tsolomon@dbcc.org

214-702-6652 2922 Martin Luther King Jr. Blvd., Building A, Ste. 104 Dallas, TX 75215

Fort Worth Metropolitan Black Chamber of Commerce Jeremiah Anderson janderson@fwmbcc.org

Virtual Builders Exchange, LLC Heidi Shaffer heidi@virtualbx.com 1150 South Fwy, Ste. 211 Fort Worth, TX 76104

817-871-6558

210-564-6900 4047 Naco Perrin, Ste.100 San Antonio, TX 78217 Please return this Intention to Propose Form within **Five (5) Days** of receipt of this Request for Competitive Sealed Proposal Package. Doing so will enable us to keep a record of interest in this project. It is your responsibility to continue to monitor the District Website for any modifications or addenda issued prior to the submittal deadline. Email this form to:

Attn:	Dallas ISD Procurement Services c/o Bond/Construction Services Linus D. Wright Dallas ISD Administration Building 9400 North Central Expressway, Suite 800 Dallas, TX 75231 E-mail: ProcurementCS@dallasisd.org
Subject:	Dallas ISD Construction Services CSP 207459

Dear Procurement Services:

We hereby acknowledge receipt of the proposal documents for the above referenced COMPETITIVE SEALED PROPOSAL (CSP) Package, and confirm that:

(Check appropriate box)

- □ We do intend to submit a proposal for this work. We understand that this proposal will be prepared by us at no cost or obligation to: JMA Johnson, LLC or Dallas ISD.
- □ We do not intend to submit a proposal on this work. The reason(s) we decline to offer a proposal is as follows:

Yours sincerely,

Name	Signature
Firm	Title
Phone	Date
Fax	
Email Address	

1.01 GENERAL INFORMATION

1.01.1. Scope

In accordance with the Texas Government Code Chapter 2269 the Dallas ISD is requesting Competitive Sealed Proposals (CSP) from general construction contractors. The following instructions by the Dallas Independent School District are intended to afford proposers an equal opportunity to participate in the proposal process.

1.01.2. Discrepancies and Interpretations

Proposer must notify the Architect/Engineer during procurement, at least ten (10) business days prior to the scheduled Proposal opening date, with any questions arising out of the drawings or specifications or if discrepancies, ambiguities or omissions are found in the Proposal documents, or if further information or interpretation is desired.

Answers to inquiries will be provided in writing to all proposers in addenda form. All provisions and requirements of such addenda will supersede or modify affected portions of the Proposal documents. All addenda will be incorporated into and bound with the Contract Documents. No other explanation or interpretation will be considered binding.

1.01.3. Submittal Procedures

Submit the Proposal in sealed packages of sufficient size to hold all of the copies of the Proposal documents. These should be packaged following the instructions in Specification Section 00 41 10 – Overall Proposal Packaging Checklist.

Provide a properly formatted label, using page one of the advertisement, on the exterior of the Proposal envelope or package providing the proposer's identification including due date and time.

If the Proposal is submitted by mail, place the sealed Proposal package in a mailing envelope addressed as required in this section. Delivery of the Proposal prior to the advertised time set for the Proposal opening is the responsibility of the proposer. Dallas ISD is not responsible for mail delivered from the post office.

1.01.4. Preparation of Competitive Sealed Proposals

The Proposal must be based on conditions at the project site, the project Drawings, the project manual and any addenda issued.

All original Proposal Forms must be authoritatively executed and submitted on the Proposal forms furnished by Dallas ISD.

If the **Technical Proposal** form does not provide sufficient space to adequately respond to a question, the proposer should attach additional 8 1/2" X 11" white paper sheets as required, referencing the page and question numbers to which the response pertains.

A Proposal with omissions, alterations, conditions, or carrying riders or other qualifiers which modify the Proposal form may result in the proposal being deemed as non-responsive.

If the proposer chooses to issue a "No Response" (N/R) to a question on the Proposal, an explanation of this action is required. Failure to do so may be viewed by Dallas ISD as incomplete and may subject the entire Proposal to rejection.

Only one proposal shall be submitted by each proposer. If two or more Proposals are submitted, either in one envelope or in separate envelopes, such multiple Proposals will be deemed as non-responsive. The blank Proposal form bound in the Specification is for the proposer's information reference only.

Facsimile or emailed proposals will not be accepted and modifications are not allowed. Any modifications not inside the proposal envelopes/packages will not be considered part of the Contractor's proposal.

The proposer will receive no compensation or reimbursement of expenses incurred in the preparation of this Proposal.

Dallas ISD reserves the right to reject any or all Proposals. Dallas ISD also reserves the right to waive errors and omissions in any proposal if it deems it in the best interest of Dallas ISD to do so.

1.01.5. Public Information and Notice of Confidentiality

Dallas ISD considers all Proposal information, documentation and supporting materials submitted in response to this Request for Competitive Sealed Proposal to be non-confidential and / or non-proprietary in nature, and therefore, shall be subject to the public disclosure under the Texas Public Information Act (*Texas Government Code*, Sec. 552.001, et seq.) after the award of the contract. Exceptions to this are listed in this Project Manual.

The Proposer must identify and designate those portions of their technical Proposal which contain trade secrets or other proprietary data. If the Proposal includes such data, the proposer shall:

Mark the cover sheet of the Technical Proposal with the following phrase: "This Proposal includes data that shall not be disclosed outside Dallas ISD, and the A/E design team and shall not be duplicated, used or disclosed in whole or in part for any purpose other than to evaluate this Proposal."

Mark each sheet and the specific data on that sheet that the proposer wishes to restrict with the following phrase: "Use or disclosure of this specifically marked data is subject to the restrictions regarding confidentiality cited on the cover sheet of this Proposal."

1.01.6. Proposal Guaranty Bond

A Proposal bond on Dallas ISD Proposal Guarantee Bond Form, from a Surety authorized to transact business in the State of Texas, in the amount of not less than ten percent (10%) of the greatest total amount of the proposed contract amount (Base Price plus all Allowances), payable without recourse to the order of the Dallas ISD Board of Trustees, must accompany the Proposal as a guarantee that, if awarded the Contract, the proposer will promptly enter into and execute the Contract and Performance and Payment Bonds on the forms provided.

The Proposal Guarantee Bond must be accompanied by a properly dated and executed Power of Attorney with a raised Surety seal on each document. Failure to do so will constitute an irregular Proposal which may be deemed as non-responsive. Use of a Surety company's bond form is not acceptable and may result in the Proposal being deemed as non-responsive.

Should the successful proposer fail to execute and return to Dallas ISD, the Contract and Bonds within ten (10) calendar days after the date of transmittal of the Contract Documents for execution, the Proposal Guaranty becomes the property of Dallas ISD.

No cashier's checks, official checks, or other items will be accepted. Only a Proposal Guaranty Bond as described in this paragraph for proposal security.

Deadline for Signing Contract and DALLAS ISD's Rights if Delay

The completion of this Project is crucial and must remain on a timely schedule. In order to keep the Project on a judicious schedule, the selected proposer must:

a. Sign the Contract no later than ten (10) calendar days after the date of Board approval when the selected proposer has been notified that it is the successful proposer, and

b. Provide the safety plan for the Project and all required bonds and insurance no later than five (5) business days after the successful proposer has signed the contract.

If the selected proposer fails to meet the district's specified deadline of ten (10) calendar days, the Dallas ISD has the right to:

a. Award the contract to the next successive responsive proposer subject to the district's ranking and evaluation.

1.01.7. Insurance

Original Certificates of Insurance, as well as copies of the original insurance policies and endorsements as required by the contract documents are due not later than 5 business days after execution of contract by the owner.

1.01.8. Ownership of the Competitive Sealed Proposal and Contractor's Proprietary Information

Submitted Proposals, documentation and supporting materials shall become the property of Dallas ISD.

1.01.9. Site Investigation

It is the responsibility of each proposer to examine the project site, existing improvements, and adjacent property and be familiar with existing conditions, and the full scope of the work before submission of a Proposal. By submitting a proposal, the Proposer certifies his acceptance of this requirement.

After investigating the project site and comparing the Drawings and Project Manual with the existing conditions, the proposer should immediately notify the A/E of any conditions for which requirements are not clear; or about which there is any question regarding the extent of the Work involved.

Should the successful proposer fail to make the required investigations and should a question arise after award of contract as to the extent of the Work arising from existing conditions, the A/E will review the issues and make a recommendation to the Project Manager.

Requests for site visits by individual proposers after the formal Pre-Proposal Meeting for the purpose of evaluating and preparing a proposal, will not be accommodated. State law requires proper background checks and badging or accompaniment by District personnel for site visits. It is not practical for the District to provide such accompaniment for individual proposers outside the prescribed Pre-Proposal and Site Visit parameters. Therefore the only viable and appropriate opportunity for viewing the site prior to the proposal date is to attend the Pre-Proposal Meeting and Site Visits.

1.01.10. Evaluation and Contract Award Process

Proposals will be opened publicly to identify the names of the proposer and their respective proposed contract amount (Base Price which includes all Allowances) beginning at 3:00pm Central time upon submittal of Part 2. Other contents of the Proposals will be afforded security sufficient to preclude disclosure of the contents prior to award.

The Proposal Evaluation Committee will evaluate the Proposals. The criteria for evaluation and selection of the successful proposer for this award will be based upon the factors listed in the Evaluation Criteria herein and in the Request for Competitive Sealed Proposal documents.

The Proposal Evaluation Committee consists of the following:

• Construction Services Staff ("CSS")

- M/WBE ("M/WBE")
 DALLAS ISD M/WBE Program Manager
- Construction Proposal Evaluators ("CPE") Five (5) Owner Representatives and or other in-house staff (as assigned)
- Safety Manager Consultant ("SM")

After opening the Proposals, the Proposal Evaluation Committee will evaluate and rank each Proposal with respect to the published selection criteria. This ranking will be used to make an advisory recommendation to the Dallas ISD Board of Trustees and is subject to their approval. Per Texas Government Code Ch. 2269, Dallas ISD may negotiate a contract with the selected proposer offers for cost adjustment and other elements of the Proposal. Other than the data read at the Proposal opening, Dallas ISD will endeavor not to disclose any information derived from the Proposals submitted by competing firms in conducting such discussions. The selected Contractor will be required to sign the Dallas ISD Contract form once the district's Board of Trustees grant the formal recommendation for award at the particular monthly publicly held Board meeting.

If Dallas ISD determines that it is unable to reach a satisfactory agreement with the first ranked proposer, Dallas ISD will formally and in writing, terminate discussions with that proposer. Dallas ISD will then proceed with negotiations with each successive proposer as they appear in the order of ranking until an agreement is reached, or until Dallas ISD has rejected all Proposals. After termination of discussions with any proposer, Owner will not resume discussions with that proposer.

Following execution of a contract agreement between Dallas ISD and the successful contractor(s), the proposers will be notified about the outcome of the selection process.

The award or rejection action regarding this Proposal is at the sole discretion of Dallas ISD. Dallas ISD makes no warranty regarding that a contract will be awarded to any proposer.

If a Contract is awarded, it will be awarded to the proposer offering the best value to Dallas ISD. Dallas ISD is not bound to accept the lowest priced Proposal, if that Proposal is judged and or determined not to be the best value for Dallas ISD.

1.02.1 RECEIPT OF PROPOSALS

See Specification Section 00 41 10 Overall Proposal Packaging Checklist - for packaging instructions and Section 00 11 13 Advertisement for CSP for proposal receipt instructions and details

1.03.1 ADDENDA, ALLOWANCES, ALTERNATES AND UNIT PRICES

Addenda. Contractors are required to acknowledge receipt of all addenda issued prior to the Proposal due date. Failure to acknowledge all addenda in the Proposal Form will result in the Proposal being deemed as non-responsive.

Allowances. Contractors are required to include the Allowances described in Section 01 21 00 in the Base Proposal. Refer to the General, Supplementary and Other Conditions of the Contract for Construction for other related details on allowances.

Contingency Allowance. All construction contracts shall contain an Owner Controlled Contingency Allowance (OCCA). The contingency allowance is to be used only for expenditures which do not require a change order. The contingency allowance may be used to pay for changes in the work including but not limited to those resulting from hidden or unforeseen conditions.

The contingency allowance may be used to pay claims. Use of the contingency allowance must be authorized in advance by the Owner's Project Manager. Refer to Specification Section 00 41 11, for the contingency allowance. The contractor shall not be entitled to markups or profit related to use of the Owner Controlled Contingency Allowance.

Alternates. Contractors are required to submit prices for the Alternates described in Section 01 23 00 to add work or to deduct work from the Base Proposal. Contractor shall be responsible for any changes in the Work affected by acceptance of Alternates. Refer to Drawings and Technical Specifications Sections for items of work affected by Alternates. Election of Alternates will be exercised at the option of the Owner. Contractor will include as part of each alternate, miscellaneous devices, accessory objects and similar items incidental to, or required for, a complete installation. The amount shown in Specification Section 00 41 12 for each alternate shall include all plant, labor, material, equipment, overhead, profit, insurance and other costs incidental to the performance under the alternate. Failure to provide this information as an alternate is unacceptable and may result in the Proposal being deemed as non-responsive.

Unit Prices. Contractors are required to submit unit prices for any items that are listed in Spec. Section 01 22 00. The amount shown in Specification Section 00 41 12 for each unit price listed task/item shall include all overhead, profit, insurance and other costs incidental to the performance of the listed task/item. Failure to provide the requested unit pricing may result in the Proposal being deemed as non-responsive.

1.04.1 EVALUATION CRITERIA

Evaluation for ranking of firms submitting proposals will be based on the criteria shown in the following table (the weighting of each item by the points shown indicate the relative importance of each item and shall be utilized in the ranking of Proposal). Carefully review the submittal requirements, as failure to submit a Proposal in the proper format and in proper number may cause that Proposal to be rejected. The selection shall follow the Texas Government Code Chapter 2269, Contracting and Delivery Procedures for Construction Projects. The firm that offers the best value to the district based on published selection criteria and on its ranking evaluation will be selected. The District shall first attempt to negotiate a contract with the selected firm. Should negotiations be unsuccessful, the firm will be notified in writing of the decision to end negotiations, and the District will proceed to the next firm in the order of selection ranking until a contract is reached or all proposals are rejected. Based upon the proposal material submitted, the following criteria will be used to evaluate firms.

SECTION 00 21 13 – INSTRUCTIONS TO PROPOSERS

Criteria Number	Criteria Description	Category Value
1	Purchase Price	
1a	¹ Proposal Price - This section will be scored according to published formula by Construction Services Procurement personnel and provided for all evaluators:	40 points
	Category Total:	40 points
2	Reputation of Vendors and of the Vendor's Goods or Services	
2a	References – Designated evaluators will check references to score this section:	5 points
	Category Total:	5 Points
3	The Quality of the Vendor's Goods or Service	
3a	Safety Plan, and Insurance Rate Modifier (IRM):	5 points
3b	Proposed Project Team(s) and Management approach to proposed projects:	12 Points
	Category Total:	17 Points
4	The Extent to which the Goods or Services Meet the District's Needs	
4a	General Contractor's current/past K-12 new or renovation construction experience:	10 points
4b	Proposed Construction schedule and phasing plan:	5 points
	Category Total:	15 points
5	The Vendor's Past Relationship with the District	
5a	N/A	0 points
	Category Total:	0 points
6	The impact on the Ability of the District to Comply with Laws and Rules Relating to Historically Underutilized Businesses (M/WBE)	
6a	Proposer demonstrated a commitment to the district's M/WBE program by providing enhancements to the administration of the proposer's contracting process for the work to be done by M/WBE firms. Examples of this commitment may include any of the following: expedited payments, Mentor Protege Programs, early release of retainage, expanding the pool of diverse subcontractors to firms that have not done business with the district, etc.	
6b	Proposer submitted a list of two (2) M/WBE subcontractor references.	
6c	Proposer is a certified M/WBE OR Proposer submitted a Jooint Venture Agreement with a certified M/WBE OR Proposer submitted a Prime Subcontractor Teaming Agreement with a certified M/WBE.	
6d	Proposer submitted a diverse list of certified M/WBE subcontractors, subconsultants or suppliers that meets or exceeds the district's M/WBE aspirational goal in meaningful and significant roles OR Proposer demonstrated outreach designed to meet the M/WBE project goals with a diverse M/WBE team of subcontractors, suppliers and subconsultants.	5 Points
6e	Proposer demonstrated a comprehensive framework and understanding of the district's M/WBE program by: providing a written and detailed M/WBE compliance plan, designating a high ranking individual who will be responsible for M/WBE contract compliance, monitoring and reporting, ensuring no unauthorized changes to M/WBE subcontractors, adhering to the M/WBE commitment and subcontractor payment terms, executing the M/WBE subcontracting schedule, complying with the district's M/WBE Program.	5 Points
	Category Total:	20 Points
7	The Total Long-Term Cost to the District to Acquire the Vendor's Goods and Services	
7a	Financial status of the vendor (as rated by Dun & Bradstreet):	3 Points
	Category Total:	3 Points
8	Any other Relevant Factor Specifically Listed in the Procurement Document	
8a	N/A	0 points
	Category Total:	0 points
	Total	100 Points Maximum

¹ Proposed Pricing Formula:

Maximum Score = Minimum Score = Zero(0)

Forty (40)

Notes: Low Bidder can only receive the full 40 points if at or under the advertised Construction Budget Estimate (A7) Notes: Bids that are under budget will only lose 1 point per % from Low Bidder (Column G)

Notes: Bids that are over budget will be penalized 1 point per % from Low Bidder to the Budget & 2 points per % from the Budget

Notes: The low bidder is awarded points up to 20% over budget. If Low bid is 20% or more over Construction Budget Estimate (A7), no bidder shall receive any points for price.

NOTE: If all bidders are 20% or more over budget resulting no points being awarded, Dallas ISD shall use an alternative price evaluation formula to award points for the bids received. Low bidder will be awarded 5 points and each bidder will lose 1 point per percent from the low bid.

Formula = P10-G10*100 P= Max Points Allowed (40) G= % from Low Bid

Step 1- Determine Low Bidder (Column C)

=IF(Bid=\$E\$6,"Low Bidder","-") Formula =

E6 = Low Bid

Step 2- Calculate Bid Delta (\$) from Budget (Column D)

=Bid-\$A\$7) Formula =

A7 = Construction Budget Estimate

Step 3- Calculate Bid Delta (%) from Budget (Column E)

Formula = =ROUND((Bid-\$A\$7)/\$A\$7,2))

A7 = Construction Budget Estimate

Step 4- Determine if Bid is Over or Under Budget (Column F)

=IF(Bid<=\$A\$7,"Under Budget","Over Budget")) Formula =

A7 = Construction Budget Estimate

Step 5- Calculate Bid Delta (%) from Low Bid (Column G)

=IF(C10="low bidder",0,ROUND(E10-MIN(\$E\$10:\$E\$40),2))) Formula =

C10 = Low Bidder vs Not Low Bidder

Step 6- Calculate Points Lost for Bids Under Budget. (Column H)

Bid Proposals that are UNDER the Construction Budget Estimate provied will be scored with an escalator of 1.1 Point Per Percent from low bid will be deducted from max points of 40. Pricing Formula =

=IF(C10="low bidder",0,IF(F10="under budget",ROUND((G10*100)-

K10,0),IF(MIN(\$E\$10:\$E\$40)>0%,0,ROUND(-MIN(\$E\$10:\$E\$40)*100,0)))))

Under Budget

Step 7- Calculate Points Lost for Bids Over Budget. (Column K)

Bid Proposals that are OVER the Construction Budget Estimate provided will be scored with an escalator of 1 from the Low Bid to the Budget and an Escalator of 2 from the Budget to their bid. 1 Point Per Percent from the low bid will be deducted from low bid to budget & 2 points per percent from budget to their amount from max points of 40. Pricing Formula = =IF(F10="under budget",0,IF(F10="OVER BUDGET",IF(C10="low

bidder",ROUND((E10*100),0),ROUND((E10*100),0)))))

Step 8- Add Multiplier to Points Lost for Bids Over Budget (Column M)

Bid Proposals that are OVER the Construction Budget Estimate provied will be scored with an escalator of 1 from the Low Bid to the Budget & an Escalator or 2 from the Budget to their bid. 1 Point Per Percent from low bid will be deducted from low bid to budget & 2 points per percent from budget to their amount from max points of 40. =IF(C10="low bidder",K10*2,IF(F10="under Budget",0,(E10*100)*2))) Pricing Formula = Step 9- Calculate Total Points Lost (Column N) Add Points Lost from Step 7 (Column J) + Points Lost from Step 8 (Column M) Pricing Formula = =J10+M10)Step 10- Calculate Total Points Awarded (Column Q) Subtract Points Lost from Max Points of 40 =IF(C10="low bidder",K10*2,IF(F10="under Budget",0,(E10*100)*2))) Pricing Formula = C10 = Low Bidder vs Not Low Bidder

Dallas ISD Construction Services

1.01 PROJECT NAME/ADDRESS

CSP 207459, consisting of improvements to:

Org #	PROJECT NAME	PROJECT TYPE	ADDRESS
220	MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED	RENOVATION	724 GREEN COVE LANE, DALLAS, TEXAS 75232

1.02 OWNER

Dallas Independent School District Construction Services Linus D. Wright Dallas ISD Administration Building 9400 N. Central Expressway Suite 800 Dallas, TX 75231

State Notification-

- A copy of the 10-day Abatement and/or Demolition notification submitted to the State, must be forwarded to the following departments within reasonable time frame:
- Dallas ISD Environmental-<u>DDANIELS@dallasisd.org</u>
- Bond Safety Department- <u>almeza@dallasisd.org</u>

Guidelines for Facility Owner Section-

- 10-day Abatement and Demolition State Notification, the below information must be included on the facility owner section:
- Name: Dallas Independent School District- Construction Services
- Attention: Contract Manager
- Address: 9400 N US 75-Central EXPY, STE 800 Dallas, TX 75231

1.03 OWNER'S PROJECT MANAGER (PM)

MCKISSSACK & MCKISSACK will be the Owner's Project Manager (PM) for the management of planning, design, permitting, construction, and post-construction for this CSP. All correspondence and communication during the contract finalization, construction and post-construction processes shall be directed to the Architect/Engineer firm (A/E) with copy to McKissack & McKisssack. During construction, the PM shall have authority to act on behalf of Dallas ISD for Owner related direction.

Robert Spicer, Project Manager

Dallas Independent School District Construction Services Linus D. Wright Dallas ISD Administration Building 9400 N. Central Expressway Suite 800 Dallas, TX 75231 Phone: 817-308-2916 E-mail: C113808@Dallasisd.org

1.04 ARCHITECT/ENGINEER FIRM (A/E)

JMA Johnson, LLC has been retained by Dallas ISD as the primary Architect/Engineer (A/E) for this bid package. All Drawings and Specifications have been prepared by the Architect/Engineer (A/E), including those dated **08/16/24.** All correspondence and communication regarding these documents shall be directed to the Architect/Engineer (A/E) with a copy to Project Manager.

JMA Johnson, LLC 13355 Noel Rd, Suite 1100 Main Contact: Michael L. Johnson Phone: 214-745-7070 Fax: Not Applicable Email: michael@jma-johnson.com

- 1.05 Summary of Work. See related Section 01 10 00 Summary of Work
- **1.06 Project Schedule.** The Contractor shall diligently prosecute and achieve Substantial Completion of the Work no later than as shown below.

Org # -SCHOOL NAME and PROJECT TYPE	SUBSTANTIAL COMPLETION	Final COMPLETION
220 – MARK TWAIN SCHOOL FOR THE	01/06/26	60 days after Substantial
TALENTED AND GIFTED - RENOVATION		

A Notice to Proceed (NTP) will be required before any work may commence. The NTP will be issued to the contractor when signed contracts, and any other required forms required, are returned to the Owner with valid bonds and insurance

A separate contract will be issued by Dallas ISD for each school. The Contractor will be required to provide Payment and Performance Bonds for each contract. Contractor shall be responsible for all permit costs including plan review fees.

1.07 Estimated Construction Budget (including allowances). The estimated construction budget for each school and total for the package is shown in the table below. The Owner reserves the right to reject any and all proposals if they exceed the estimated construction budget amount. <u>The total base proposal</u> amount for the package, which includes the listed allowances, will be considered in the evaluation of the <u>Contractor's proposal</u>.

For accounting purposes each school construction budget stands alone. In Section 00 41 11 Proposal Form Base – Base Bid (Part 1-A of the CSP), Proposers are required to enter a cost per school breakdown of their proposed Base Bid amount including allowances so that the cost per school can be verified against the per school budget during negotiations. These breakdowns are not for evaluation purposes and will not be read at the proposal opening.

School Org #	School Name and Project Type	Construction Cost Limitation (CCL)	In Contract Owner Controlled Contingency (IC)	Total Other Owner Allowances	Estimated Construction Budget (CCL + IC + Allowances)
220	MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED - RENOVATION	\$5,665,266.00	\$283,263.30	NA	\$5,948,529.30

1.01 Student Safety is Priority-One. The General Contractor ("the Contractor") has the duty of care to perform the Work safely. The Dallas ISD Safety Program and School Operational Parameters are incorporated into the Project Contract Documents. Under the AIA 101 and 201, the Contractor's Superintendent is the person responsible for the daily safe execution of the Work. The Contractor recognizes the critical need for the safety of all persons involved with the construction project, and most specifically the safety of students and the campus staff, and the need to conduct any and all construction operations in such a way as to NOT endanger the students and to NOT DISRUPT THE SCHOOL OPERATIONS.

The Contractor's Superintendent will plan his work with the students' safety as priority one. <u>On a</u> daily basis, the Contractor will plan and execute his work (in coordination with the campus Principal, but under DISD Construction Services direction) with the utmost care to not endanger the students' safety or the schools' operations. To this end, for each active project, the Contractor's safety manager and the Contractor's job site specific safety person MUST attend each DISD monthly Safety Committee Meeting. The PMF PM will also attend.

Daily Contractor Operations:

- Prior to the start of each work shift, daily jobsite specific Job Hazard Analysis (JHAs) will be provided by the Contractors' subs and reviewed by the Contractor.
- Prior to the end of each work shift, the Contractor's Superintendent will walk the site, and take the requisite action, to physically field verify that the campus has been made safe for student occupancy (the following morning), to protect the Work, materials and equipment from vandalism and theft. All gates and doors must be secured, and all warning signs must be posted.
- And at the end of the workday, the Contractor WILL audit the campus life safety systems and then call Central Control at 214.932.5627, to confirm to Central Control that the fire alarm system and security systems are back on normal operations.
- <u>The Contractor will not rely on DISD ("the Owner") staff, school personnel, or PMF PM</u> to perform his end of shift duties of making the campus safe for occupancy and auditing the life safety systems.

The Superintendent must have OSHA 30-Hour Training and must be proficient in enforcing the Dallas ISD Safety Program and School Operations Parameters. Each Foreman, that will be working on site, must have the OSHA 10-Hour Training.

- 2.01 School Operating Hours. For Contractor construction purposes, access to school facilities shall be limited during the school's normal working hours. During school operating hours, student occupancy and use is priority one. And during normal hours, on a daily basis, the Contractor will plan and execute his work (in coordination with the campus Principal, but under DISD Construction Services direction) with the utmost care to not endanger the students' safety or the schools' operations. To this end, during school operating hours, the Contractor will incorporate student safety as priority one in his daily task specific Job Hazard Analysis ("JHAs") and there will be no digging during normal school operating hours.
- 3.01 **Normal hours** are defined as the time and days when DISD provides for custodial staff to be on site. The cost for DISD custodial staff, during normal working hours on normal working days, shall NOT be included in the Contractor's proposal. During procurement, the Contractor is free to call the campus to inquire as to the campus normal hours of operation. The DISD School calendar is readily available on the Dallas ISD website with a listing of the campus working days.
- 4.01 After Hours Access. The campus custodian must be on site when the Contractor is working after hours. <u>The Contractor is responsible for all after-hours custodial costs</u>. This cost shall be included in the Contractors proposal price. After hours are defined as the time when DISD does not have custodial staff on site. The Contractor will incur custodial overtime costs, at the rate of \$30 per hour, for DISD custodial staff presence at the school site. The Contractor will not rely on DISD Dallas ISD Construction Services

("the Owner") staff or school to perform the Contractor's housekeeping duties. Custodial staff will be on site only to allow the Contractor access to the campus. Custodial staff will not perform cleanup work for the Contractor.

The Contractor is responsible for all after-hours custodian costs on days and times including but not limited to nights, weekends, DISD non-working days, and holidays. Any request by the Contractor to enter areas of the school, after normal operating hours, shall be coordinated and approved in advance per the (5) step process outlined on the DISD 'After Hours Access Request Form'.

The contractor shall utilize the After-Hours Access Request form and submit said form to DISD at least two (2) working days prior to the needed access date. Contractor shall submit copies of each fully executed form(s) to the Project Manager ("PMF") via email each day and during each weekly progress meetings so that they may be attached to the meeting minutes. Upon request, the PMF PM will provide the After-Hours Access Request form to the Contractor in electronic format. <u>After execution of the Work, the Contractor must email all custodial forms to the PMF prior to leaving the site. Noncompliance will require the Contractor to daily hand deliver (the following morning) the end of the day executed OT form to the bond office.</u>

5.01 **Holidays, Spring, Summer, Fall, and Winter Break Operations.** The Contractor will explicitly show each holiday, spring, summer, fall, and winter break and each SPA on his schedule. The Contractor will plan the project's construction operations to perform major portions of the Work after hours, during holidays, and at times when the campus is NOT occupied. The heating scope should be performed during the summer and the cooling scope should be performed during the heating season.

The DISD School Calendar is available on the Dallas ISD website with a listing of all the holidays and breaks. Any requirement by the Contractor to enter areas of the school during the evenings, non-working days, and holidays shall follow the (5) step process outlined on the DISD 'After Hours Custodial Request Form' and the area will be made safe for student occupancy (the following morning).

6.01 **Summer School Status**. The Contractor will plan the construction Work to perform major portions of the Work during the summer, after hours, during holidays, and at times when the campus is NOT occupied. The heating scope should be performed during the summer and the cooling scope should be performed during the heating season. The Dallas ISD School Calendar is available on the Dallas ISD website with a listing of all the holidays and breaks.

To the extent feasible, the Owner will plan NOT to have summer school at school sites affected by construction. Select campuses may have summer programs and or early school start dates. <u>Upon</u> <u>mobilization to the campus, it is the Contractor's responsibility to coordinate with the</u> <u>campus Principal to phase the Work in such a way as to incorporate summer programs and</u> <u>or early campus start dates into the project Work schedule.</u>

WHEN WORKERS AND DISD TEACHERS/STAFF ARE BOTH WORKING IN THE SAME AREA, THE CONTRACTOR'S SUPERINTENDENT (OR SAFETY MANAGER) WILL HAVE THE STAFF & STUDENTS SAFETY AS PRIORITY ONE. SPECIFICALLY, (2) WEEKS BEFORE THE STUDENTS RETURN FROM SUMMER BREAK, THE CONTRACTOR WILL TRANSITION FROM DAY TO NIGHT WORK. DURING THIS TWO-WEEK PERIOD, IF FOR ANY REASON THE CONTRACTOR HAS TO WORK DURING THE DAY THEN THE CONTRACTOR'S SUPERINTENDENT (OR SAFETY MANAGER) WILL WALK, MONITOR, AND COMMAND AND CONTROL HIS WORKFORCE UNDER THE EXPLICIT SCOPE OF MONITORING TO KEEPING THE STAFF/STUDENTS SAFE.

7.01 **State Testing Dates**. The Contractor will NOT be allowed to perform construction activities during critical achievement test periods. After hours work will NOT be allowed on testing days. During state testing periods, the Contractor's Superintendent will be required be on site prevent his workers from being on site during testing periods. The campus State testing dates are campus specific. <u>Upon mobilization to the campus, it is the Contractor's responsibility to coordinate</u>

with the campus Principal to inform himself of the requisite state testing days and to explicitly include said campus testing dates into the project Work schedule.

For each calendar year, Contractor shall allow for a minimum of 11 testing days for Elementary Schools, 18 testing days for Middle Schools and 23 testing days for High Schools. Actual testing days and dates may vary for each school and must be confirmed with the respective school Principal.

The System-wide Testing Schedule may be available under the School Calendar on the Dallas ISD website. The Contractor should consult this calendar to determine the number of testing days that will take place during the duration of the Project and the Contractor shall include those days in his proposal.

8.01 **The Contractor Will Not Disrupt the Campus Utilities, Critical Systems, or Critical Areas of Operation**. The Contractor has the duty of care to perform the Work safely and in a manner to NOT impact the campus Critical systems and to not disrupt school operations. The campus critical systems and areas of operation are areas/systems that are required for campus occupancy. <u>The</u> <u>campus critical systems include but are not limited to the campus air conditioning systems,</u> <u>the campus utilities (water, sewer, electrical, etc.), the campus life safety systems, the</u> <u>internet, the MDF/IDF rooms, and critical areas such as the kitchen and the campus admin</u> <u>areas.</u> Any renovation work that would require a shutdown of a critical system or impact an area of operation MUST be accomplished during after hours, weekends, non-working days, holidays, and other times when the school is not in operation. All critical system and areas of operation shutdown SPAs must be shown on the project schedule and planned for in advance so that the campus is ready for student occupancy. To this end, the Contractor must provide DISD with a written Critical System Safe Plan of Action ("Critical System SPA") notification no less than 10 calendar days in advance.

A shutdown of a critical system requires written Owner approval. <u>The Contractor will not impact</u> a critical system or a critical area of operation without explicit written approval from the <u>Owner</u>. To this end, the Contractor MUST provide a written Critical Systems and Areas of Operation Safe Plan of Action ("Critical System SPA") and MUST decide for temporary systems or services that are acceptable to the Owner. The Contractor must provide temporary power for the campus life safety systems. During an electrical power shutdown, the life safety and campus security systems must remain operational under temporary power. And during power shutdowns the campus food must be refrigerated under temporary power to prevent spoilage.

9.01 **10-Day Notice of Power Shutdown**. The Contractor has the duty of care to perform the Work safely and in a manner to NOT damage the Owner's equipment. <u>To this end, the Contractor must provide the Owner with a written proposed Power Shutdown Safe Plan of Action ("Power Shutdown SPA") no less than 10 calendar days in advance of the shutdown.</u> The COMPLETE proposed SPA will be transmitted via email to both the Project Management Firm PM (PMF) and the DISD Safety Manager. After review by the Owner's Safety Manager (with 10 calendar days in advance notice), the PMF PM will transmit said Power Shutdown SPA to DISD's Contract Manager, DISD Central Maintenance Office, the A/E team, and the campus custodial staff. All utilities shutdowns must be shown on the project schedule.

During electrical power shutdowns, the life safety and campus security systems must remain operational. The Contractor must provide temporary power for the campus life safety systems. And during power shutdowns the campus food must be refrigerated under temporary power to prevent spoilage.

10.01 Worker Identity Badges. The Contractor must provide each construction workers with a DISD approved third party issued identification badge, that shall be worn, visibly at all times while the worker is present on the campus construction site. <u>All workers must undergo a background check via Dallas ISD's approved third party vendor. After badging, prior to being allowed on site, each worker must attend a 2-hour DISD Safety Orientation. The Contractor is responsible for all badging and safety orientation costs.</u>

11.01 **Construction Fencing, Parking and Staging Areas**. Because the Work is a Phased project, the Contractor SHALL include the cost of all hard barriers and signage in his bid. The Contractor SHALL include the cost of covered walkways in his bid. The Contractor SHALL provide hard barriers and signage at his own cost. No CAEAs or additional funds will be provided to the Contractor for fencing, signage, parking, relocation of the jobsite trailer and or relocation of the staging areas.

Six-foot fencing and privacy cloth SHALL be provided to enclose the Contractor's laydown areas and job site trailer. Contractor site activities, storage offices, and fabrication shall be limited to the areas enclosed by construction fences. Contractor parking SHALL be limited to the area enclosed by the construction fence or other Owner approved areas adjacent to school property. The Contractor SHALL include the cost of offsite parking for his workers in his bid.

Because the Work is a Phased project, the Contractor shall include the cost of all required hard barriers and signage in his bid. The Contractor will incorporate all costs associated with deenergizing and or relocating hard barriers, electrical exit signs, etc. for each phase of the phased Work. The Contractor must coordinate all temporary barriers with the Fire Marshall. As the Contractor shuts down a part of the school, the Contractor SHALL erect, at his own cost, a floor to ceiling barricade to completely separate his work area from the campus occupants. The barrier shall be made of 3/4" plywood, it shall extend from floor to ceiling, wall to wall, shall have a door that can be locked, and shall be painted on the Owner's side. This barrier shall remain in place until the Work is completely finished. Safety warning signage shall be displayed near the temporary barrier. Temporary construction barriers and safety signage must be provided at tie-ins from Additions to existing structures.

12.01 Fire Alarm System Maintenance, Operation, Removal and Certification. Life Safety Systems are critical systems for occupancy and may only be disabled under a SPA and WRITTEN Owner approval. The Contractor shall be responsible for all costs and coordination of any disconnection, removal, shunting, reconnection, testing, and re-certification of the fire alarm and security systems as required to accomplish the Work. The Contractor is responsible for maintaining the existing fire alarm system, security system, and life safety systems operational throughout construction duration. If the Contractor requires the temporary or permanent relocation of fire alarm devices in order to complete the Work, then Contractor shall be responsible for notifying the PMF Project Manager and utilizing DISD's Vendor (if the system is under warranty) to disconnect, remove, secure, protect, reinstall, re-test and re-certify said equipment or system. If no vendor is indicated (or it is not under warranty), then the Contractor may select a qualified fire alarm vendor of his choosing. The Contractor is responsible for all costs and coordination of any disconnection, removal, shunting, reconnection, testing, and re-certification of the fire alarm system required to accomplish the Work and to receive the requisite green tag or certificates from the applicable Fire Department.

Anytime an existing fire alarm system or security system is disabled, prior to leaving the site for the day, the Contractor must contact Dallas ISD's Safety and Security Central Control at 214.932.5627. The Contractor will be required to provide his name, company, cell phone number, the reason for placing the system in trouble and how long the system will be disabled. The fire alarm and or the security system will not be left disabled overnight. <u>At the end of the workday, the Contractor must audit the campus life safety systems and call Central Control at 214.932.5627, to confirm that he has place the fire alarm system and security systems back on normal operations.</u> The Contractor will not rely on DISD ("the Owner") staff or school security personnel to perform this duty.

Contractor shall comply with the following time restrictions, when scheduling Fire Alarm inspections, and placing the life safety systems on TEST, **that require contact with DISD Central Control**. The Contractor will be responsible for any and all costs associated with said inspections (including but not limited to scheduling the Fire Marshal, City or any other personnel needed for this inspection).

- 7:00 AM 9:00 AM (Arrival): Fire Inspections can occur before 7:00 AM or after 9:00 AM
- 2:30 PM 4:00 PM (Dismissal): Fire Inspections can occur before 2:30 PM or after 4:00 PM

13.01 **Technology/Communications**. The Contractor has the duty of care to perform the Work in a manner to NOT damage the Owner's equipment. To this end, the Contractor must provide DISD with a written Power Shutdown Safe Plan of Action ("Power Shutdown SPA") notification of power or other utility shutdown no less than 10 calendar days in advance of the shutdown.

Contractor is responsible for any damages or changes to the existing technology/communication system throughout the duration of the construction and must make any appropriate repairs. If the Contractor requires the temporary or permanent relocation of technology in order to complete his work, then the Contractor is responsible for notifying Dallas ISD and completing all disconnections, removals, temporary facilities, security, protection, re-installation, re-testing and re-certification, etc. to maintain the system. The original warranty will need to be maintained / restored. Contractor is responsible for all costs and coordination.

14.01 **Water and Electrical Utilities.** On new construction projects, the Contractor shall provide and pay for all temporary and permanent utility services necessary for the execution and completion of the Work. On new construction projects, where new utility services are being installed, the Contractor shall establish temporary utility accounts and pay for said temporary utility costs for the duration of the project (until Substantial Completion). Utility costs paid by the Contractor after Substantial Completion shall be reimbursed by the District.

On renovation projects, the contractor is allowed to use temporary power and water from the existing school for the Work inside the building.

- 15.01 **Off-Limit School Areas**. The Contractor shall provide for hard barriers between his work and the campus occupants. When working in the existing building, the Contractor shall not use the school's cafeteria, telephones, restrooms, vending machines, staff parking lots or any other school facility. The Contractor shall include in his bid, the cost for temporary worker restrooms and the costs for offsite parking.
- 16.01 No Overhead Lifting and No Trenching During Normal School Hours. The Contractor shall NOT perform overhead lifting activities over areas occupied by students, school personnel, or visitors. The Contractor recognizes the critical need for the safety of all persons involved with the construction project, most specifically the students and the campus staff, and the need to conduct any and all construction operations in such a way as to NOT endanger the students and to NOT DISRUPT THE SCHOOL OPERATIONS. <u>Any Work that would require lifting over an occupied area or excavating MUST be accomplished during after hours, weekends, non-working days, holidays, and other times when the school is NOT in operation.</u> Roofing kettle operations will not be allowed to commence while the campus is occupied.

The Contractor shall NOT perform any trenching or excavating activities during regular school hours. Prior to digging, the Contractor shall perform a GPR and overlay the utilities finding over the Work areas. One week prior to any planned excavation or trenching, the Contractor shall conduct a Pre-Dig meeting (on site) with all the subs involved. Agenda will include a discussion about the GPR findings, the scope and review of the existing underground utilities as it relates to the planned trenching / excavation. At the pre-dig meeting, Contractor shall present a contingency plan if any utility is struck during execution of such work. The GPR findings overlay will be shared with all subcontractors and will be posted for worker ready reference at the jobsite trailer.

All utilities must first be hand dug, to field verify the depth and location of said line. Only after field verifying the depth and location, may the Contractor use mechanical equipment to excavate.

17.01 **Delivery of Materials and Equipment.** The Contractor shall issue a directive to all of his subcontractors that deliveries for this project shall be made to the Contractor and not to the campus office or to DISD personnel. It will be the Contractor's responsibility to replace, at his own cost, equipment or deliveries that are lost because of noncompliance with said delivery requirements.

The Contractor will also direct his subcontractors to NOT make deliveries during student arrival, student departure and on student testing days.

- 18.01 **Owner's Right to Salvaged Items**. Dallas ISD reserves the right to salvage any and all materials. The Contractor shall notify the Owner at least 4 weeks prior to the start of demolition (in each area where demolition will be performed). During said 4 weeks, the Owner may furnish a list of items to be salvaged, labeled, logged, and delivered to a place of DISD's choosing. Upon request, the Contractor will provide a receptacle acceptable to DISD for said salvageable items.
- 19.01 **Equipment Access**. During installation of new chilled water, hot water lines, new VAVs, AHUs, RTUs, Boilers, etc. the Contractor will install the new work in a way where he provides the requisite equipment access at each service side panel in accordance with the manufacturer's recommendation. The Contractor will account for insulation thickness, all existing and new above ceiling MEP and will coordinate his work prior to installation of new equipment. Please refer to the Contract Documents for specific details and preinstall meetings.
- 20.01 **Removal of Fixed Furnishings, Fixtures or Equipment.** The Contractor is responsible for the cost of removal, cataloguing, protection and the re-installation of fixed furnishings, fixtures or equipment required by the Contractor for the execution of his Work. The Contractor will include in his base bid, the costs to relocate and protect from damage said furniture, equipment, and property within any given room.
- 21.01 **Moveable Furnishings or Equipment.** This is a phased project. The Contractor will be responsible for any relocation of furniture or school property within any given room as necessary to perform the Work. The Contractor will include in his base bid, the costs to relocate and protect from damage said furniture, equipment, and property within any given room. The Contractor must obtain written approval to relocate furnishings or equipment within the room from the Owner via the PMF PM.
- 22.01 **I.T. Equipment and Safety/Security Equipment**. The Contractor SHALL coordinate a preinstallation meeting between DISD IT, the Contractor and the PMF PM. The Owner will be responsible for moving I.T. equipment and chemicals from science labs, when necessary. A pre-move meeting will be held at least five (5) days prior to any move requiring the Owner's involvement. If required, to accommodate significant demolition and construction activities, DISD will provide and the PMF will manage a moving services vendor to relocate movable furnishings and equipment out of each phased classroom area and into temporary facilities. The Contractor shall be responsible for coordinating the phasing of the Work with the Owner's moving vendor. Contractor will be responsible for the protection of any furnishing or equipment remaining in the Work areas.
- 23.01 **Tobacco and Alcohol Products Prohibited.** Use of all tobacco, alcohol and illegal uncontrolled substances is prohibited on Dallas ISD property. The Contractor will take daily action to enforce compliance.
- 24.01 **The Contractor Will Not Interact with Students/Campus Staff.** This is a phased project. The Contractor will install hard barriers between his Work and the campus occupants. As the Work progresses, the Contractor will move or relocate the hard barriers are required to prevent worker/student/staff interaction. The Contractor shall issue daily instructions to all of his subcontractors to refrain from interactions with students and campus staff.
- 25.01 **The Contractor Will Not Use Existing School Facilities.** Construction crews MUST stay away from all areas existing school facilities that are not within the limit of the designated work area. When working in the existing building, the Contractor shall not use the school's cafeteria, telephones, restrooms, vending machines, staff parking lots or any other school facility. The Contractor shall include in his bid, the cost for temporary worker restrooms and the costs for offsite parking. The Contractor shall issue instructions to all of his subcontractors to avoid interactions with students and campus staff. The Contractor will not rely on DISD ("the Owner") staff or school security personnel to perform his duties.

- 26.01 **Pressurized Testing.** Repressurizing of an existing system will be accomplished gradually and methodically and in a way that it does not damage the existing infrastructure. The Contractor has the duty of care to perform the Work safely and in a manner to NOT impact the campus Critical systems. Pressurized testing, on MEP systems, shall be done after hours, weekends, non-working days, holidays, and other times when the school is not in operation by Dallas ISD that occupied areas are not impacted, directly or indirectly, due to the testing.
- 27.01 **No Roofing Work Activities Allowed Over Occupied Areas.** On a daily basis, the Contractor will plan and execute his work with the utmost care to not endanger the students' safety or the campus operations. Activities that may cause a hazard to the below occupants is restricted. To this end, prior to the start of each work shift, daily jobsite specific Job Hazard Analysis (JHAs) will incorporate this requirement. NO roofing work or hot work is allowed, regardless of the extent, when the campus is occupied. Specifically, roof work not allowed while the campus is occupied includes, but is not limited to roof coring, roof drilling, installation of roofing electrical and plumbing pipes, no installation of roof blocking, no installation of gas lines or equipment curbs, no installation of flashing, no roof demolition activities, no placing materials on the roof, and no maintenance or warranty work that would require changing of a piece of equipment.

Minimal inspections and maintenance activity are allowed. For example, activities that would require a workman to access the roof and make minor adjustments or to change a small blower. Said activity must be coordinate in advance.

- 28.01 **Demolition Activities Will Be Conducted With Student Safety As Priority One.** On a daily basis, the Contractor will plan and execute his demolition work with the utmost care to not endanger the students' safety or the campus operations. Prior to the start of each work shift, daily jobsite specific Job Hazard Analysis (JHAs) will be provided, and the Asbestos report will be reviewed so as to prevent an asbestos release. And during abatement demolition and containment, the MEP chilled water lines, electrical lines, low voltage, fire suppression lines, etc. will be temporarily supported by the abatement contractor. This cost will be part of the contractor's base scope and will be included in his bid.
- 29.01 **Phased Project With Student Safety As Priority One.** On a daily basis, the Contractor will plan and execute his work with the utmost care to not endanger the students' safety or the campus operations. Prior to the start of each work shift, daily jobsite specific Job Hazard Analysis (JHAs) will be provided.

Since the school buildings will be in use during construction, the Work shall be conducted in phases as proposed in the Contract Documents phasing drawings. <u>Phasing proposed by the Contractor</u> <u>during procurement will be deemed proposed and not as accepted</u>. After the Notice to Proceed ("NTP') is issued to the Contractor, the Contractor's proposed phasing will be reviewed by the PMF Project Manager. The PMF PM will make a recommendation for DISD Contract Manager acceptance or rejection. <u>If proposed phasing plan is rejected by the PMF PM or DISD Contract</u> Manager, then the phasing plan in the Contract Documents stands.

Because the Work is a Phased project, the Contractor will include the cost of all required hard barriers and signage in his bid. The Contractor will incorporate all costs associated with demoing and or relocating hard barriers, electrical exit signs, etc. for the phased Work. The Contractor must coordinate all temporary barriers with the Fire Marshall. As the Contractor closes down a part of the school, the Contractor SHALL erect (at his own cost) a floor to ceiling barricade to completely separate his work areas from the campus occupants. Said barrier shall be made of 3/4" plywood, shall extend from floor to ceiling, shall be installed from wall to wall, shall have a door that can be locked, and shall be painted on the Owner's side. Hard barrier will remain in place and be relocated as work progresses until the Work is completely finished. The door will be kept secured to prevent students from entering construction areas.

30.01 **Project Schedule.** The Contractor will plan and execute his work with the utmost care to not endanger the students' safety or the campus operations. The Contractor will explicitly show each holiday, spring, summer, fall, winter break and each SPA on his schedule. The Contractor will plan

the construction Work to perform major work activities after hours, during holidays, and at times when the campus is NOT occupied.

Even though DISD does not operate its HVAC systems as true 4 pipe system, most DISD campuses have a 4-pipe system. Hence, the cooling scope should be performed during the heating season and the heating scope should be performed during the summer. These activities must be planned in advance and shown on the project schedule. The cooling portion of the work that is performed during the summer break must be fully operational by the time the teachers return from their summer break. The heating work that is performed during the winter holidays must be fully operational by the time the students return.

The Project Schedule must show that during the summer break, 2 weeks prior to students' arrival, the contractor will shift to working nights, weekends, DISD non-working days, and holidays. 2 weeks prior to students arrival, the teachers will occupy the campus during the day to prepare their classrooms for student use.

The Contractor must plan in advance and show on the project schedule all Dallas ISD Safety Manual high risk SPAs including but not limited to Pre Crane, Pre-Dig, Pre-Crawlspace, Pre-Dig, and Pre-Utility SPAs.

31.01 Weekly Owner, Architect, Contractor ("OAC Meetings"). The Contractor's Project Manager and Superintendent MUST attend all weekly OACs. Missing more than 2 OACs will be grounds for replacing the Contractor's Project Manager and or Superintendent.

On a weekly basis the Contractor will organize and host an Owner, Architect, and Contractor ("OAC") progress meeting. At said meeting the Contractor will provide all attendees a hard copy of the project schedule, a copy of the 3 week look ahead, the RFI Log, the ASI Log, the PCO Log, the Submittals Log, and a hard copy of the Equipment Long Lead Items List. After the OAC meeting, the Owner, Architect, and the Contractor will walk the site to review installed work.

- 32.01 **DISD Monthly Safety Meeting.** For each active project (that has not reached Substantial Completion), the Contractor's Safety Manager and the Contractor's job site Superintendent MUST attend each DISD monthly Safety Committee Meeting. Noncompliance with said requirement will be grounds for replacing the Contractor's Safety Manager and or Contractor's Site Safety Person.
- 33.01 **Inclement Weather SPAs.** The Contractor will comply with DISD Inclement Weather SPA reporting requirements. The Contractor's Project Manager and Superintendent on a daily basis will monitor the weather to mitigate the damage to DISD property. The Contractor will take proactive action to prevent water intrusion. When HVAC or roofing work is in progress, the Contractor will temp in his Work to prevent water intrusion.
- 34.01 **Jobsite Trailer Postings.** On a weekly basis, the Contractor will plan and execute his work with the utmost care to not endanger the students' safety and to provide his subcontractors the most up to date project information available. To this end, the below items will be posted immediately adjacent to the job trailer entrance:
 - The Project Team's Contact List w/Phone Numbers and Email.
 - A Complete Copy of the Operations Parameters.
 - A Colored Copy of The Most Recent GPR Report.
 - A Site Map Showing the Location of each Utility Shutdown Valve.
 - A Copy of the Project Baseline Schedule
 - A Copy of the 3 Week Lookahead Schedule.
 - A Copy of the Project's Phasing Plan.
 - A hard copy of the last OAC Hand Outs.

On a daily basis, the Contractor will plan and execute his work (in coordination with the campus Principal, but under DISD Construction Services direction) with the utmost care to not endanger the students' safety or the campus operations.

Prior to the start of each work shift, daily jobsite specific Job Hazard Analysis (JHAs) will be provided. And, prior to the end of each work shift, the Contractor's Superintendent will walk the site, and take the requisite action, to make the campus safe for student occupancy (the following day), to protect the Work, materials and equipment from vandalism and theft. And at the end of the workday, the Contractor's Superintend will check all the life safety systems and then call Central Control at 214.932.5627, to confirm that the fire alarm and security systems are operational. The Contractor will not rely on DISD ("the Owner") staff or school security personnel to perform his duties.

- 35.01 **Lessons Learned.** For each active project, the Contractor must incorporate the below lessons learned into the planning and execution of the Work.
 - 1) This is a phased project. The roof, windows, floors, and ceiling demolition and abatement scope will be phased by wing. Demo of the entire campus roof, windows, floors, and ceiling demolition and abatement scope will NOT be allowed at once.
 - 2) The Contractor's Superintendent will plan his work with the students' safety as priority one. If the work endangers campus operations, it must be performed after hours, on weekends, holidays or times when the campus is not occupied.
 - 3) During the Summer Break, the Contractor PM and Superintendent are not allowed to take vacation. Noncompliance with said requirement will be grounds for replacing the PM and or Superintendent.
 - All long lead item submittals must be driven to conclusion within 90 days of the Notice to Proceed. The project submittals must be driven to conclusion within 120 days of the notice to proceed.
 - 5) Immediately after mobilizing, the Contractor will audit all of the school's life safety systems (Fire Alarm and Security Panels) and the Contractor will provide DISD will a video of any deficiencies. It will be assumed that all the systems are in perfect condition if the Contractor does not provide said video within 30 days from mobilization. At this point the Contractor will be responsible for any and all costs to repair the life safety systems.
 - 6) For new building additions and or new building construction work any utilities work that would require a shutdown of a critical system or impact an area of operation MUST be accomplished after hours, weekends, non-working days, holidays and other times when the school is not in operation. All utilities must first be hand dug, to field verify the depth and location of said line. Only after field verifying the depth and location, may the Contractor use mechanical equipment to excavate.
 - Jurisdictional inspections shall be coordinated with the campus to not impact campus operations. The Contractor is required to include the costs of all inspection whether during normal of after-hours in his bid.
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| Dallas Independent School D
Construction Services
After Hours-Work, Holidays an | istrict
d/or Holidays Authoriz: | tion Form: General Contrac | tor(s) |
| SECTION A. GENERAL INFORMAT | ION | | |
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| Contractor Name: | Contra | actor Person In-Charge: | |
| Scope: | | | |
| Name of Dallas ISD Operations Empl
Cellular Number for Dallas ISD Oper | oyee:
ations Employee | Biometric Code: | |
| SECTION B. PRE-WORK NOTIFICA | TION: | | |
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| Time Scheduled From | То | | |
| Contractor Person-In-Charge Sign: | ature: | Date: | |
| Dallas ISD Program Administrator | Approval : | Date: | |
| SECTION C. POST-WORK CERTIFI | CATION: | | |
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| Time Actually worked From | To | Biometric Clock Use | ed – Check 'X' if Yes |
| Hours of Actual Work | | II Not Used – See St | ep 3 below |
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| Dallas ISD Operations Employee Si | gnature: | Date: | |
| Step 1. At least two (2) working days prior
form to Program Management Firm
name of the Operations employee by
Step 2. Contractor and Operations employee
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to the Program Management Firm.
Step 3. Upon completion of the scheduled
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Step 4. Contractor shall submit copies of co
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Step 5. Dallas ISD shall make payment to to
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Failure to follow all these steps listed above
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Dallas Independent School District Bond Program

Scheduled Utility Shutdown Authorization Form: General

Contractor(s)

SECTION A. GENERAL INFOR	MATION:	2	Permanent	☐ Temporary
School Name and Org. #:				
Bond Program Manager (PM) Name:			_	
General Contractor (GC) Person In-Charge:				
Sub-Contractor (SUB) Person In-Charge:	(Name)		(Contact No.)	
SECTION B. PRE-WORK NOTIF	ICATION:			
Utility System(s) to Be Shut down:				
Utility Meter number				
Description of Work Performed:				
Describe Procedure for Shutdown:				
Safety Measures/ Precautions for Shutdown:				
Date/ Time Requested for Shutdown:				
1	Shutdown Date	Shutdown Time	Restart Date	Restart Time
It is requested that the noted building services for the Project as enumerat certify that the required work has bee	Shutdown Date system(s) be allow ed below. We note n coordinated and	Shutdown Time ved for "shutdown" by t that <u>five (5) days adv</u> d scheduled to achiev (Sign)	Restart Date he General Contract ance notice is require e completion within	Restart Time for to allow for our tie-in of ed as a minimum. I hereby the requested time-period.
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It is requested that the noted building services for the Project as enumerat certify that the required work has bee SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT Actual Date/ Time for Shutdown:	Shutdown Date system(s) be allow ed below. We note n coordinated and TFICATION: Shutdown Date	Shutdown Time ved for "shutdown" by t e that <u>five (5) days adv</u> d scheduled to achiev (Sign) 	Restart Date he General Contract ance notice is require completion within (Sign) (Sign) (Sign) Restart Date	Restart Time For to allow for our tie-in of ed as a minimum. I hereby the requested time-period. (Date) (Date) (Date) (Date) (Date) (Date) (Date)
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SECTION D. PROCESS FOR SCHEDULED UTILITY SHUTDOWN AUTHORIZATION

- A. The General Contractor is to complete the *Utility Shutdown Request Form*, at least <u>5 working days</u> prior to the scheduled utility shutdown, and submit it to the respective Bond Program Manager for approval.
- B. The Bond Program Manager (PM) will review and approve submitted Utility Shutdown Request Form and forward to the respective Dallas ISD Project Manager for approval.
- C. The Dallas ISD Project Manager will review and approve form and return to the PM.
- D. PM forwards approved form to Director/Maintenance Solutions and notifies Deputy Chief Director, Emergency Operations and Bond Program Safety Manager.
- Note: All scheduled shutdown requests will require a jobsite meeting with the Program Manager and the School staff 48 hours in advance to discuss the outage procedures and status of all District departments involved on the shutdown request.

<u>Note</u>: For electrical shutdowns (Scheduled/ involuntary), when required for building operations, the General contractor must supply a power generator to keep the telephones, data and alarms working at all times.

*Permanent shutdowns are facilities or specific meters that will not require power/ utility to be restored.

- 1.01 Proposers are to package all submittal information as follows. Documents should be bound in 3 ring binders with tabs for each section of the proposal form. Do not spiral or GBC bind the documents.
- 2.01 Both Parts of the Proposal response shall be labeled as follows:

Proposal for CSP 207459 ORG 220 – MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED -RENOVATION Due 10/02/24 Time Due: 2:00pm Part 1-A, 1-B, 1-C <<Name of Proposer>>

Please Note: Part 1-C Proposal Form- Alternates & Unit Pricing (Section Div 00 41 12) - Should the solicitation contain an opportunity for alternate pricing, please ensure that the Section Part 1-C Proposal Form – Alternates & Unit Pricing Section 00 41 12 is submitted in an individually sealed envelope labeled accordingly with the specified CSP number, CSP title and Part 1-C Proposal Form – Alternates & Unit Pricing. *Alternates Pricing will not be opened by the District unless the District engages in negotiations with the vendor submitting the alternate pricing package.*

Due 10/03/24 Time Due: 3:00pm Part 2 <<Name of Proposer>>

Proposals will be read at 3:00pm following the receipt of Part 2

- 3.01 Part 1-A of the Proposal shall contain completed Specification Sections
 - 00 41 11 Proposal Form Base Bid (with all addenda acknowledged) 00 43 13 Proposal Guarantee Bond Form
 - 00 45 00 Dallas Independent School District Required Forms Package
 - 00 45 20 Certificate of Non-Discrimination
 - 00 45 22 Notification of Hazardous Materials Affidavit Form
 - 00 45 23 Family Conflict of Interest Questionnaire (CIQ)
 - Submit one (1) original of each Section for Part 1-A.
- 4.01 Part 1-B of the Proposal shall contain completed Specification Section 00 41 13 Technical Proposal Form

Submit one (1) original, and one (1) copy of each Section for Part 1-B and one soft copy (electronic) via flash drive or USB of each Section for Part 1-B, Section 00 41 13 Technical Proposal Form section.

- 5.01 Part 1-C of the Proposal shall contain completed Specification Sections 00 41 12 Proposal Form – Alternates and Unit Pricing Submit one (1) original of each Section for Part 1-C in a separate, sealed envelope marked according to the specifics noted in Section 2.01 on this page.
- 6.01 Part 2 of the Proposal shall contain completed Specification Sections 00 45 39 M/WBE Program Compliance Guidelines and Forms Submit one (1) original, one (1) copy, and one (1) soft copy (electronic) in either CD Rom or flash drive of each Section for Part 2.

(1)



The intent of this document is to establish guidelines to reasonably reconcile ONLY the Project's materials cost escalation. No overhead, profit, or insurance costs are to be included. The Contractor has a duty to mitigate Materials Cost Escalation. Therefore, as a condition precedent to any cost adjustments, the Contractor must comply with establishing the Project Baseline Schedule as required under Division 1 of the Project's Contract Documents. All terms shall have the same meaning as defined in the executed AIA Agreement for this project.

1. DELIVERY METHODS:

- Competitively Sealed Proposal (CSP)
- Construction Manager at Risk (CMAR, CMaR, CM@Risk)

2. PARTIES

- DISD (Owner)
- Program Management Firm (PMF, Program Manager, PM)
- Architect or Engineer of Record (A/E)
- Contractor (GC)

3. PROJECT

- a. ORG# _____ PROJECT NAME : _____
- b. Notice to Proceed (NTP) Date: _____

c. Date City Permits Ready for GC Pick Up: _____

- d. Date of Escalation of Materials Document Submission to Owner:
- 4. **PRICE IMPACTED MATERIALS:** It is understood that vendors providing materials to the Owner's Project may be experiencing industry wide economic fluctuations that affect the price, availability, delivery, and execution of the Project. The intent of this document is to reasonably reconcile ONLY the Project's materials cost escalation. This form will be used by the Owner to provide a good faith adjustment of market price impacted materials.
- 5. **PROJECT BASELINE:** Compliance with establishing the project baseline will be a condition precedent to requesting Owner approval of a materials cost escalation . The Contract Documents (Drawings, Specs, and Contract) establish the elements required to establish the project baseline. The Contractor has a duty to mitigate Materials Cost Escalation.
- 6. **PRICE INCREASE:** In the event of a Materials' Price INCREASE, the Contract Price shall be reasonably adjusted to reconcile the Materials' Price INCREASE.

Page 1 of 6

00 41 11 (a) 10/18/2022 CSP 207459 August 16, 2024



- 7. **PRICE DECREASE:** In the event of a Materials' Price DECREASE, the Contract Price shall be reasonably adjusted to reconcile the Material's Price DECREASE.
- 8. LIMITATION ON CONTRACT PRICE ADJUSTMENT: Regardless of Proposed Materials' Price Increases or Decreases, the Contract Price shall not be adjusted by more than ______% percent of the original Contract Price or any other restrictions on cost increases found in State law or the terms of the contract between Owner and Contractor.
- 9. **NO ADJUSTMENT FOR MATERIALS QUANTITIES:** No adjustments will be made for changes in materials quantities. The intent of this document is to reconcile ONLY materials costs.
- 10. **SCHEDULE OF VALUES & PAYMENT:** Payment for adjustments will be in accordance with the executed AIA Agreement, change orders, or CAEAs for this project. Similar to other Owner Cost/Credits, in accordance with Division 1 of the Specifications, the cost or the credit for materials reconciliation will be shown as a line item in the Project's Pay Application's Schedule of Values.

OWNER (DISD)

CONTRACTOR (GC)

ARCHITECT (A/E)



EXHIBIT "MATERIALS ESCALATION" – BASELINE PRICE Matrix

The intent of this document is to establish a Baseline so that the materials escalation costs may be subsequently reconciled. To establish an objective cost baseline, the Contractor must provide the Owner a date stamped copy of the actual materials costs proposal from the materials vendor/manufacturer.

••		
	Date of Price:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
•	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	



6.	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
7.	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
8.	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
9.	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
10.	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
11.	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	



12.	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
13.	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
14.	Price Impacted Material:	(11-2)
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
15.	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
4.6		
16.	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
17.	Price Impacted Material:	
	Baseline Price:	(Unit)
	Pricing Method:	
	Provide Copy of Manufacturer Docs:	
		Page 5 of 6



1454765-v1/12396-124000

COMPETITIVE SEALED PROPOSAL (Part 1A) to DALLAS INDEPENDENT SCHOOL DISTRICT FOR THE FOLLOWING WORK:

PART 1. General Information

Competitive Sealed Proposal (CSP) 207459, consisting of improvements to:

ORG #	PROJECT NAME	PROJECT TYPE	ADDRESS
220	MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED	RENOVATION	724 GREEN COVE LANE, DALLAS, TEXAS 75232

PART 2. Proposal Form

2.01 Agreement of Proposal Submittal

The undersigned, as a designated representative of the proposer, declares such firm is the only entity, as principal, with any interest in this Proposal, and the Proposal is made without collusion with any other entity.

The proposer affirms that the form of Contract, Instructions for Competitive Sealed Proposals, Supplemental Instructions for Competitive Sealed Proposal, Addenda, selection criteria, weighting/scoring system, estimated budget, Specifications, and the Drawings pertaining to this Proposal have been examined and the firm has also examined the locations, conditions, and classes of materials for the proposed Work and agrees to provide all necessary labor, materials, plant and equipment, machinery, tools, apparatus and construction means to accomplish the Work described in the Contract Documents in the manner prescribed.

The proposer agrees the quantities of Work to be performed and materials to be furnished may be increased or decreased as may be considered necessary, in the sole opinion of Dallas ISD's designated representative, to complete the Work as planned and contemplated. Adjustment for changes in Work will be in accordance with the General Conditions.

Proposal amounts must be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.

2.02 Addenda

The proposer acknowledges receipt and incorporation of the following addenda into this Proposal. Proposer is to fill in the Addenda # and date and initial in the box to show receipt.

CSP 207459

Addendum No.	Addendum No.	Addendum No.	Addendum No.

2.03 Withdrawal of Proposals

A Proposal may be withdrawn only upon written request by the proposer or his duly authorized representative, provided such request is received by the Owner at the place designated for receipt of Proposals and prior to the time fixed for the opening of Proposals.

No Proposal may be withdrawn after the time fixed for the opening of Proposals for a period of 90 days.

2.04 Award of Contract

The proposer to whom the award of a Contract is made will be promptly notified following Board action. If a proposer, (a) withdraws his Proposal within 90 days after the date and time fixed for the opening of Proposals in the Advertisement for Proposals, or, (b) fails or refuses to execute the Agreement, or other required forms within ten (10) days after the same are presented to him for signature, or (c) fails or refuses to furnish properly executed Performance and Payment Bonds, and certification of required insurance upon the execution of the Agreement, the Owner may award the Work to another proposer or may re-solicit the contract. The Proposal Bond is forfeited if Proposal is withdrawn after the Proposal opening, or Contract Documents are not executed in accordance with the above requirements.

The Owner reserves the right to reject any or all Proposals and to waive any irregularities in any Proposal received. The Owner further reserves the right to limit the number of contracts awarded and/or to be performed concurrently to any one Contractor if such appears to be in the best interest of the District. Awards will be per published criteria and weights. Price is only 40% of the evaluation criteria, and awards may be made to other than the low dollar proposer.

2.05 Notice To Proceed (NTP) and Notice of Intent to Award (NIA)

The Contractor shall not commence the Work under this Contract until execution of the Notice to Proceed (NTP) duly signed by Dallas ISD's designated representative.

The Contractor shall acknowledge that a Notice of Intent to Award (NIA) may be issued at the Owner's discretion. The purpose of the NIA is to expedite pre-construction activities. Upon receipt of the duly signed NIA, the Contractor shall promptly proceed with the activities listed and authorized by the NIA.

2.06 Collusion, Litigation, Default, Competency

By completing and submitting a Proposal, the proposer agrees to comply with the requirements of the following paragraph. A proposer who subsequently does not agree to comply with these requirements may be disqualified. The responses to the items of the Contractor's Qualification Statement will be used in evaluation of the Proposals on the project.

Proposers may be disqualified, and their proposals not considered for any of the following specific reasons:

- 1. Reason for believing collusion exists among proposers.
- 2. Reasonable grounds for believing that any proposer is interested in more than one proposal for the work contemplated.
- 3. The proposer is involved in any litigation against the Board.
- 4. The proposer is in arrears on any existing contract with Dallas ISD or has defaulted on a previous contract with Dallas ISD.
- 5. Lack of competency as revealed by the financial statement, experience and equipment questionnaires, or omission of required proposal submittals.

- 6. Uncompleted work which, in the judgment of the Board, will prevent or hinder the prompt completion of this Work, if awarded.
- 7. Inaccurate information or circumstances that establish reasonable grounds for belief that the proposer is not a "responsible proposer" include, but are not limited to the below examples:
 - a. Incomplete Bid Submittal e.g., Missing Base Bid proposal number.
 - b. Incorrectly Calculated Total Base Bid Proposal plus Owner's Controlled Contingency MUST add up to Total Base Bid. Please double check to confirm compliance.

By entering into a contract with Dallas ISD, the proposer agrees that (1) Work on the project will begin upon receipt of the Notice to Proceed, (2) Contractor will participate as a team member in cooperation with the Architect/Engineer (A/E) and Owner, (3) The Work will not interfere with normal instructional and learning programs of the school, (4) The Contractor will assign a full time competent superintendent for each school in the CSP and that same superintendent(s) shall remain for the duration of the contract, contingent upon that person's continued employment with the Contractor, (5)The Contractor will furnish and pay for the Bid, Performance, and Payment Bonds.

- Projects of \$25,000 and under: Bid bond is required
- Projects over \$25,000 and up to and including \$100,000: Bid and Payment Bond is required
- Projects over \$100,000: Bid, Performance and Payment Bonds are required

2.07 Ultimate Corporate Ownership

Is proposer a corporation? Check One, Yes ____ No____

Proposer's legal name and address of principal place of business:

Ultimate parent company or majority owner's name and address of principal place of business:

2.08 Contractor's Price (40 Points out of 100 Possible Points in the Selective Criteria)

The Proposer's Price is defined as the total amount, including Cost of the Work and allowances, for the performing or causing to be performed all Work including labor and materials, necessary to build, construct, erect and equip in accordance with the Contract Documents, Drawings, and Specifications.

Contractor agrees to <u>base its price on the proposed completion schedule and the phasing plan</u> presented in the contract documents. The Contractor may, at their option, propose a project duration that is of less duration and indicate this duration in the box below (See **Proposer's Proposed Substantial Completion Date** box below). However, the duration proposed by the Contractor must be based upon the number of phases identified in the contract documents and must not be predicated upon the use of additional temporary swing space other than the swing space identified in the contract documents. Contract documents identify the number of existing classrooms or temporary portable buildings available to the contractor for swing space.

Base proposal is defined as the Cost of the Work not including allowances or alternates.

(Amount shall be shown in both words and numbers; in the event of discrepancies, the words will govern.)

Α	Proposer's Price for all schools in CSP 207459, which includes the Allowances as per item 2.09 below:		
		\$	
	Dollars		

Proposer's Price Breakdown (to be completed by proposer):

Base Proposal minus Allowances:	\$
2.09 B: Owner Controlled Contingency Allowance (5%/2.5% of Base Price minus Allowances):	\$ 283,263.30
2.09 C: Other Owner Allowances (provided by Owner, see 2.09 C below):	\$
2.09 D: Proposer's Abatement Cost included in 2.08 A (Abatement is to be included in GC Base scope price. The intent of this section is to show the breakout of the abatement cost.)	
2.08 A: Proposer's Base Price plus (+) Allowances (should equal amount in Section 2.08 A above):	\$

2.09 Allowance Items

The following allowances are further described in Specification Section 01 21 00.

SECTION 00 41 11 – PROPOSAL FORM – BASE PROPOSAL

Name of Contractor	

В	Allowance Description: In Contract Owner Controlled Contingency (IC)	Dollar Amount (\$)
220	MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED - RENOVATION	\$283,263.30

С	Allowance Description: Other Allowances	
	NA	NA

2.10 Alternates

This information is to be submitted with section 00 41 12 (Part 1-C of the CSP Package.)

2.11 Unit Pricing

This information is to be submitted with section 00 41 12 (Part 1-C of the CSP Package.)

2.12 Breakout or Separate Pricing

The successful Proposer shall provide a proposed preliminary schedule of values for each school within the CSP 3 days after Board award. In the chart below, the Proposer must provide the cost breakdown per school of the base price provided by the Proposer in paragraph 2.08A of this section

The following information is requested for information and budget verification only and it is not the basis for the quantitative evaluation of this proposal.

School Org #	School Name and Project Type	Estimated Construction Budget	Proposer's Base Bid Proposal Breakdown per School		
220	MARK TWAIN SCHOOL FOR	\$5,948,529.30			
	THE TALENTED AND GIFTED				
NOTE: If a project has more than one school, then the proposal MUST be itemized by campus. An					
Addition/Renovation project MUST have 2 lines (one line for the addition and one line for the					
renovat	renovation scope). The Total Project bid must add up to the sum of all the itemized components.				

Org #	School Name	Owner's Expected Substantial Completion Date	Proposer's Proposed Substantial Completion Date
220	MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED RENOVATION	01/06/26	

2.13 Liquidated Damages

Time is of the essence in all Phases of the Work. It is specifically understood and agreed by and between Dallas ISD and Contractor that time is of the essence in the substantial completion of the Project.

The Contractor acknowledges and recognizes that Dallas ISD is entitled to full and beneficial occupancy and use of the completed work immediately following expiration of the Contract time. The Contractor further acknowledges and agrees that, if the Contractor fails to substantially, or cause the Substantial Completion of any portion of the Work within the Contract Time, the Owner will sustain actual damages as a result of such failure. The exact amount of such damages will be difficult to ascertain. Therefore, Dallas ISD and Contractor agree that, if the Contractor shall neglect, fail, or refuse to achieve substantial completion of the Work by the Substantial Completion date, subject to any proper extension granted by Dallas ISD, then Contractor agrees to pay to Dallas ISD the following sum(s) for each day in which such Work is not substantially completed, not as a penalty, but as liquidated damages, for the damages ("Liquidated Damages") that would be suffered by Dallas ISD as a result of delay for each and every calendar day that the Contractor shall have failed to have substantially completed the Work as required herein.

	Liquidated Damages	* Dollars Per Calendar Day		
		Addition	Renovation	New
Org# 220	MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED	0.025% of Construction Budget	0.025% of Construction Budget	0.025% of Construction Budget

* The Dallas ISD's liquidated damages cost formula is 0.025% of the construction budget for the project, up to a maximum of \$1,500.00 per calendar day.

PART 3. Execution

3.01 Proposal Form Execution

Contractor's Firm Name (legal name)	
Federal Tax I. D. Number	
Contractor's Street Address	
Contractor's Phone Number	
Contractor's Fax Number	
Contractor's Email Address	

SUBMITTED BY:

Revised 5/1/2024

(Corporation, Partnership, Individual, etc.)

Name of President of Corporation or Name of Principal Owner

Name of Secretary of Corporation (if applicable)

(Corpo	oration, Partnership, etc.,) is organ	ized under the laws of th	ne State of	·
Firm:				
Ву:	Printed Name			
Title:				
Signat	ure:		_	
Legal	Address:			
Date: Affix C	orporation Seal here (if applicable	2)	-	
Dallas 00 41	ISD Construction Services	Page 7 of 7	A	CSP 207459 ugust 16, 2024

COMPETITIVE SEALED PROPOSAL (Part 1C) to DALLAS INDEPENDENT SCHOOL DISTRICT FOR THE FOLLOWING WORK:

PART 1. General Information

CSP PACKAGE 207459, consisting of improvements to:

	Org #	PROJECT NAME	PROJECT TYPE	ADDRESS
ſ	220	MARK TWAIN SCHOOL FOR	RENOVATION	724 GREEN COVE LANE,
		THE TALENTED AND GIFTED		DALLAS, TEXAS 75232

PART 2. Proposal Form

2.01 through 2.09

Refer to Specification Section 00 41 11.

2.10 Alternate Price Items

The Contractor proposes the following sums as **additions to** or **deductions from** the Base Price amount for alternates. Failure to quote every item may cause the entire Proposal to be considered non-responsive. If there is no cost change in the alternate(s) pricing, the Contractor should enter "\$0.00" as the price for the alternate. Do not make an entry of N/A.

All Alternates must be priced. Alternates are not listed in the order of preference.

ORG 220 MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED

No.	Alternate Description	Proposer's Add Price	Proposer's Deduct Price
	No Alternates		

2.11 Unit Prices

The Contractor proposes the following all-inclusive unit prices for the items/tasks. Failure to provide unit pricing for each item may result in the Proposal being deemed as non-responsive. Do not make an entry of N/A. All unit prices must be priced. Unit prices are not listed in order of preference.

ORG 220 MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED

No.	Unit Price Item	Unit of measure	Proposer's Unit Price
No Unit Prices			\$

2.12 through 2.14

Refer to Specification Section 00 41 11.

PART 3. Execution

3.01 Proposal Form Execution (Part 1A)

Contractor's Firm Name (legal name)	
Federal Tax I. D. Number	
Contractor's Street Address	
Contractor's Phone Number	
Contractor's Fax Number	
Contractor's Email Address	

SUBMITTED BY:

(Corporation, Partnership, Individual, etc.)

Name of President of Corporation *or* Name of Principal Owner Name of Secretary of Corporation (if applicable)

(Corporation, Partnership, etc.,) is organized under the laws of the State of ______.

Firm: _____

Ву: _____

Title: _____

Legal Address: _____

Date: _______Affix Corporation Seal here (if applicable)

COMPETITIVE SEALED PROPOSAL (Part 1-B) to DALLAS INDEPENDENT SCHOOL DISTRICT

PART 1. GENERAL

1.01 Contractor Firm Information

Contractor's Firm Name (Legal Name)	
Contractor's Point of Contact with Signature Authority	
Street Address	
Phone Number	
Point of Contact Email Address	
Type of Business: Corporation, Partnership, Sole proprietorship, Joint Venture	
State of Incorporation	
In continuous business since (Date of Incorporation/ Years in Business):	
List other fully staffed offices or fully staffed branch offices of your organization: Name Branch Manager Telephone Number	
Corporate Officers, Partners, or Owners of Organization:	
Name Title Construction Experience (Years) (Years)	
Check box(es) corresponding to the nature of your business: Large Business (100 or more employees)Small Business (fewer than 100 employees) Minority Owned Business; Certified with Women Owned Business; Certified with Other (Define)	
Has your organization ever defaulted or failed to complete any work awarded?YesN If yes, stipulate where and why:	lo
Has your organization ever paid liquidated damages or a penalty for failure to complete a contract of time?YesNo If yes, stipulate where and why:	n

PART 2. TECHNICAL PROPOSAL

The Contractor is requested to submit a complete response to each of the items listed in this technical proposal form. If the question is not applicable, please provide a response after each question or section with the words: NOT APPLICABLE TO THIS PROJECT. Responses requiring additional space should be brief and submitted as an attachment to this section.

2. Reputation of Vendors and of the Vendor's Goods or Services (5 Points out of 100 Possible Points in the Selective Criteria)

2 a. References (5 Points of the 5 points Possible under Reputation of Vendors and of the Vendor's Goods or Services)

Provide five projects, from five separate organizations, with appropriate references using the attached form. Answer the questions for each relevant project, with emphasis on school, educational, and/or renovation experience, that your organization has in-progress or completed in the last four years, using the format below:

A member of the Evaluation Committee will verify the information with the references provided and may ask additional questions of the references. Contractor should ensure availability of the references after bid opening.

Project No.	
Owner / Name and Location of Project:	
Type of Project: (Renovation, Remodeling, Addition, New Construction?)	
Procurement Method: (Competitive Bidding, CSP, CM at Risk, Other)	
Type of Contract: (Lump Sum, Cost Plus, T&M, other)	
Contract Amount: (at time of award)	
Final Contract Amount: (If in progress, contract amount to date)	
Contract Time: (at time of award)	
Percent Complete:	
Projected/Actual Completion Date:	
If completed, was the project completed on time? If in progress, is the project on schedule?	
What kind of delays occurred?	
Did Contractor operate in a safe manner? Was safety a priority to the Contractor?	
Reporting Tools used: (Daily reports, weekly reports, monthly reports)	
Superintendent's Name:	
Project Manager's Name:	
Owner* or Appropriate Owner's Representative** Reference Contact Name/Telephone/Email/Address:	
*If reference iPros no longer employed by the Owner indicate current Employer and Title.	
**Program Managers cannot be used as a reference from a past projects on one of their own current projects.	

Proposer should copy this form for use on 5 past projects.

3. The Quality of the Vendor's Goods or Service (17 Points out of 100 Possible Points in the Selective Criteria)

3 a. Safety Plan and Insurance Rate Modifier (IRM): (5 Points of the 17 points Possible under Criteria 3)

A. List your organization's Insurance Rate Modifier (IRM) for the current year as obtained from your insurance agent. Copy of IRM from insurance agent to be attached as confirmation.

_____current year IRM

B. Complete the matrix for the five past years, as obtained from OSHA No. 300 Log:

	Year	Year	Year	Year	Current Year
Number of injuries and illnesses					
Number of lost time accidents					
Number of recordable cases					
Number of fatalities					
Number of employee direct hire fixed hours worked (round to 1,000's)					

C. Are regular project safety meetings held by Field Supervisor(s)? _____Yes _____No If yes, frequency: ____Weekly ___Bi-Weekly ___Monthly ___As Needed

D. Are project safety inspections conducted? _____Yes ____No If yes, who performs inspection? ______ How often? ___Weekly ___Monthly ___As Needed

E. Does your organization have a written safety program? ____Yes ____No
If yes, two copies of the full safety manual must be provided. Two CD-ROMs, each containing the safety manual in PDF format clearly marked as "Safety Manual" is preferred.
If no, then the contractor may adopt the Dallas ISD Safety manual. Will your organization adopt the DALLAS ISD Safety Manual? ____Yes ____No

F a. Does your organization have a safety orientation program for new employees?

Yes

For employees promoted to Field Supervisor. ____Yes ____No

No

If yes, does your Supervisor Safety Program include instructions on the following topics?

	Yes	No
Safety work practices		
Toolbox safety meetings		
First aid procedures		
Accident investigation		
Fire protection		
HazCom Program		
Record keeping		
Emergency response procedures		
New worker orientation		

F b. Provide a resume of the Safety Manager.

G. Does your organization have a written Drug and Alcohol policy in place? _____Yes _____No

If yes, provide a copy of the policy as an attachment.

If no, please note when adopting the Dallas ISD safety manual, the contractor is also

adopting the "Drug and Alcohol Policy" included within.

3 b. Proposed Project Team(s) and Management approach to proposed projects and Contractor's Pending Claims and or Litigation: (12 Points of the 17 points Possible under Criteria 3)

Please note that Dallas ISD requires a full-time superintendent to be assigned to each individual job site while Work is in progress, contingent upon the continued employment of those personnel by the Contractor. Contractor's staffing approach and organization must reflect this requirement. Contractor may not make any changes to these personnel assignments without the prior approval of the Program Manager and the Owner.

- A. Provide a <u>Staff Organization Chart</u> depicting your staff roles, relationships, and responsibilities.
- B. Identify the proposed key staff: Project Manager, Superintendent, Assistant Superintendent(s), Cost Estimator, Scheduler, Safety Manager, etc. by name and title and provide the following information for each. Include additional key staff, as necessary. Indicate which staff are assigned either on a full time or part time basis. For part time personnel, identify the percent of full-time participation. For example, Project Manager 50% of Full-time, Safety Manager 75% of Full-Time, Scheduler 25% of Full-Time, etc.

Staff: Project Manager

Name:	
Current Assignment: (Project name, client name and	
anticipated project completion date.) Total years of construction experience:	
Full Time or Part Time (For part time personnel, identify the percent of full-time participation. For example, Project Manager 50% of Full-time, etc.)	
Relevant experience with similar projects: (educational and/or renovations and/or additions as applicable)	
Years with the Organization:	

Staff: Superintendent 1 – School Name:

Name:	
Current Assignment:	
(Project name, client name and	
anticipated project completion date.)	
Total years of construction experience:	
Relevant experience with similar projects:	
Years with the Organization:	

Staff: Superintendent 2 – School Name:

Name:	
Current Assignment: (Project name, client name and anticipated project completion date.)	
Total years of construction experience:	
Relevant experience with similar projects:	
Years with the Organization:	

Staff: Superintendent 3 – School Name:

Name [.]	
Name.	
Current Assignment:	
(Dreject name, client name, and	
(Project name, client name and	
anticipated project completion date.)	
Total years of construction experience:	
Total years of construction experience.	
Relevant experience with similar projects:	
· · · · · · · · · · · · · · · · · · ·	
Years with the Organization:	
rouis with the organization.	

Staff: Superintendent 4 – School Name:

Name:	
Current Assignment:	
(Project name, client name and	
anticipated project completion date.)	
Total years of construction experience:	
Relevant experience with similar projects:	
Years with the Organization:	

Staff: Superintendent 5 – School Name:

Name:	
Current Assignment: (Project name, client name and anticipated project completion date.)	
Total years of construction experience:	
Relevant experience with similar projects:	
Years with the Organization:	

Proposer should copy this form as needed to present information for all proposed staff.

C. CONTRACTOR'S PENDING CLAIMS AND/OR LITIGATION

Attach a list of pending claims and/or litigation at time of submitting Proposal. (Show project name, owner, and summary explanation.)

4 The Extent to which the Goods or Services Meet the District's needs (15 Points out of 100 Possible Points in the Selective Criteria)

4 a. General Contractor's current/past K-12 new or renovation construction experience: (10 Points of the 15 points Possible under Criteria 4)

Provide below the School District, School Name, Project Type, **Completion Date** and **Final Construction Value** for a **minimum of 5**** K-12 Projects completed by your company as a prime contractor.

School District	School Name	Renovation, Addition, or New Const.	Completion Date	Final Construction Contract Value

**A separate sheet may be attached with additional projects.

4 b. Proposed Construction schedule and phasing plan: (5 Points of the 15 points Possible under Criteria 4)

The Contractor understands that Dallas ISD desires that the Project be completed on or before the duration of the contract. The Contractor shall prepare and submit a proposed construction schedule for each of the schools in the CSP and present this schedule with Section 00 41 13. **Additions and Renovations work within a school must be broken out into two separate items**. This schedule may be as detailed as the Proposer would like but must have a minimum of schedule information (major construction phases, activities, and milestones) as is necessary to facilitate negotiations.

Provide, as an attachment to the Technical Proposal form, <u>a GANTT chart depicting how you</u> <u>anticipate delivering the project in the time frame outlined in this proposal.</u> Describe the scope of work to be completed in each phase of each school.

Note: Contractors may, as a Cost Saving Recommendation, offer for Dallas ISD's consideration, an alternative plan, which may alter the duration in the contract documents. However, any such proposal must be presented as a <u>Cost Saving Recommendation</u> in the Technical Proposal – Part B (Section 00 41 13). The contractor must clearly identify the alternative work schedule, alternative duration, and alternative base price. The evaluation committee will evaluate alternative plans and schedule and determine if the plans may benefit Dallas ISD.

The Contractor's proposed schedule is a vital part of the evaluation process and sufficient information should be provided for Dallas ISD to assess the Contractor's time frame, work plan and approach.

A. Describe the type of software utilized to prepare the construction schedules. (Attach proposed project schedule)

5. N/A

6. The contractor is to complete all M/WBE Compliance forms in Section 00 45 39 for selection criteria 6. (Category Total: 20 Points of the 20 Points possible under Criteria 6.)

6a. Proposer demonstrated a commitment to the district's M/WBE program by providing enhancements to the administration of the proposer's contracting process for the work to be done be M/WBE firms. Examples of this commitment may include any of the following: expedited payments, Mentor Protégé Programs, early release of retainage, expanding the pool of diverse subcontractors to firms that have not done business with the district, etc. (3 points)

6b. Proposer submitted a list of two (2) M/WBE subcontractor references. (2 points)

6c. Proposer is a certified M/WBE, or Proposer submitted a Joint Venture Agreement with a certified M/WBE OR Proposer submitted a Prime Subcontractor Teaming Agreement with a certified M/WBE. (5 points)

6d. Proposer submitted a diverse list of certified M/WE subcontractors, subconsultants or suppliers that meets or exceeds the district's M/WBE aspirational goal in meaningful and significant roles OR Proposer demonstrated outreach designed to meet the M/WBE project goals with a diverse M/WBE team of subcontractors, suppliers and subconsultants. (5 points)

6e. Proposer demonstrated a comprehensive framework and understanding of the district's M/WBE program by: providing a written and detailed M/WBE compliance plan, designating a high ranking individual who will be responsible for M/WBE contract compliance, monitoring and reporting, ensuring no unauthorized changes to M/WBE subcontractors, adhering to the M/WBE commitment and subcontractor payment terms, executing the M/WBE subcontracting schedule, complying with the district's M/WBE Program guidelines, etc. (5 points)

7. The Total Long-Term Cost to the District to Acquire the Vendor's Goods and Services (3 Points out of 100 Possible Points in the Selective Criteria)

7 a. Financial status of the vendor (as rated by Dun & Bradstreet): Category Total: (3 Points of the 3 points Possible under Criteria 7)

A. Provide the complete corporate or company name of your firm and the D-U-N-S Number as it is recorded with Dun & Bradstreet. This information will allow the owner to confirm that the correct reports are being used for the evaluation.

D-U-N-S Number: _____

C8. ADDITIONAL INFORMATION:

The following information must be provided to complete the evaluation of the Contractor's technical proposal.

A. DISCLOSURE OF INTERESTED PARTIES

1. <u>Disclosure of Interested Parties</u> – In 2015, the Texas Legislature adopted House Bill 1295, which added section 2252.908 of the Government Code. The law states that a governmental entity or state agency may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to the governmental entity or state agency at the time the business entity submits the signed contract to the governmental entity or state agency. The disclosure requirement applies to a contract entered into on or after January 1, 2016.

After Board of Trustee authorization, the <u>successful Vendor</u> will be required to complete an electronic Form 1295 on the Texas Ethics Commission website (<u>https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm</u>) prior to entering into a contract with the District in accordance with this statute. Additional information is available on the Texas Ethics Commission website at <u>www.ethics.state.tx.us</u>.

Submission of a response to this CSP indicates Respondent's acceptance and intended compliance with this requirement.

PART 3. TECHNICAL PROPOSAL FORM EXECUTION

3.01 Proposal Form Execution

Contractor's Firm Name (legal name)	
Federal Tax I. D. Number	
Contractor's Street Address	
Contractor's Phone Number	
Contractor's Email Address	

SUBMITTED BY:

(Corporation, Partnership, Individual, etc.)

Name of President of Corporation *or* Name of Principal Owner Name of Secretary of Corporation (if applicable)

(Corporation, Partnership, etc.,) is organized under the laws of the State of ______.

Firm: _____

Ву: _____

Title: _____

Legal Address: _____

Date: ______ Affix Corporation Seal here (if applicable)

SECTION 00 43 13 – PROPOSAL GUARANTEE BOND

Name of Contractor

KNOW ALL MEN BY THESE PRESENTS	S, THAT we		as Principal, and
as Surety, a	re held and firmly	bound unto the Board of	Trustees, Dallas
Independent School District, Dallas, Dalla	as County, Texas, he	ereinafter called the Obligee	, in the penal sum
of	_Dollars (\$), lawful money of	the United States,
for the payment of which sum well an	d truly to be made	e, we bind ourselves, our	heirs, executors,
administrators, successors and assigns,	jointly and severally	, firmly by these presents.	

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the accompanying Competitive Sealed Proposal, dated ______, 20_____, being for the construction of ______ with appurtenances thereto, at Dallas, Dallas County, Texas, the kind and extent of work involved being set forth in detail in the proposed Contract Documents;

NOW, THEREFORE, if the Obligee shall accept the proposal of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such proposal, and give such bond or bonds as may be specified in the proposal or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said proposal and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said proposal, then this obligation shall be null and void, otherwise to remain in full force and effect.

This Proposal Guarantee Bond applies to all contracts in excess of \$100,000 involving a contract for construction, alteration or repair of any public building or the completion or prosecution of any public work.

This Proposal Guarantee Bond must be payable to the awarding authority, Dallas Independent School District, as the named Obligee, and it must be approved as to form by such awarding authority.

Surety must be corporate surety duly authorized to do business in Texas.

This Proposal Guarantee Bond must be equal to 10% of the full amount of the contract which it secures. Power of Attorney from Corporate Surety should be attached to this Proposal Guarantee Bond.

SECTION 00 43 13 - PROPOSAL GUARANTEE BOND

Name of Contractor	

IN WITNESS WHEREOF, the above bounded parties have executed this instrument under their several seals this ______ day of ______, 20_____, the name and Corporate Seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

(Business Address)	(Individual Principal)
(Business Address)	(Corporate Principal)
ATTEST:	
Socratary	Prosident
Secretary	Tresident
Business Address	Corporate Surety
ATTEST:	BY:

PART 1 GENERAL

Schedule "A" Building Construction Prevailing Wage Rates 2012 City of Dallas

Building Construction Projects (does not include single family homes and apartments).

*Use Schedule B - Current Engineering (Highway/Heavy) Construction Wage Determination For Paving and Utilities Incidental to Building Construction.

Schedule "A"

CLASSIFICATION	PREVAILING	FRINGES
Accurational Installer	ATE ATE	
Acoustical Installer	\$12.10 \$10.04	 ተ ለተ
Backnoe Operator	\$10.64 ¢01.00	\$1.41 ¢7.10
Bricklayer	\$21.06	\$7.18
Brick, Tender	\$8.6U	\$1.30
Carpenter	\$23.15	\$8.20
Cement Mason/Concrete Finisher	\$11.38	
Drywall Hanger	\$11.71	
Electrician	\$24.50	12.25% + 4.70
Electrician, Cable Splicer	\$26.41	4.50 + 12.5%
Floor Layer, Carpet	\$13.13	
Front End Loader Operator	\$8.77	
Glazier	\$12.26	\$1.10
Mechanical Insulator	\$10.55	\$1.00
Laborer, Unskilled (Excluding Landscape Laborers)	\$7.58	\$1.30
Painter Brush & Spray	\$10.76	\$2.20
Painter doing drywall finishing only	\$10.42	
Paperhanger	\$11.30	\$2.20
Lather	\$17.38	\$1.04
Hydraulic Crane (35 tons & under)	\$23.70	\$9.35
Hydraulic over 35 tons. Derricks. Overhead		
Gentry, Stiffleg, Tower, etc., and Cranes with Pile driving or Caisson Attachments	\$24.70	\$9.35
Plasterer	\$15.06	\$2.94
Plasterer tender	\$9.00	
Plumber	\$12.80	\$1.63
Boofer	\$9.45	\$1.04
Sheet Metal Worker (Including HVAC Duct Work)	\$12.80	\$2.05
Sprinkler Fitter (Fire Sprinkler)	\$25.84	\$16.47
Iron Worker, Structural	\$21.60	\$4 40
Iron Worker, Beinforcing	\$10.33	\$2.94
	φ.0.00	φ⊏.0+
Tile Setter	\$13.75	

Schedule "B"

CLASSIFICATION	PREVAILING
	RATE
Asphalt Distributor Operator	\$15.32
Asphalt Paving Machine Operator	\$13.99
Asphalt Raker	\$12.69
Broom or Sweeper Operator	\$11.74
Concrete Finisher -Paving and Structures	\$14.12
Concrete Paving Finishing Machine	\$16.05
Concrete Paving Saw Operator	\$14.48
Crane Operator, Lattice Boom 80 Tons or Less	\$17.27
Crane Operator, Lattice Boom over 80 Tons	\$20.52
Crane, Hydraulic 80 Tons or Less	\$18.12
Crawler Tractor	\$14.07
Electrician	\$19.80
Excavator, 50,000 Pounds or Less	\$17.19
Excavator, over 50,000 Pounds	\$16.99
Flagger	\$10.06
Form Builder/Setter, Structures	\$13.84
Form Setter -Paving & Curb	\$13.16
Foundation Drill Operator, Crawler Mount	\$17.99
Foundation Drill Operator, Truck Mount	\$21.07
Front End Loader 3 CY or Less	\$13.69
Front End Loader, over 3 CY	\$14.72
Laborer -Common	\$10.72
Laborer -Utility	\$12.32
Loader / Backhoe	\$15.18
Mechanic	\$17.68
Milling Machine	\$14.32
Motor Grader, Fine Grade	\$17.19
Motor Grader, Rough	\$16.02
Pavement Marking Machine	\$13.63
Pipe Layer	\$13.24
Reclaimer / Pulverizer	\$11.01
Roller, Asphalt	\$13.08
Roller, Other	\$11.51
Scraper	\$12.96
Servicer	\$14.58
Small Slipform Machine	\$15.96
Spreader Box	\$14.73
Steel Worker (Reinforcing)	\$16.18
Truck Driver -Lowboy -Float	\$16.24
Truck Driver -Off Road Hauler	\$12.25
Truck Driver -Single Axle	\$12.31
Truck Driver -Single or Tandem Axle Dump Truck	\$12.62
Truck Driver -Tandem Axle Tractor with Semi Trailer	\$12.86
Truck Driver -Transit Mix	\$14.14
Tunnel Boring Machine Operator (greater than 48")	\$13.61
Tunneling Machine Operator (48" or less)	\$9.16

Dallas ISD Construction Services 00 43 43

00 43 43 PREVAILING WAGE RATES

Welder	\$14.84
Work Zone Barricade Servicer	\$11.68

If the construction project involves the expenditure of federal funds of \$2,000 or more, the minimum wages to be paid various classes of laborers and mechanics will be based upon the wages that will be determined by the Secretary of labor to be prevailing for the corresponding classes of laborers and mechanics employed on the project of a character similar to the contract work in the City of Dallas.

Except for work on legal holidays, the "General Prevailing Rate of Per Diem Wage" for the various crafts or type of workers or mechanics is the product of (A) the number of hours worked per day, except for overtime hours, times (B) the above respective rate per hour.

For legal holidays, the "General Prevailing Rate of Per Diem Wage" for the various crafts or type of workers or mechanics is the product of (A) one and one-half times the above respective rate per hour times (B) the number of hours worked on the legal holiday.

The "General Prevailing Rate for Overtime Work" for the crafts or type of workers or mechanics is one and one-half times the above respective rate per hour.

Under the provisions of Chapter 2258 of the Government Code, the contractor shall forfeit as a penalty to the entity on whose behalf the contract is made or awarded, sixty dollars (\$60.00) for each laborer, worker or mechanic employed, for each calendar day, or portion thereof, such laborer, worker or mechanic is paid less than the said stipulated rates for any work under the contract, by him, or by any subcontractor under him.

Solicitation Number: <u>CSP 207459</u> Solicitation Title: <u>ORG 220 - MARK TWAIN SCHOOL FOR THE TALENTED AND</u> <u>GIFTED - RENOVATION</u>

REPRESENTATION AND CERTIFICATION

By submitting this Offer, the Offeror certifies that he/she is a responsible authorized officer of the company and certifies the accuracy of the following statements:

- 1. Represents that to the best of its knowledge it is not indebted to the District. Indebtedness to the District shall be basis for non-award and/or cancellation and/or termination of any award.
- 2. By signing this bid/proposal, vendor makes the assurance that vendor has not been debarred or suspended from conducting business with the US Government according to Executive Order 12549 entitled "Debarment and Suspension."
- 3. Pursuant to the Texas Education Code, Subchapter B, Section 44.034, "Notification of Criminal History", a person or business entity that enters into a contract with a school district must give advance notice to the district if the person and/or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony. Subsection (b) states "a school district may terminate a contract with a person or business entity if the district determines that the person or business entity failed to give notice as required by Subsection (a) or misrepresented the conduct resulting in the conviction. The district must compensate the person or business entity for services performed before the termination of the contract." Subsection (c) this notice is not required of a publicly held corporation.

.____My firm is a publicly held corporation, therefore, this reporting requirement is not applicable.

2. My firm is not owned nor operated by anyone who has been convicted of a felony.

3. My firm is owned or operated by the following individual(s) who has/have been convicted of a felony.

Name of Felon(s): _____ Details of Conviction(s): _

- 4. "Non-Collusion Statement" and "Anti-Lobbying Certification": "The undersigned affirms that they are duly authorized to execute this Representation and Certification, Offer, and/or Contract and that this company, corporation, firm, partnership, etc., or individual has not prepared this bid in collusion (*An agreement between two or more persons to deceive the school district or defraud the school district of its rights*) with any other bidder, school board member, or school district employee, and that the contents of this bid as to prices, quality of product, terms and/or conditions, etc., <u>have not</u> been communicated by the undersigned nor by any other employee, agent and/or representative of the company, corporation, firm, partnership, etc., or individual to any other person engaged in this type of business prior to the official opening of this bid for the intent or purpose of collusion." In accordance with Title 31, USC Section 1352, no attempt has been or will be made by this company's officers, employees, or agents to lobby, directly or indirectly, with the District's Board of Trustees between bid/proposal submission date and award by the Board.
- 5. The District promotes, to the maximum extent allowed by law, participation by economically disadvantaged business enterprises in all District competitive procurement. Are you a qualified economically disadvantaged business enterprise, historically underutilized business, or minority/women owned business enterprise?

(check one) Yes No	
Type of Certification:	
Issued by:	Date of Issue:
Please attach proof of certification to this submittal.	Certified by:

6. "Conflict of Interest": No officer, agent, or stockholder of the Offeror is a member of the staff, or related to any employee of the District except as noted herein:

Texas Statute enacts disclosure requirements if certain school officials or family members receive a gift (other than gifts of food, lodging, transportation, or entertainment accepted as a guest) that had an aggregate value of \$250 or more over a twelve-month period that the district is considering or has awarded a contract for the sale or purchase of property, goods, or services. Has your firm, parent firm, subsidiary, and/or affiliate provided a gift (other than gifts of food, lodging, transportation, or entertainment accepted as a guest) that had an aggregate value of \$250 or more over a twelve-month period that the district is considering or has awarded a contract for the sale or purchase of property, goods, or services. Has your firm, parent firm, subsidiary, and/or affiliate provided a gift (other than gifts of food, lodging, transportation, or entertainment accepted as a guest) that had an aggregate value of \$250 or more over a twelve-month period to any District official, administrator, and/or Board member? []Yes []No
If yes, explain (the gift, name of individual receiving gift, date gift was provided, etc.).______

(COMPLETE THE ATTACHED QUESTIONNAIRE FORM)

- 7. Offeror agrees to the attached "General Terms and Conditions" and any "Special Terms and Conditions" (if applicable) of this solicitation and in case of conflict with other documents provided by Offeror, these General and/or Special Terms and Conditions take precedence and prevail unless specifically identified and changes are signed by both parties.
- 8. "Insurance, Bonds": Insurance and/or bond requirements are enumerated elsewhere in Contract documents. Submission of a certificate of insurance/bond by the undersigned (or an agent/broker on behalf of the undersigned) represents that the coverages and perils covered by the insurance/bond meet or exceed the requirements of the solicitation document and/or subsequent contract. The District may make reasonable reliance on the submitted certificate of insurance/bond must accurately reflect the policy coverages and will become a part of the Contract Documents and incorporated by reference, but the Contract terms/conditions and statement of work take precedence over any and all contents of the certificate of insurance/bond including, but not limited to, disclaimers, qualifications, etc. Failure to provide insurance/bond in accordance with Contract may be cause for termination for default and other remedies allowed by law and/or equity. Offeror must notify the District entity, in writing, by certified mail or personal delivery, within ten days after the vendor knew or should have known of any changes that materially affects the insurance/bond coverage.
Solicitation Number: <u>CSP 207459</u> Solicitation Title: <u>ORG 220 - MARK TWAIN SCHOOL FOR THE TALENTED AND</u> <u>GIFTED - RENOVATION</u>

- 9. "Workers Compensation": Offeror acknowledges that the District will NOT provide Workers Compensation coverage to the Offeror and Offeror represents to the District that all employees, subcontractors, agents, representatives, etc. of the Offeror who will provide products, goods, or services to the District will be covered by worker's compensation coverage for the duration of the Contract, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance regulation. Providing false or misleading information may subject the contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.
- "Criminal Background Checks/Searches": Offeror represents that criminal background checks/searches have been conducted (or will be conducted prior to start of Work if required) in accordance with the General Terms and Conditions (Criminal Background Check) and "Instructions to School District Contractors Regarding Criminal History Background Searches Under Texas Education Code (TEC) 22.0834" (attached).
- 11. **"No Boycott of Israel".** Offeror certifies that it (and any of its affiliates or parent company), does not, and will not, boycott Israel during the term of any contractual arrangement with DALLAS ISD. For purposes of any contractual arrangement with DALLAS ISD, "boycott Israel" means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes.
- 12. "Prohibition of Contracts Engaged in Business with Iran, Sudan, or Foreign Terrorist Organizations". Offeror certifies that it is not a company identified by the Texas Comptroller as a company known to have contracts with or provide supplies or services to a foreign terrorist organization.
- 13. "Transactions with an Abortion Provider or Affiliate". Offeror certifies that it is not an abortion provider nor an affiliate of such a provider as noted in Texas SB 22, codified in Texas Government Code Chapter 2273, and effective September 1, 2019. If this provision is violated by Offeror, Agreement and/or taxpayer resource transaction is voidable by Dallas ISD and Offeror agrees to defend and indemnify Dallas ISD against any action brought by the Office of the Attorney General for a violation of Section 2273.003.

I, the undersigned officer or authorized agent for the firm named below, certify that the information provided herein has been reviewed by me and is true to the best of my knowledge.

Company Name:	Submitter's Name/Title:
Email Address:	
Submitter's Signature:T	elephone No
Address:C	ity, State and Zip Code:
Fax No	Date:

THIS SHEET MUST BE COMPLETED, SIGNED, AND RETURNED WITH FIRM'S OFFER.

Notice to Offerors Conflict of Interest Disclosure Statements Texas Local Government Code, Chapter 176

Offerors are required to file a Conflict of Interest Questionnaire with the District if a relationship exists between the Offeror's company and an officer of the District. Offerors are encouraged to review and become familiar with all disclosure requirements of Texas Local Government Code, Chapter 176. Conflicts of interest exist if:

- 1. the person has employment or other business relationship with the local government officer or a family member resulting in the officer or family member receiving taxable income; or
- 2. the person has given the local government officer or family member one or more gifts (excluding food, lodging, transportation, and entertainment) that have an aggregate value of more than \$250 in the twelve- month period preceding the date the officer becomes aware of an executed contract or consideration of the person for a contract to do business with the District.

Disclosure is required from Offerors regarding each affiliation or business relationship between the Offeror and:

- 1. an officer of the District;
- 2. an officer of the District that results in the officer or family member receiving taxable income;
- 3. an officer of the District that results in the Offeror receiving taxable income that does not come from the District;
- 4. a corporation or other business entity in which an officer of the District serves as an officer or director, or holds an ownership interest of 10% or more:
- 5. an employee or Offeror of the District who makes recommendations to an officer of the District regarding the expenditure of money;
- 6. an officer of the District who appoints or employs an officer of the District that is the subject of the guestionnaire; and
- 7. any person or entity that might cause a conflict of interest with the District.

If a conflict exists, forms must be filed:

- No later than the seventh business day after the date that the person begins contract discussions or negotiations with the government entity, or submits to the entity an application, response to a request for qualification or bid, correspondence, or other writing related to a potential agreement with the entity.
- 2. The Offeror also shall file an updated questionnaire:
 - a. not later than September 1 of each year in which a covered transaction is pending, and
 - b. the seventh business day after the date of an event that would make a statement in the questionnaire incomplete or inaccurate.
- 3. A Offeror is not required to file an updated questionnaire if the person had filed an updated statement on or after June 1, but before September 1 of the year.

Officers of the Dallas Independent School District are:

Lance Currie (District 1) Sarah Weinberg (District 2) Dan Micciche (District 3) Camille D. White (District 4) Maxie Johnson (District 5) Joyce Foreman (District 6) Ben Mackey (District 7) Joe Carreon (District 8) Ed Turner (District 9) Stephanie Elizalde, Ed.D. Superintendent of Schools

If no conflict of interest exists, you must fill out Box 1 and type N/A on Box 3 of the CIQ form, sign and date it.

If you are required to file, send the completed form to Dallas Independent School District, Procurement Services Department, 9400 North Central Expressway Suite 1510, Dallas, Texas 75231

July 2022

CONFLICT OF INTEREST QUESTIONNAIRE For vendor doing business with local governmental entity	FORM CIQ
This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.	OFFICE USE ONLY
This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).	Date Received
By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. See Section 176.006(a-1), Local Government Code.	
A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor	
1 Name of vendor who has a business relationship with local governmental entity.	
Check this box if you are filing an update to a previously filed questionnaire. (The law re completed questionnaire with the appropriate filing authority not later than the 7th busines you became aware that the originally filed questionnaire was incomplete or inaccurate.)	quires that you file an updated s day after the date on which
Name of local government officer about whom the information is being disclosed.	
Name of Officer	
A Describe each amployment or other business relationship with the local government offi	cor or a family member of the
A. Is the local government officer or a family member of the officer receiving or li other than investment income, from the vendor? Yes No B. Is the vendor receiving or likely to receive taxable income, other than investment of the local government officer or a family member of the officer AND the taxable i local government al entity?	kely to receive taxable income, income, from or at the direction income is not received from the
Describe each employment or business relationship that the vendor named in Section 1 m other business entity with respect to which the local government officer serves as an o ownership interest of one percent or more.	aintains with a corporation or fficer or director, or holds an
Check this box if the vendor has given the local government officer or a family member as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.0	of the officer one or more gifts 003(a-1).
Signature of vendor doing business with the governmental entity	late
Form provided by Texas Ethics Commission www.ethics.state.tx.us	Revised 11/30/2015

D	all	las	ļ	SD	Construction	Services

CONFLICT OF INTEREST QUESTIONNAIRE For vendor doing business with local governmental entity A complete copy of Chapter 176 of the Local Government Code may be found at http://www.statutes.legis.state.tx.us/ Docs/LG/htm/LG.176.htm. For easy reference, below are some of the sections cited on this form. Local Government Code § 176.001(1-a): "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on: (A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity; (B) a transaction conducted at a price and subject to terms available to the public; or (C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency. Local Government Code § 176.003(a)(2)(A) and (B): (a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if: (2) the vendor: (A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds \$2,500 during the 12-month period preceding the date that the officer becomes aware that (i) a contract between the local governmental entity and vendor has been executed; or (ii) the local governmental entity is considering entering into a contract with the vendor: (B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than \$100 in the 12-month period preceding the date the officer becomes aware that: (i) a contract between the local governmental entity and vendor has been executed; or (ii) the local governmental entity is considering entering into a contract with the vendor. Local Government Code § 176.006(a) and (a-1) (a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and: (1) has an employment or other business relationship with a local government officer of that local governmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A); (2) has given a local government officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value specified by Section 176.003(a)(2)(B), excluding any gift described by Section 176.003(a-1); or (3) has a family relationship with a local government officer of that local governmental entity. (a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of: (1) the date that the vendor: (A) begins discussions or negotiations to enter into a contract with the local governmental entity; or (B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or (2) the date the vendor becomes aware: (A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a); (B) that the vendor has given one or more gifts described by Subsection (a); or (C) of a family relationship with a local government officer.

Form provided by Texas Ethics Commission

www.ethics.state.tx.us

Revised 11/30/2015

Dallas ISD Construction Services 00 45 00

Solicitation Number: <u>CSP 207459</u> Solicitation Title: ORG 220 - MARK TWAIN SCHOOL FOR THE TALENTED AND **GIFTED - RENOVATION**

Dallas ISD, 9400 North Central Expressway, Dallas, TX 75231

FELONY CONVICTION NOTICE

Statutory citation covering notification of criminal history of contractor is found in the Texas Education Code #44.034. Following is an example of a felony conviction notice:

FELONY CONVICTION NOTIFICATION

State of Texas Legislative Senate Bill No. 1, Section 44.034, Notification of Criminal History, Subsection (a), states "a person or business entity that enters into a contract with a school district must give advance notice to the district if the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony."

Subsection (b) states "a school district may terminate a contract with a person or business entity if the district determines that the person or business entity failed to give notice as required by Subsection (a) or misrepresented the conduct resulting in the conviction. The district must compensate the person or business entity for services performed before the termination of the contract."

THIS NOTICE IS NOT REQUIRED OF A PUBLICLY-HELD CORPORATION

I, the undersigned agent for the firm named below, certify that the information concerning notification of felony convictions has been reviewed by me and the following information furnished is true to the best of my knowledge.

A. [] My firm is a publicly-held corporation, therefore, this reporting requirement is not applicable.

B. [] My firm is not owned nor operated by anyone who has been convicted of a felony:

C. [] My firm is owned or operated by the following individual(s) who has/have been convicted of a felony:

Name of Felon(s):		
Details of Conviction(s):		
Company Name:	Submitter's Name/Title:	
Address:	City, State and Zip Code:	
Email Address:		
Submitter's Signature:	Telephone No	
Fax No	800 # (if available)	
Date:		
Dallas ISD Construction Services		CSP 2074
00 45 00	Page 6 of 8	August 16, 20

Solicitation Number: <u>CSP 207459</u> Solicitation Title: <u>ORG 220 - MARK TWAIN SCHOOL FOR THE TALENTED AND</u> <u>GIFTED - RENOVATION</u>

IDENTIFICATION BADGE(S)

- 1. <u>Identification Badge</u>: Offeror's employees, agents, and consultants and subcontractors, subject to the criminal history record review requirement shall be identified by a photographic identification badge.
- 2. If the Offeror is the person or owner or operator of the business entity, that individual may not self-certify regarding the criminal history record information and its review and must submit original evidence acceptable to the District with this Agreement showing compliance.
- 3. Pursuant to Dallas ISD's Board Policy CJA (LOCAL) Purchasing and Acquisition:

All contracts must comply with the requirements for criminal background checks. All vendors must give advance notice to the District if the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony. The District may terminate any resulting agreement if the District determines that the person or business entity failed to provide notice as required by this paragraph or misrepresented the conduct resulting in the conviction.

4. The above requirement is required for all suppliers who will provide a service to Dallas ISD and will be on District property. The background checks and badges must be done through the supplier's company or the District's third-party provider, Field Control Analytics at <u>www.fcbackground.com/clientsignup</u> using project code: VENDISD15 or be issued by the supplier's company.

Company Name:	_Submitter's Name/Title:
Address:	_City, State and Zip Code:
Email Address:	
Submitter's Signature:	_Telephone No
Fax No	_800 # (if available)
Date:	

Instructions to School District Contractors Regarding Criminal History Background Searches Under TEC 22.0835

TEC 22.0834 directs school district contractors (i.e., Company) to obtain state and national criminal history background searches on their employees who will have direct contact with students, and to receive those results through the DPS criminal history clearinghouse (Fingerprint-based Applicant Clearinghouse of Texas –FACT). In order for contractors to receive the information through FACT, they must first establish an account with the DPS for FACT clearinghouse access. The Company owner must sign a user agreement with the DPS. To obtain the user agreement and more information, Company must contact:

Access and Dissemination Bureau Texas Department of Public Safety Crime Records Service P. O. Box 149322 Austin, Texas 78714-9322

Email: FACT@txdps.state.tx.us Phone: (512) 424-2365

For fastest service, please email or call. State in the message that Company is a school district contractor and needs to have an account established for DPS FACT clearinghouse access. Please include:

Company Name Company Address Company Phone Name of Company point of contact Phone of Company point of contact Company email to be used for notification of FACT records and messages

The information in the DPS FACT Clearinghouse is confidential, and access must be restricted to the least number of persons needed to review the records. The account must include at least one designated supervisor to make necessary changes and to monitor the site's security and the access to the criminal history data retrieved. Additional users must be limited to those who need to request, retrieve, or evaluate data regarding the individual applicants.

PLEASE NOTE: After the Company signs the DPS User Agreement for FACT, DPS will provide the Company with a revised **FAST Fingerprint Pass** that Company will have to provide to its employees and applicants. Company's employees and applicants will use that **FAST Fingerprint Pass** when scheduling their FAST fingerprinting.

Company Name:	Submitter's Name/Title:	
Address:	City, State and Zip Code:	
Email Address:		
Submitter's Signature:	Telephone No	
Fax No	800 # (if available)	
Date:		
Dallas ISD Construction Services		CSP 207459
00 45 00	Page 8 of 8	August 16, 2024
ISSUED 8/18/2023		

DALLAS INDEPENDENT SCHOOL DISTRICT CERTIFICATE OF NON-DISCRIMINATION

In connection with the execution of this Contract, the Contractor shall fully comply with the District nondiscrimination requirement cited below.

"The Dallas Independent School District does not discriminate on the basis of sex, disability, race, religion, color, age, gender, sexual orientation, and/or national origin in the educational programs or activities which it operates, and it is required by Title IX, Section 504, Title VII, and the Americans With Disabilities Act not to discriminate in such a manner. This policy not to discriminate extends to employment in and admission to such programs and activities."

Submittal to District of reasonable evidence of discrimination will be grounds for Termination of the Agreement. This policy does not require the employment of unqualified persons.

By the signing of this Certificate, the Contractor signifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. It certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The undersigned agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this proposed Contract. As used in this certification, the term 'segregated facilities' means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. It further agrees that (except where it obtained identical certifications from proposed consultants for specific time period) it will obtain identical certification from proposed Subcontractors prior to the award of a Contract exceeding \$10,000.00 which are not exempt from the provisions of the Equal Opportunity Clause; that it will retain such certifications in its files; and that it will forward the following notice to such proposed Subcontractors (except where the proposed Subcontractors have submitted identical certifications for specific time periods): Notice to Prospective Subcontractors of requirement for certification of non-segregated facilities. A certification of non-segregated facilities, as required by the May 19, 1967 Order (32 FR. 7439, May 19, 1967) on elimination of segregated facilities, by the Secretary of Labor, must be submitted prior to the award of a Contract exceeding \$10,000.00 which is not exempt from the provisions of the Equal Opportunity Clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., guarterly, semiannually, or annually).

Note: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.11."

Rv	•
υу	•

Signature:

(PRINT NAME OF PERSON SIGNING FOR CONTRACTOR)

(CONTRACTOR REPRESENTATIVE SIGNATURE)

Date:

Contractor:

STATE OF TEXAS COUNTY OF DALLAS

Before me, the undersigned authority on this day personally appeared ______, known to me to be the person whose name is subscribed below, who, on oath stated:

"As the appropriate official of the company, contractor, or subcontractor submitting this affidavit in conjunction with a bid submitted to the Dallas Independent School District, I acknowledge that this company, contractor, or subcontractor has been notified that copies of the Asbestos Hazard Emergency Response Act (AHERA) for the school(s) where such company, contractor or subcontractor has contracted to perform work are available at the individual school library and at the Professional Library at the Dallas Independent School District, 9400 N. Central Expressway, Dallas, Texas 75231. I understand that it is our responsibility to familiarize ourselves with such plans and that it is our responsibility to inform every worker that we use on this project as to the availability of these plans.

We also acknowledge that we will be required to obtain written clearance from the Dallas Independent School District, Bureau of Hazardous Materials Management, prior to executing any work on this project."

	Name of C	ompany
	Signature	
	Name	
	Title	
STATE OF TEXAS		
COUNTY OF DALLAS		
Sworn to and subscribed before me at Dallas, Tex	as this the	day of
, 20, A.D.		

Notary Public in and for Dallas County, Texas

FAMILY CONFLICT OF INTEREST QUESTIONNAIRE

This Questionnaire must be completed by every individual or entity that contracts or seeks to contract with the District for the sale or purchase of property, goods, or services.

The questionnaire(s) required by this policy shall be filed with the Director of Procurement Services not later than the seventh (7^{TH}) business day after the date that the individual or entity begins contracts discussions or negotiations with the District or submits to the District an application, response to a request for proposals or bids, correspondence, or other writing related to a potential agreement with the District. If the individual or entity becomes aware of new facts or change of facts that would make the completed questionnaire(s) inaccurate, the individual or entity shall file an amended questionnaire(s) within seven (7) days of the date the individual or entity first learned of the new facts or changes in facts.

Family or family relationship means a member of an individual's immediate family, including spouse, parents, children (whether natural or adopted), aunts, uncles, and siblings.

For individuals who contract or seek to contract with the District for the sale or purchase of any property, goods, or services:

Identify each and every family relationship between yourself (and any member of your family) and any full-time District Employee (and any member of such employee's family) (please include name and sufficient information that will allow proper identification of any named individual):

For entities that contract or seek to contract with the District for the sale or purchase of property, goods, or services:

Identify each and every full-time District employee (and any member of the employee's family) who serves as an officer or director of the entity, or holds an ownership interest of 10 per cent or more in the entity (please include name and sufficient information that will allow proper identification of any named individual):

If more space is required please attach a second page. If the answer to any question is none, or not applicable, please write "None" or "Not Applicable" in the space reserved for that answer.

"I certify that the answers contained in this questionnaire are true and correct."

Individual:			Date:
Entity:			
By: Signature			Date:
Title:			
Certified this	_ day of	, 20, by	Notary Public
			Notary Seal

M/WBE Compliance Guidelines and Forms

Date Issued: June 17, 2020

Contact Info: M/WBE Department 9400 N. Central Expressway Dallas, TX 75231 972-925-4140 972-925-4141 (Fax) Website: <u>www.dallasisd.org</u> Contact: Annie Partee 972-925-7222 or 972-925-4143

Read Carefully: The M/WBE Program requirements are applicable to any bidder/proposer, including minority, women, and non-minority owned firms. These forms should be attached to any bid/proposal totaling \$50,000 or more and are due at the time of bid/proposal opening.



Minority Women Business Enterprise

www.dallasisd.org/mwbe 972.925.4140 mwbe@dallasisd.org

Construction | Competitive Sealed Proposals (CSP) M/WBE Compliance Guidelines and Forms

The Information gathered from these forms will be used as part of the Minority/Women Business Enterprise (M/WBE) evaluation. Please visit our website at www.dallasisd.org/mwbe for a fillable version of these forms.

	To be com	pleted and signed by the Prime Vendor			
Bid Title:			Bid/RFP N	lumber:	
School:			Org. Num	ber:	
Description of Work:					
	1	Company Information		ſ	
Company Name:			Tax ID#:		
Is your company a Certified Minority or Woman Owned Business (M/WBE)?	Yes If "Y Dall: No If "M	Yes ," include your current certification, ethnicity and as ISD recognized M/WBE Certification Agencies: Ref No ," indicate your ethnicity & gender below.	gender inforr er to Section	mation be 14 on Pag	low. ge 10.
		Certification Information			
M/WBE Certific	ation Agency	M/WBE Certification Number	Ethnie	city	Gender
	AL	ithorized Agent's Information			
*Authorized Agent's Nam	e:				
Authorized Agent's Email	:		Phone:		
Company Address:					
City:			State:		Zip:

* Authorized Agent is a person who has the authority to enter into a legally binding contract with Dallas ISD.

Required Signature. The undersigned authorized agent agrees that he/she has read and understands the M/WBE Compliance Guidelines and Forms and that all information is correct to the best of his/her knowledge.

Authorized Agent's Signature (Sign below)	Date:
X	

Section 1. M/WBE Compliance Reporting

The M/WBE Department has adopted the usage of B2G Now, a Diversity Management and Contract Compliance System, to assist with the management of the monthly compliance reporting requirement. Indicate the person who is knowledgeable about M/WBE utilization on this project below.

M/WBE Contact Person:	
Email:	
Phone:	

Section 2. Diversity Plans

Does your company have an Affirmative Action, Equal Employment Opportunity or Supplier Diversity Plan?

Yes. If "**Yes**," attach a copy of your plan immediately following the M/WBE forms.

No.

Section 3. Workforce Composition

Employee Category	African A	American	A	sian	His	panic	Native	American	Non-M	linority	Total Em	ployees
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Executive & Managerial												
Technical & Skilled												
Office & Clerical												
Other												
	ł	ł		ł	ł	ł	ł	ł		·		
TOTAL												

Section 4. M/WBE References

List two (2) M/WBE companies that have performed work for your company.

Company Name:	
Contact Person:	
Email:	
Phone Number:	
Project Name:	

Company Name:	
Contact Person:	
Email:	
Phone Number:	
Project Name:	

Section 5. Mentor Protégé Program

Does your company currently participate in a Mentor Protégé Program as a mentor to an M/WBE company? Refer to Section 20 on Page 13 for additional information.

Yes. If "Yes," attach a signed, dated and notarized copy of the Mentor Protégé Agreement and notarized minutes.
No.

Section 6. Prime-Subcontractor Team

Is your company bidding as a Prime-Subcontractor Team with a certified M/WBE company? Refer to Section 17 on Page 11 for additional information.

Yes. If "Yes," identify the certified M/WBE company below. Attach a signed, dated and notarized Prime-Subcontractor Teaming Agreement.
No.

M/WBE Company	M/WBE Certification Agency	M/WBE Certification Number	Ethnicity/Gender

Section 7. Joint Venture (JV)

Is your company bidding as a Joint Venture (JV) with a certified M/WBE company? Refer to Section 18 on Page 12 for additional information.

Yes. If "Yes," identify all partners (including your company*) below and attach a signed, dated, and notarized Dallas ISD Master JV Agreement. Each JV partner (excluding your company) must complete Sections A through D on Page 4.

No.

Joint Venture Majority Partner*					
Company:	Contact Person:				
Email:	Phone:				
JV % Split:					

Joint Venture Partner						
Company:		Contact Person:				
Email:		Phone:				
M/WBE Certification Agency:						
M/WBE Certification Number:						
Ethnicity:	Gender:		JV % Split:			

COMPLETE SECTIONS A THROUGH D FOR EACH JOINT VENTURE PARTNER(S). USE ONE PAGE PER PARTNER

Section A. Diversity Plans

Does your company have an Affirmative Action, Equal Employment Opportunity or Supplier Diversity Plans?

Yes. If "**Yes**," attach a copy of your plan immediately following the M/WBE Compliance Guidelines & Forms.

No.

Section B. Workforce Composition

Employee Category	African	American	A	sian	His	panic	Native	American	Non-N	linority	Total En	nployees
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Executive & Managerial												
Technical & Skilled												
Office & Clerical												
Other												
TOTAL												

Section C. M/WBE References

List two (2) M/WBE companies that have performed work for your company.

Company Name:	
Contact Person:	
Email:	
Phone Number:	
Project Name:	

Company Name:	
Contact Person:	
Email:	
Phone Number:	
Project Name:	

Section D. Mentor Protégé Program

Does your company currently participate in a Mentor Protégé Program, as a mentor to an M/WBE company? Refer to Section 20 on Page 13 for additional information.

Yes. If **"Yes,"** attach a signed, dated and notarized copy of the Mentor Protégé Agreement and notarized minutes.

🗌 No.

Section 8. Subcontractor and Prime Self-Performance Participation

Will you use any subcontractors, sub consultants, suppliers (M/WBE and/or Non-M/WBE) as part of this bid/proposal?

Yes. I plan to utilize subcontractors as part of this bid/proposal. Complete Section 10 below.

🗌 No.

Will you self-perform the entire scope of work?

Yes. I plan to self-perform the entire scope of work with my own workforce. If you are a Certified M/WBE Prime complete Section 9 below.

No.

Section 9. Certified M/WBE Prime Self-Performance

Certified M/WBE Prime Self-Performance

If you are a Certified M/WBE Prime and will self-perform with your own workforce the management of the project, complete the Certified M/WBE Prime Self-Performance chart below. The work should be consistent with industry standards. The M/WBE Prime's self-performance of a specialty trade or project scope of work shall be counted toward the goal, up to a maximum of 50% of the M/WBE project goal. Refer to Section 15 on Page 10 for additional information.

Certified M/WBE Prime Self-Performance						
Certified M/WBE Prime Company's Name:		Contract Amount	M/WBE %			
Contact Person:						
Ethnicity:	Gender:					
Scope of Work:						

Section 10. Subcontractor Utilization

List all (minority and non-minority) subcontractors, suppliers, sub consultants, or sole proprietors that will be utilized in this bid/proposal. Only Certified M/WBE Prime Self-Performance and Certified M/WBE Subcontractors will be counted towards the M/WBE goals. If you will not utilize M/WBE subcontractors, complete Section 11 on Page 7. For information on the change of subcontractor policy refer to Section 16 on Page 11.

Non-certified companies will not be counted towards the M/WBE goal.

Subcontractor/	Supplier	Information

Subcontractor/Supplier Company's Name:				Contract Amount	M/WBE %
Address:	City:	State:	Zip:		
Contact Person:					
Ethnicity:		Gender:			
Phone:		Email:			
M/WBE Certification Agency:		Certification #:			
Scope of Work:					

Additional Subcontractor/Supplier Information on the following page

Subcontractor/Supplier Information Continued					
Subcontractor/Supplier Company's Name:				Contract Amount	M/WBE %
Address:	City:	State:	Zip:		
Contact Person:					
Ethnicity:		Gender:			
Phone:		Email:			
M/WBE Certification Agency:		Certification #:		-	
Scope of Work:					
Subcontractor/Supplier Company's Name:				Contract Amount	M/WBE %
Address:	City:	State:	Zip:		
Contact Person:					
Ethnicity:		Gender:			
Phone:		Email:			
M/WBE Certification Agency:		Certification #:			
Scope of Work:		I			1
Subcontractor/Supplier Company's Name:				Contract Amount	M/WBE %
Address:	City:	State:	Zip:		
Contact Person:					
Ethnicity:		Gender:			
Phone:		Email:			
M/WBE Certification Agency:		Certification #:			
Scope of Work:					
Subcontractor/Supplier Company's Name:				Contract Amount	M/WBE %
Address:	City:	State:	Zip:		
Contact Person:					
Ethnicity:		Gender:			
Phone:		Email:			
M/WBE Certification Agency:		Certification #:			
Scope of Work:				1	1
Subcontractor/Supplier Company's Name:				Contract Amount	M/WBE %
Address:	City:	State:	Zip:		
Contact Person:					
Ethnicity:		Gender:			
Phone:		Email:]	
M/WBE Certification Agency:		Certification #:		1	
Scope of Work:					
			Total:		

If you have additional subcontractors/suppliers make copies of this form.

Office Use Only				
Contract Amount	M/WBE Contract Total	M/WBE Percentage	M/WBE Coordinator	

Company Name:_

Certified M/WBE Subcontractor Performance. The M/WBE subcontractors, suppliers, and/or vendors must be 1st, 2nd or 3rd tier subcontractors, suppliers, and/or vendors when calculating participation. In order to prevent double counting, the district will count the M/WBE subcontractor participation for the 1st tier firm. If the 1st tier isn't a certified M/WBE, the district will count the 2nd tier M/WBE subcontractor. If the 1st and 2nd tier aren't certified M/WBEs, the district will count the 3rd tier M/WBE subcontractor. The expenditures by M/WBEs for materials or supplies toward M/WBE goals are calculated as follows:

	Туре	M/WBE Percentage	Definition
А.	M/WBE Manufacturer	100%	Operates or maintains a factory or establishment that produces on the premises; the materials, supplies, articles, or equipment required under the contract.
в.	M/WBE Regular Dealer	60%	Owns, operates, or maintains a store, warehouse, in which the materials, supplies, articles or equipment are kept in stock, and regularly sold or leased to the public.
С.	M/WBE Representatives	Amount of Commission or Fees	Packagers, brokers, manufacturers' representatives

Section 11. Good Faith Effort

All district prime vendors are required to demonstrate positive and reasonable good faith efforts to subcontract with M/WBEs. *Complete this section if only non-M/WBE subcontractors will be utilized.*

	Yes	No
 Was contact made with M/WBEs by telephone or written correspondence at least one week before the bid was due to determine whether any M/WBEs were interested in subcontracting and/or joint ventures? 		
2. Were contracts broken down to provide opportunities for subcontracting?		
3. Was your company represented at a pre-bid/proposal conference to discuss, among other matters, M/WBE participation opportunities and obtain a list (not more than two months old) of certified M/WBEs?		
4. Was information provided to M/WBEs including, but not limited to bonding, lines of credit, technical assistance, insurance, scope of work, plans/specifications?		
5. Were subcontracting opportunities advertised in general circulation, trade associations, M/WBE focused media and/or minority chambers of commerce?		
6. Did you encourage non-certified M/WBEs to pursue certification status?		
7. Were negotiations conducted in good faith with interested M/WBEs?		
8. Were the services utilized of available minority and women, community organizations, contractor groups, local, state, and federal business assistance offices, and other organizations that provide assistance in the identification of M/WBEs?		
Special Note : The good faith efforts documentation is subject to an M/WBE audit. Upon request, you will be reprovide supporting documentation for the purpose of verifying your good faith efforts.	quired t	io

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Section 12. Letter of Intent (LOI) [Not required with the initial bid/proposal]

To be submitted at the contract negotiation meeting with the district, or as requested by the M/WBE Department. Complete one LOI form for each proposed M/WBE subcontractor.

Org/School:

Prime vendors must submit a Letter of Intent for each M/WBE subcontractor who will be utilized to supply any services, labor or materials pursuant to the bid/proposal. If necessary, make copies.

This Letter of Intent is submitted to confirm the intent of the prime vendor and subcontractor to conduct good faith negotiations toward a subcontract agreement, with terms agreeable to both parties, for the scope of work identified herein. The parties acknowledge that any obligation of the prime vendor to enter into a subcontract agreement with subcontractor is expressly contingent upon the prime vendor entering into a contract with Dallas ISD for the work as defined in the bid/proposal.

This document must be completed in its entirety by the prime vendor and signed by both the prime vendor and the M/WBE subcontractor.

Any false statements or misrepresentations regarding information submitted on this form may be a criminal offense in violation of Section 37.10 of the Texas Penal Code.

A. M/WBE Subcontractor's Information:

The M/WBE subcontractor ______ has been certified by a Dallas ISD recognized certification agency.

Name of Certifying Agency: _________ Print or Type Certification Agency's Name

Scope of Work:

_ Certification #: _____ Ethnicity/Gender: ____

Pursuant to district policy (CH Local), only M/WBEs who are currently certified with one of the Dallas ISD recognized certifying agencies (see Section 14 on Page 10 for listing) may be counted towards meeting the district's M/WBE goal at the subcontracting level.

The M/WBE subcontractor is prepared to perform the following services, labor, or materials listed in connection with the project:

M/WBE Subcontractor Signature Required Review the above information for accuracy prior to signing this Letter	er of Intent.	
Print or Type Name and Title of M/WBE Owner, President or Authorized Agent	X Signature	Date
B. Prime Vendor's Information:		
Contact Person:	Company Name:	
Address, City, State & Zip:		
Declaration of prime vendor/Declarant:		
	HEREBY DECLARE AND AFFIRM that I am the	
Name of Declarant (Print or Type)		Title of Declarant (Print or Type)
and am duly authorized to make this declaration on	behalf of	
	Company Name (Print o	ог Туре)
and that I have personally reviewed this Letter of contained in this form are true and correct. The ow	Intent. To the best of my knowledge, inform mer, president or authorized agent of the M/	nation and belief, the facts and representations WBE firm signed this form, and no material facts

Print or Type Name

Last update 6.17.2020

Signature

Date



General Information regarding the M/WBE Compliance Guidelines and Forms

The district's aspirational M/WBE goal is **30%** for goods, services, and construction contracts. The district's aspirational M/WBE goal for bond funded professional service contracts is **35%**. The district may assign a contract specific M/WBE goal in lieu of the aspirational goal. Review your solicitation documents to determine which M/WBE goal will apply. The established M/WBE goal is applicable to any change orders, additional services, modifications or revisions to the original contract.

Section 13. During Bid/Proposal Submission

M/WBE Forms. Submit the completed, signed, and dated M/WBE Compliance Guidelines & Forms by the due date. Include all M/WBE supporting documentation including, but not limited to M/WBE Certificates, Affirmative Action, Equal Employment Opportunity or Supplier Diversity Plan, signed, dated and notarized Joint Venture Agreement, Mentor Protégé Agreement and Minutes, or Prime-Subcontractor Teaming Agreement.

M/WBE Scoring Criteria. The district's M/WBE Evaluation Scoring Criteria has been established as follows:

	M/WBE Criteria	Maximum Point Allocation
Α.	Proposer demonstrated a commitment to the district's M/WBE program by providing enhancements to the administration of the proposer's contracting process for the work to be done by M/WBE firms. <i>Examples of this commitment may include any of the following: expedited payments, Mentor Protégé Programs, early release of retainage, expanding the pool of diverse subcontractors to firms that have not done business with the district, etc.</i>	3
В.	Proposer submitted a list of two (2) M/WBE subcontractor references.	2
C.	Proposer is a certified M/WBE OR Proposer submitted a Joint Venture Agreement with a certified M/WBE OR Proposer submitted a Prime Subcontractor Teaming Agreement with a certified M/WBE.	5
D.	Proposer submitted a diverse list of certified M/WBE subcontractors, subconsultants or suppliers that meets or exceeds the district's M/WBE aspirational goal in meaningful and significant roles OR Proposer demonstrated outreach designed to meet the M/WBE project goals with a diverse M/WBE team of subcontractors, suppliers and subconsultants.	5
E.	Proposer demonstrated a comprehensive framework and understanding of the district's M/WBE program by: providing a written and detailed M/WBE compliance plan, designating a high ranking individual who will be responsible for M/WBE contract compliance, monitoring and reporting, ensuring no unauthorized changes to M/WBE subcontractors, adhering to the M/WBE commitment and subcontractor payment terms, executing the M/WBE subcontracting schedule, complying with the district's M/WBE Program guidelines, etc.	5
	Total Points	20

Subcontractor Utilization. Complete Section IO on Page 5 for the subcontractors you plan to utilize. Attach a copy of the current M/WBE certificate or proof of M/WBE certification for each M/WBE subcontractor. Contact the M/WBE Department if you would like a listing of certified M/WBE subcontractors or suppliers.



Section 14. Recognized Certifying Agencies

The district accepts M/WBE certifications issued by:

North Central Texas Regional Certification Agency (NCTRCA) D/FW Minority Supplier Development Council (DFW MSDC) Department of Transportation (DOT) City of Houston City of Austin National Minority Supplier Development Council (NMSDC) State of Texas' Historically Underutilized Business (HUB) Women's Business Council Southwest (WBC SW) South Central Texas Regional Certification Agency (SCTRCA) Corpus Christi Regional Transportation Authority Small Business Administration (SBA 8A) or certified SDB National Women's Business Enterprise Certification (WBENC)

Other certifications may be considered on an individual basis. Only certified minority and women-owned companies will be counted towards the prime's M/WBE subcontracting goals. Vendors do not have to be a certified M/WBE to participate in the district's contracting and purchasing activities.

Section 15. Certified M/WBE Prime Self-Performance

- The M/WBE prime must be a bona fide business with real and continuing ownership for more than a year prior to the solicitation and was not created merely for the purpose of meeting this evaluation criteria.
- The M/WBE prime must be certified at the time of submission of the proposal.
- The M/WBE prime must be economically independent, perform commercially useful functions and perform the management of the project or the specialty trade work, consistent with industry practices, with its own workforce.
- The M/WBE's self-performance of a specialty trade or project scope of work shall be counted toward the M/WBE goal, up to a maximum of 50% of the M/WBE project goal.

For example, an M/WBE prime elects to self-perform the interior finish out painting which equals 10% of the project's total costs and the goal for the project is 30%. The M/WBE prime's participation will count 10% toward the M/WBE project goal of 30%. The remaining M/WBE subcontracting goal after applying the MWBE prime's self-performance on the project is a 20% M/WBE subcontracting goal.

If the M/WBE prime's self- performance exceeds the M/WBE contract goal, a maximum of 50% of the M/WBE project goal will be applied toward the goal.

For example, the M/WBE prime self-performs the concrete work for the project and the concrete work is 30% of the total project costs. The MWBE prime's participation will count 15% toward the M/WBE project goal of 30%. The remaining M/WBE subcontracting goal after applying the M/WBE prime's self- performance on the project is a 15% MWBE subcontracting goal.

Section 16. After Bid/RFP Submission

Letter of Intent. The awarded prime vendor who will subcontract portions of the work should complete the *Letter of Intent to Perform/Contract as an M/WBE Subcontractor* form (Section 12 on Page 8) for each proposed M/WBE subcontractor. The prime vendor will be required to provide the *Letter of Intent to Perform/Contract as an M/WBE Subcontractor* form at the contract negotiation meeting with the district, or as requested by the M/WBE Department.



Changes to the List of Subcontractors. A Request for Approval of Contract Change form must be submitted to the M/WBE Department for approval **prior** to any changes to the M/WBE subcontractor utilization listing in Section 10. A written justification and supporting documentation are required from the prime requesting the change. This applies after the Bid/RFP submission and throughout the contract duration.

Subcontractor Payment. The Prime vendor shall submit an M/WBE Pay Activity Report (PAR) indicating the amounts paid (along with required proof of payments) to its subcontractors with each pay application or as requested by the district.

- Acceptable proof of payments includes: (1) Emails from the Subcontractor verifying the payment amount, date paid, school name and/or org #, and project information (2) Partial Lien Releases, (3) Cancelled Checks, or (4) Proof of Electronic Funds Transfer;
- All Prime vendors must pay all submitted invoices, including retainage to subcontractors, suppliers, or entities within **10 days** of receiving payment from the district;
- No Prime vendor shall withhold a non-disputed subcontractor payment;
- No Prime vendor may withhold retainage greater than 5% from the subcontractor.

Contract Execution between Prime Vendor and Subcontractor. Prime vendor agrees to establish a written contract with each subcontractor. At minimum, the contract should include the scope of work, payment terms, prompt payment clause and retainage clause.

Changes to the original M/WBE Commitment – After Contract Execution. The prime vendor shall notify the M/WBE Department if the percentage of M/WBE participation falls below the level of participation represented in the contract. The prime vendor shall promptly notify the M/WBE Department within seven (7) days and obtain a listing of other certified M/WBE vendors to meet the commitment amount.

Records Retention. The prime vendor will be required to maintain records showing the subcontractor/supplier awarded contracts, subcontractor payment history, efforts to identify and award contracts to M/WBEs, and copies of executed contracts with M/WBEs. The contractor must provide access to books, records and accounts to authorized district, state and federal officials for the purpose of verifying M/WBE participation and good faith efforts. District contracts are subject to an M/WBE audit.

Section 17. Prime-Subcontractor Teaming Agreement

The Prime-Subcontractor Teaming Agreement will be evaluated based upon the below referenced criteria. The designated subcontractor in this agreement must be a certified M/WBE. There is a maximum of five (5) numerical points available.

Proposer submitted a teaming arrangement and/or strategic partnership with subprime contracting with a certified MWBE firm(s). The certified MWBE firm(s) provides prime management, control and supervision of a clear and distinct portion of the specialty trade(s) or project scope of work in a meaningful and significant role(s). Proposer will establish a teaming agreement which defines the minimum M/WBE subcontractor commitment. The teaming agreement defines what trade(s) the subcontractor will perform, and the subcontractor is certified in the respective subcontracting scope.



	Teaming Agreement Scoring Analysis	Located	Available
		on Page	Points
Α.	The teaming agreement provides the certified M/WBE firm(s) with prime management,		2.00
	control and supervision of a clear and distinct portion of the project scope of work in		
	meaningful and significant roles.		
В.	A pre-negotiated subcontract form is an exhibit to the teaming agreement.		1.00
С.	The teaming agreement contains a dispute resolution procedure.		0.50
D.	The teaming agreement only terminates upon owner non-select or owner non-award.		0.50
Ε.	The teaming agreement requires subcontract award to the M/WBE partner identified in		1.00
	the teaming agreement.		
	Total		5.00

Section 18. Joint Venture Program Information

The objective of the district's Joint Venture (JV) Program is to further the development, growth, and capabilities of minority and women-owned businesses that allow such businesses to offer the district the best combination of performance, cost, and delivery of service. A Joint Venture is an association of two (2) or more companies with a certified minority or woman-owned business to form a new company. The Joint Venture parties are required to utilize the Dallas ISD's Master Joint Venture Agreement. The agreement must be signed, dated and notarized by all Joint Venture parties. The Joint Venture does not replace a prime contractor's responsibility to satisfy applicable M/WBE program requirements, including M/WBE goals.

Companies seeking to participate in a Joint Venture arrangement has the burden of demonstrating to the district, by a preponderance of the evidence, that it meets the requirements of Board Policy (CH) Local with respect to being an eligible Joint Venture for counting purposes. The district will analyze whether the stated Joint Venture is realistic considering the number of employees, experience, resources, certification type, and other resources that each party provides to the Joint Venture. The Joint Venture Partnership must include a certified M/WBE Partner, based on the percentage allocated, who is able to adequately bond the project, have the experience and resource to perform the services, labor or material listed.

The Joint Venture Partner(s) may provide co-surety bond or bonds in proportionate percentage to their ownership in the Joint Venture and to other parties are applicable in a form acceptable to the owner. The Joint Venture may also provide in a form acceptable to the owner any bond or bonds in the name of the Joint Venture in lieu of the co-surety arrangement; provide an Up Front Joint Agreement (SAA Form #1), and an executed copy of the indemnity agreement signed by all of the parties associated with the SAA Form #1.

A separate bank account in the name of the Joint Venture must be established by the Joint Venture. The bank account will require the signature of an authorized representative of each party or his or her designee for withdrawal by check or documented approval of an authorized representative for withdrawal by electronic means.

Refer to the district's website at www.dallasisd.org/mwbe for the required Dallas ISD's Master Joint Venture Agreement and Joint Venture Guidelines.



Section 19. Construction M/WBE Joint Venture Scoring Analysis

The Joint Venture (JV) Agreement will be evaluated based upon the below referenced criteria. One of the JV partners must be a certified minority or woman-owned business. There is a maximum of five (5) numerical points available. Refer to Section 18 on Page 12 for additional information.

The proposer must submit an approved, signed, dated, and notarized Dallas ISD Master Joint Venture Agreement. Any modifications to the Dallas ISD Master Joint Venture Agreement and amendments must be submitted for review with the proposal and include highlighted proposed changes or modifications to the agreement for review and approval of Dallas ISD's M/WBE office.

A. M/WBE Joint Venture Partner	Points
Does it identify the distinct, clearly defined portion of the work provided by each M/WBE joint venture	3 00
partner, in significant and meaningful ways? The work must be separate, clear and distinguishable. Specify	5.00
the nature of the work and what it will entail. Complete exhibit A of the Dallas ISD Master Joint Venture	
Agreement.	
B. Staffing Plan	
Does it provide a staffing plan to be determined per the established participation percentages indicating the	
number of employees to be provided by each M/WBE joint venture partner? This should include a project	1.00
organizational chart and a resumé for each key personnel that includes length of employment, time serviced	
in their role(s), and experience within the industry. Complete exhibit B of the Dallas ISD Master Joint Venture	
Agreement.	
C. Financial and Bonding Information	
Does it provide a letter from a financial institution or bonding surety company, substantiating the financial	
strength or bonding capacity of each M/WBE joint venture partner(s)? This document should commensurate	1.00
each M/WBE joint venture partner(s) percentage split. Complete exhibit C of the Dallas ISD Master Joint	
Venture Agreement.	
Total Points	5.00

Section 20. Mentor Protégé Program Information

The Minority/Women Business Enterprise (M/WBE) Department's Mentor-Protégé program aims to stimulate the growth of minority and women-owned businesses through education, business development, and training. A mentor should be willing to advise and support the protégé and help identify the needs and skills of the protégé. The Mentor Protégé Agreement, meeting minutes, progress reports, and deliverables should be signed by all parties, dated, and notarized.

JOINT VENTURE AGREEMENT

BY AND BETWEEN

AND

AS

_____, a Joint Venture JV

FOR

Dallas Independent School District

JOINT VENTURE AGREEMENT

THIS AGREEMENT is made and entered into this	day of, 20 (the "Effective
Date"), by and between	Inc. ("NAME"), a ("STATE")
corporation, whose business address is	
, ("CITY") ,	("STATE") ("ZIP"); and
, Inc. ("NAME"), a	("STATE") corporation, whose business
address is	, ("CITY") ,
("STATE") ("ZIP"),	hereinafter referred to individually as a "Party" or
collectively as the "Parties". The name	e of the Joint Venture shall be called
	All business of the Joint Venture shall be
a and ustand unaday this name	

conducted under this name.

Recitals

A. The Parties have agreed to enter into a joint venture for the purpose of submitting a proposal, bid, solicitation or otherwise (the "Proposal") to provide owners representative services or work to the Dallas Independent School District in response to Bid/RFP/RFQ No. ______ entitled ______ (the "Solicitation"), which to the extent the Proposal is successful, will result in a contract with the Owner.

B. The Parties desire to enter into this Agreement to fix and define between themselves their respective interests and responsibilities for the purposes of providing the requisite Services, Work, or both.

C. The Parties affirm and agree that they shall participate in the preparation of the Proposal and pursue the Contract with each other, that no Party shall submit a competitive proposal or otherwise seek the award of the Contract contemplated herein either alone or with others without notice to the Parties to this Agreement and entering into a Non-Disclosure Agreement, and in reliance thereon have entered into this Agreement.

D. The Parties agree and affirm to register the Joint Venture with the State and forward the Certificate of Filing and Tax Identification Number to the Dallas Independent School District, if the Joint Venture is awarded a Project with the Owner.

E. The Parties affirm and agree the joint venture participation split represented in this Agreement and no employee or former employee [of less than one year], relative, affiliate or subsidiary company is listed or included as a joint venture partner.

F. In the event the Parties agree to pursue other DISD projects as a joint venture, they will enter into an addendum to this Agreement, subject to District approval, identifying that project and any modified terms of this Agreement, if any, in connection with the pursuit or award of same.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, it is agreed as follows:

Agreement

Article 1: Definitions and Interpretation

1.1 Capitalized terms used in this Agreement shall have the meaning set forth below or as defined elsewhere in this Agreement.

- 1.1.1 "Agreement" means this document.
- 1.2
- 1.2.1 "Managing Business Party" the Joint venture partner designated to provide the accounting and financial services, on behalf of the Joint Venture required to reflect the conduct of the Joint Venture's affairs
- 1.2.2 "Owner" means Dallas Independent School District.
- 1.2.3 "Contract" means any contract (together with any amendments, supplements or modifications thereto) awarded to the Joint Venture by the Owner for the performance of the Services, Work, or both, for the Project
- 1.2.4 "Deputy Project Manager" means the individual specifically designated pursuant to Article 3 of and charged with assisting the Project manager and Senior Project manager in the overall responsibility to direct the Joint Venture's performance under the Contract.
- 1.2.5 "IRC" means the Internal Revenue Code of 1986 as amended as of the date of this contract.
- 1.2.6 "Joint Venture" means an association between ______, Inc., and ______, Inc. engaged in a solitary business enterprise for profit.
- 1.2.7 "Management Committee" means the group formed pursuant to Article 4 as the final authority of the Joint Venture and having the powers and duties as provided herein.
- 1.2.8 "Project" means the "DALLAS ISD" Construction" project the subject of the solicitation.
- 1.2.9 "Project Manager" or "Senior Project Manager" means the individual specifically designated pursuant to Article 3 of and charged with overall responsibility to direct the Joint Venture's performance under the Contract.
- 1.2.10 "Proposal" means the proposal(s) submitted by the Joint Venture to the Owner to secure the award of the Contract for the Project. The Proposal shall include, but not limited to, all pursuit efforts, including any presentation or other interview. The term "Proposal" does not include task order specific proposals.
- 1.2.11 "Services" or "Work" means services or work under the Contract to be performed by the Joint Venture in furtherance of the Project.
- 1.2.12 "Task Order Contract" means a contract for services that does not procure or specify a firm quantity of services (other than a minimum or maximum quantity) and that provides for the issuance of orders for the performance of tasks during the period of the contract. 1.2. Terms importing the singular include the plural and vice versa where the context requires.

1.3. The headings used in this Agreement are included for ease of reference only and shall not affect the construction or interpretation hereof.

Article 2: Association of the Parties

2.1 Formation. The Parties hereby agree to form the Joint Venture pursuant to the provisions hereof for the limited purpose and scope set forth in this Agreement. The Parties hereby further agree to perform the Joint Venture's responsibilities and obligations as an integrated team, providing staffing (including key

personnel) and resources generally in proportion to their respective interests in the Joint Venture as set forth in Article 5.

2.2 Purpose. This Joint Venture is entered into solely for the purpose of submitting the Proposal and, if the Contract is awarded to the Joint Venture, the performance of the Services, Work, or both, as identified in the Solicitation. The Parties agree that the Joint Venture is a temporary association and that it will not place any limitation or liability on the Parties beyond the specific undertakings contained in this Agreement.

2.3 Name. The Joint Venture shall operate under the name ______, a Joint Venture.

2.4 Duration. The Joint Venture will continue until dissolved in accordance with this Agreement. Subject to the foregoing, the Joint Venture shall:

- 2.4.1 dissolve automatically (i) should the Parties fail to agree as to the form, terms or conditions of the Proposal, (ii) if the Project is cancelled prior to award, or (iii) if the Contract is not awarded to the Joint Venture, but only after any challenge to the award of the Contract, by administrative protest or litigation (or appeal of a decision on such protest or litigation), is fully concluded without an award of the Contract to the Joint Venture, or
- 2.4.2 if awarded the Contract, be dissolved upon completion of all Services, Work, or both, required to be performed under the Contract, receipt of full payment of all sums for which the Joint Venture is entitled under the Contract, the settlement of all disputes and final accounting, and the expiration of all warranties and all other obligations arising in connection with the Contract.
- 2.43 if awarded the Contract, the Joint Venture shall not be dissolved, without thirty (30) days written notice and the prior written consent of the Dallas Independent School District

2.5 In the event the Contract is terminated, the Joint Venture shall conclude its affairs in an orderly manner at the earliest practicable date, subject to the requirements of Section 2.4 above. However, should the Services, Work, or both, be only suspended, the Joint Venture shall remain in effect during the period of such suspension.

2.6 The Parties agree that they shall cause the Joint Venture to sign the Contract promptly upon its being tendered for signature in a form mutually agreed upon by the Parties and the Owner.

2.7 Scope of Services or Work. The Services, Work, or both, to be performed by the Joint Venture shall generally be of the type and nature described in Exhibit A.

Article 3: Operation of the Joint Venture

3.1 If required by applicable law or regulation, the Joint Venture shall be registered and licensed as a business in the jurisdiction where the Joint Venture's principal office is located.

3.2 The principal business address of the Joint Venture shall be ______. Services may be performed in the Owner's offices, in the Joint Venture office, in the respective offices of the Parties or DALLAS ISD as authorized, at the project site or at such locations as the Parties may mutually agree upon.

3.3 All correspondence from the Owner regarding the Contract shall be sent to the Project Manager and/or ______ at the principal business address of the Joint Venture, with a copy provided to each of the Joint Venture members.

3.4 Initial Proposal Effort. Each Party will participate in preparing the Proposal required for the Contract under the direction of the Project Manager. Each Party will bear its own labor and travel costs associated

with this effort. Third party direct costs for expenses and other services such as video imaging, photography, document development, technical writing and editing, graphics, printing, and reproduction, as well as any specialty sub-consultant services, shall be shared between the Parties in proportion to each Party's Agreed Percentage of Participation as specified in Article 5; provided, however, that all Parties must pre-authorize any such expenditure.

3.5 Integrated Services. During the construction and pre-construction phase of the project, the Parties intend to perform the Services as an integrated organization with each Party providing competent personnel to the Joint Venture consistent with the staffing resource plan set forth in Exhibit B and as necessary to enable the Joint Venture to successfully perform the Services, Work, or both, in accordance with the terms of the Contract. In addition, and at the direction of the Management Committee, Services may be performed, in whole or in part, by consultants retained by the Joint Venture, one or more of the Parties, or both, and Work may be performed, in whole or in part, by subcontractors retained by the Joint Venture, one or more of the Parties, or both. Notwithstanding the foregoing, personnel assigned to the Joint Venture shall remain on the payroll of the assigning Party. The staffing resource plan may be amended from time to time as may be deemed necessary by the Management Committee. A Party may not remove from the Project or reassign to another project any "key personnel" listed on Exhibit B without the prior consent of the Management Committee and notice to the Director of the MWBE Department or his/her designee within five (5) business days from the date of removal or reassignment.

3.6 Subject to the limitation noted above with respect to key personnel, in the event that an individual assigned to the Project is unable or unwilling to perform the Services, the Work, or both, in a professional and timely manner, or if the Owner directs the Joint Venture to remove a particular individual from the Project, or if the Project Manager, in the good faith exercise of his/her discretion, determines that an individual should be removed from the Project, then the assigning Party shall replace such individual with a qualified employee reasonably acceptable to the Management Committee and, if applicable, the Owner. If the assigning Party cannot furnish a qualified substitute candidate within a reasonable period of time after the vacancy arises, then the vacancy shall be filled by an individual employed by the other Party.

- 3.8 In addition to the other duties set forth herein, the Project Manager is to:
 - 3.8.1 Serve as the primary interface between the Joint Venture and the Owner;
 - 3.8.2 Ensure compliance with the DALLAS ISD MWBE Program requirements
 - 3.8.3 Submit Change Orders to the Owner;
 - 3.8.4 Report monthly, or as requested, to the Management Committee;
 - 3.8.5 Oversee the Services, Work, or both, of the Joint Venture;
 - 3.8.6 Prepare and maintain Project schedules;
 - 3.8.7 Consult and confer with the Deputy Project Manager; and
 - 3.8.8 Perform such additional duties as directed by the Management Committee.

3.9 Deputy Project Manager. The Deputy Project Manager shall be designated by the MWBE partner and will support and assist the Project Manager in the performance of his/her duties as set forth above. Subject to Owner approval (if required), _______ shall serve as the Deputy Project Manager during the term of the Contract, subject to the continuing approval of the Management Committee. If this individual, as determined by the Owner or the unanimous consent of the Management Committee, is unable to satisfactorily perform his duties as Deputy Project

3.10 Manager, the Management Committee will nominate an employee of ______ MWBE Joint Venture Partner to serve as the successor Deputy Project Manager.

Article 4: Joint Venture Organization

4.2 The Project Management Committee ("Management Committee") will be comprised of two or three (____) representative from _____, and one (_) representative from . The Parties individual representatives designated to comprise the Management Committee are referred to herein as the primary representative(s). The Managing Business Party shall designate an individual on the Committee as the Chairperson to manage the administrative and management functions of the Committee. In addition to its primary representatives or representative, each Party shall also name an alternative representative for its primary representatives or representative. A Party's alternative representative shall act in the capacity of its primary representative should its primary representative be unable to fulfill his or her duties as described herein. If not identified below, representatives shall be designated within thirty (30) days of the date of this Agreement by written notice to the other Party. A Party may change its designated representative(s) or alternate representative upon ten (10) days written notice to the other Party. No proxies shall be permitted. Each Party's designated primary and alternate representative(s) shall have full power and authority to act for and on behalf of the Party so appointing them with respects to all matters coming before the Management Committee.

4.3 Meetings of the Management Committee shall not be held unless each Party is represented. If the Parties representatives are not all available, the meeting shall stand adjourned and will be re-scheduled to the next earliest date acceptable to all Parties. While the Management Committee will always attempt to meet in person, telephonic or online meetings shall be allowed. The Parties shall endeavor to provide five (5) days written notice to each Party of scheduled meetings (in person, online or by telephone), except in the event of an emergency or immediate need. A Party's refusal or repeated failure to attend any scheduled Management Committee meeting shall at the other Party's sole discretion, constitute of default under this Agreement subject to the review and approval of the MWBE Director or his/her designee.

4.4 representative(s) shall each have one (1) vote on matters coming before the Management Committee. The primary representative(s) from shall each have one (1) vote each on matters coming before the Management Committee. A vote shall not be taken until each representative of a Party has communicated its position and expressed its questions, concerns, approval or disapproval of a matter. Each party agrees to work collaboratively to make decisions and solve problems in the best interest of the Joint Venture. In the event the Management Committee members cannot reach a unanimous decision on the business and operational matter(s) at hand requiring a Management Committee vote or resolution, the Chairperson will make the decision as majority partner, taking into account the risks and financial impacts to all parties and the Joint Venture. The final decision is applicable for all matters except for scope changes made by the Owner or settlement of claims and disputes. In these cases, if the Management Committee cannot develop a mutually agreeable solution, they shall submit any dispute to the Chief Executive Officer of the Joint Venture partners as provided for in Article 16. If, in the Project Manager's good faith judgment, immediate action is required in order to meet the Joint Venture's obligations under the Contract, the Project Manager may act without waiting for the resolution of the dispute,

subject to written notice and each Party's reservation of their respective right to seek recovery for the financial consequences arising from such action pending final resolution of the dispute. If any Party is in default (as defined in Article 12) under this Agreement, during the time of such default, its representative(s) shall not vote upon any issue, and such representative(s) shall not be included in the computation of eligible votes. Within one week of the Management Committee meeting, written meeting minutes regarding items discussed and actions taken at the meeting shall be prepared and distributed by the Chairperson of the Management Committee.

4.5 The Project Management Committee shall meet with the Project Manager or Senior Project Manager) and the Deputy Project Manager or Assistant Project Manager (and other project staff as mutually agreed upon by the Management Committee) quarterly or more frequently if deemed necessary.

4.6 The Project Manager shall have authority to conduct the business of the Joint Venture in accordance with the terms of this Agreement, but shall not have authority to, and shall not directly or indirectly without the unanimous consent and prior written approval of the Management Committee:

- 4.6.1. Enter into on behalf of the Joint Venture any third-party contractual arrangements or cause the Joint Venture to assume, incur, or become liable for any other obligations;
- 4.6.2. Make any investment in any other person or entity; make loans or guarantees, or otherwise extend or pledge credit to others;
- 4.6.3. Confess any judgment against the Joint Venture or compromise any debt due the Joint Venture except upon receipt of full payment;
- 4.6.4. Make any election for the Joint Venture under the then-current Internal Revenue Code, as amended, or any other applicable income tax legislation from time to time in force;
- 4.6.5 Commence any claim against the Owner with respect to amounts due under the Contract;
- 4.6.6 Commence any litigation; defend any action or claim against the Joint Venture by a third party; appeal any judgment or decision; or settle any litigation, action or claim to which the Joint Venture is a party;
- 4.6.7 Cause to be organized or acquired in whole or in part by the Joint Venture any corporation to carry out any activities of the Joint Venture; or
- 4.6.8 Exercise any of the authority vested in the Management Committee pursuant to Section 4.9 below.

4.7 In case it is necessary to settle a matter prior to the next scheduled or specially called meeting, the representatives may agree on a decision by notice to each other in accordance with the provisions of Article 23. Such decision will be included in the minutes of the next meeting of the Management Committee.

4.8 The representatives shall be deemed to be acting on behalf of his or her respective Party and no representative shall be liable to the Parties by reason of his or her actions as a member of the Management Committee, except where such representative's action constitutes gross negligence or actual fraudulent or dishonest conduct.

4.9 The Management Committee may delegate, in writing, such of its responsibilities and duties as it deems appropriate to the Project Manager, Senior Project Manager or the Managing Business Party, except that the Management Committee must act, *inter alia*, on the following matters of major consequence:

4.9.1 Timing and amount of distribution of Joint Venture profits and the Management Committee's right to demand additional cash reserves to cover potential losses;

- 4.9.2 Amount of revenue reserves, cash reserves, and contingent cost reserves to be retained by the Joint Venture;
- 4.9.3 Voluntary liquidation of the Joint Venture;
- 4.9.4 Third Party contractual arrangements or the incurring of other obligations in excess of \$10,000 by or on behalf of the Joint Venture;
- 4.9.5 Designation of a successor Project Manager or Deputy Project Manager;
- 4.9.6 Resolution of a dispute first referred to the Management Committee pursuant to the provisions of Article 16;
- 4.9.7 Review and approve all contractual transactions between the Parties (and their affiliates) and the Joint Venture; and
- 4.9.8 Take such other action and exercise such other authority as the Management Committee deems necessary to cause the Joint Venture to achieve its purposes consistent with good business practices and in compliance with all applicable laws and regulations.

4.10 The Joint Venture shall not have employees. The Parties shall provide all necessary personnel. A Party, at its own cost and expense, may retain necessary staff on an independent consultant basis to meet its personnel needs.

Article 5: Interests of the Parties

5.1 Except to the extent that this Agreement expressly provides to the contrary, the interests of the Parties in (i) any and all gains, losses, and liabilities that may result from the performance of the Contract or the Agreement, or both, (ii) any and all property, equipment, and other assets acquired by the Joint Venture, and (iii) any and all monies received in connection with the Contract, shall be determined proportionately in accordance with the Party's Agreed Percentage of Participation as set forth below.

Agreed Percentage of Participation



5.2 The Parties acknowledge and agree that all liabilities and risks associated with the Project shall be shared pro rata according to the Agreed Percentage of Participation unless otherwise provided for herein. The MWBE Joint Venture partners proportionate share in the ownership shall be commensurate with their capital contribution, control, management, risks and ownership interest. For the avoidance of doubt, a Party's profits and losses arising out of the performance of self-performed subcontracting services, work, or both, for which it is responsible under this Agreement shall not be considered profits and losses of the Joint Venture.

5.3 The Parties shall appoint a Project Manager or Senior Project Manager to maintain and oversee the day to day work under the Contract. The Parties shall jointly select any necessary additional Project Managers, the Assistant Project Manager (the "APM") and/or Superintendents. The selected Project Managers and Superintendents shall be available at the Project site daily to supervise the work under the Contract. The MWBE Joint Venture Partner shall be assigned staff under the Contract in proportionate share of their respective ownership interest in the Joint venture. The Project manager shall submit the final staffing matrix confirming compliance with this section including all Project managers, Assistant Project managers and Superintendents to DALLAS ISD's MWBE office within 30 days of the Notice to Proceed.

5.4 The clear and distinct portion of the Scope of Work to be performed by ______, the MWBE Joint Venture partner and the estimated value of those services commensurate with the percentage ownership interest is as follows:

A detailed delineation of the Joint Ventures duties is outlined in Exhibit "A".

[Please note that if the MWBE's scope of work is described as "participate in", "advise about", "assist in" or "consult", the work shall not be considered distinct or clearly defined for the purpose of analyzing the joint venture participation]

Article 6: Execution of Bonding and/or Guarantees

6.1 Each of the Parties agrees to execute all applications and indemnity agreements required by its sureties upon any bond or bonds required in connection with the Proposal and/or the Contract. Failure of a Party to execute any documentation necessary to effectuate the intent of this Article 6 shall constitute a default in accordance with Article 12 and entitle the non-Defaulting Party(ies) to appropriate relief as provided therein.

6.2 The Joint Venture partner(s) may provide co-surety bond or bonds in proportionate percentage to their ownership in the Joint Venture and to other Parties are applicable in a form acceptable to the Owner. The Joint Venture may also provide in a form acceptable to the Owner any bond or bonds in the name of the Joint Venture in lieu of the co-surety arrangement; provide an Up Front Joint Agreement (SAA Form #1), and an executed copy of the indemnity agreement signed by all of the Parties associated with the SAA Form #1.

Article 7: Working Capital

7.1 All necessary working capital, when and as required for the performance and prosecution of the Contract or operation of the Joint Venture as determined by the Project Manager and approved by the Management Committee, shall be furnished by the Parties in a timely manner and proportionately in accordance with their respective interests as set forth in Article 5. Each of the Parties recognizes that the failure of any Party to contribute its full proportionate share of working capital will have serious adverse consequences for the Joint Venture and imposes an unfair burden upon the other Party(ies). As to such working capital contribution, each of the Parties waives any rights of set-off it might otherwise possess and agrees to make the working capital contributions without set-off or deduction of any type. If any Party borrows funds to meet its obligation hereunder, such borrowing shall be the sole and separate obligation of the Party and shall not be the debt or obligation of the Joint Venture. No Party or its representatives shall have the power to pledge the credit of any other Party.

7.2 Any capital contributions requested by the Project Manager from the Parties shall be subject to the approval of the Management Committee. If such request is approved, the Management Committee shall give written approval thereof, with the manner of computation, to each Party. If, within thirty (30) days of receipt of such notice, either Party fails or is unable to provide its proportionate share of the funds required by the Joint Venture, such non-contributing Party shall be in default of this Agreement. In the event the non-contributing Party fails to cure its default within seven (7) days of the date of receipt of notice, the contributing Party shall be reimbursed from any profit due the non-contributing Party for the total amount of the funds contributed, but the ownership interest of the Joint Venture shall not be adjusted or changed unless the non-contributing Party is determined to be in default and fails to cure. The Management Committee has the discretion to waive a default under this Section.

Article 8: Books and Records, Accounting and Bank Accounts

8.1 Books and Records. The Parties acknowledge and agree that ______ will be the Managing Business Party and will provide at no additional costs the accounting and financial services required of the Joint Venture as approved and determined by the Management Committee. The Managing

Business Party, on behalf of the Joint Venture, shall keep proper books, records and accounts in which full, true and correct entries will be made of its transactions, on an accrual basis, in accordance with generally accepted accounting principles, showing all costs, expenditures, sales, receipts, assets and liabilities, and profits and losses of the Joint Venture, and all other records required appropriately to reflect the conduct of the Joint Venture's affairs and the distributions provided for in Article 5. Each of the Parties shall be entitled to have its representatives examine and make copies (at its own expense) of any of the books or records of the Joint Venture at any reasonable time and without notice. The Joint Venture shall permit the use of electronic copies of its books and records. The books and records of the Joint Venture are to be retained after dissolution of the Joint Venture for such period or periods as may be required by law or the Contract, whichever is greater. The costs associated with accounting and record keeping for the Joint Venture (including federal reporting under Section 9.2 and tax matters under Section 17.6) shall be a Joint Venture cost.

8.2 Fiscal Year. The fiscal year of the Joint Venture shall commence on ______ and end on

8.3 Audit. If required by the Management Committee or the Owner, the Managing Business Party shall employ, at the expense of the Joint Venture, an independent auditor acceptable to the Management Committee to conduct an audit of the financial statements, including the balance sheet and statements of income and cash flows and disclosures required under generally accepted accounting principles, of the Joint Venture each year and report to the Parties within ninety (90) days after the expiration of the fiscal year its opinion on such financial statements. Further, each Party may at its option and sole expense perform an annual audit of the Joint Venture books and records.

- 8.4 Reports. The Managing Business Party shall deliver to each Party:
 - 8.4.1 Within thirty (30) days after each month period, a balance sheet and statement of income of the Joint Venture for the month;
 - 8.4.2 Within thirty (30) days after the end of each fiscal quarter, a statement of cash flow for the Joint Venture;
 - 8.4.3 At least two (2) weeks prior to each quarterly Management Committee meeting, a summary of the monthly financial information for the most recent completed months, and projections for the next three (3) quarters; and
 - 8.4.4 With reasonable promptness, all such other information, reports, and projections as from time to time may reasonably be requested by either Party.

8.5 Bank Accounts. A separate bank account in the name of the Joint Venture will be established by the Joint Venture. The bank account will require the signature of an authorized representative of each Party or his or her designee for withdrawal by check or documented approval of an authorized representative of each Party or his or her designee for withdrawal by electronic means. All payments due the Joint Venture for performance of the Contract will be deposited in the account and all expenses incurred under the Contract will be paid from the account. All capital contributions made in cash and all of the Parties' other cash receipts shall be deposited in such account under such terms as directed by the Management Committee. No petty cash accounts for the Joint Venture are authorized. The Managing Business Party shall reconcile the bank account monthly and deliver a report to the Management Committee.

8.6 Disbursements from Bank Accounts. All withdrawals from the Joint Venture account will require written invoices, receipts, vouchers, or other acceptable documentation. All checks, drafts, or other orders of the payment of money, and all notes or other evidence of indebtedness issued in the name of the Joint Venture shall be signed by two (2) persons, each representing one of the Parties. Each Party shall designate an individual or individuals authorized on its behalf to provide such signatures.

8.7 Closing of Bank Account in Event of Default. In case of a material default by one of the Parties

under Article 12 of this Agreement, the then-existing Joint Venture account may be closed by the non-Defaulting Party(ies) and a new account opened in the name of the Joint Venture, but under the sole direction and control of the non-Defaulting Party(ies). Funds from the closed account shall be transferred to the new account and the then-existing account shall be closed. In such an event, the defaulting Party(ies) will no longer have any rights to the operation of the new bank account, unless and until it cures its default to the satisfaction of the non-Defaulting Party(ies).

8.8 Loans. Without the prior written consent of all Parties, the Joint Venture, the Management Committee, or any Party shall not:

- 8.8.1 directly or indirectly, borrow money or become otherwise obligated upon, or liable for, any monies borrowed in the name of the Joint Venture or the other Party(ies);
- 8.8.2 guarantee or act as surety for any obligation or liability (whether for borrowed money or otherwise), for any other person, firm or corporation.

8.9 Accounting Decisions. Subject to Section 8.1 above, all decisions for the Joint Venture as to accounting principles shall be made by the Management Committee consistent with Generally Accepted Accounting Principles ("GAAP") with the concurrence of accounting or tax experts from each Party.

8.10 Final Accounting. Upon completion of the Project, payment of all sums due under any contract pertaining to the Project, and settlement of all outstanding obligations and liabilities on the part of the Joint Venture and their respective affiliated subcontractors, the Management Committee shall arrange for a final account to be prepared showing the total net profit earned, or loss incurred, by the Joint Venture. Unless otherwise agreed by the Parties, such final account shall be audited by a firm of accountants and agreed to by the Management Committee.

Article 9: Additional Obligations of the Parties

9.1 The Joint Venture shall, in good faith, commit to achieve the minority and women owned business subcontracting goals as set forth within the Contract. The Joint Venture also agrees to comply with the MWBE Program guidance, rules and regulations.

9.2 Each Party shall use good faith efforts to provide and make available its expertise, technical resources, and information to the Joint Venture to effectuate the intent herein and in furtherance of satisfying the Joint Venture's obligations to the Owner.

9.3 Contracting and Procurement. The Management Committee or its designee shall administer and manage all contracting, procurement, and financial activities for the Joint Venture and periodically update the Parties on the status of such activities. For the avoidance of doubt, the foregoing activities relate solely to the contracting, procurement, and financial activities of the Joint Venture and not such activities as undertaken by the Parties in furtherance of the Services, Work, or both, for which they are responsible under a Task Order Agreement.

9.4 Ownership Interest. Subject to the prior written approval of the District's M/WBE Department, each Party's Ownership interest may be adjusted from time to time as provided in this Agreement. For purposes of this Agreement, the term "Pro Rata" means the ratio determined by dividing the Ownership interest of a Party to whom a particular provision of this Agreement is stated to apply by the aggregate Ownership interest of all the Parties.

9.5 Reporting Requirements. The Management Committee or its designee shall administer and manage all required state, local, and federal reporting activities for the Joint Venture, including MWBE goals, all in accordance with applicable DALLAS ISD regulations and guidelines. Each Party will be responsible for providing any required reporting information to the Managing Business Party in a timely manner to allow the timely submission of the combined data from each Party to the appropriate federal agency and/or electronic reporting system.

9.6 The Parties agree that, during the term of this Contract and for a period of one year thereafter, no Party to this Contract shall in any way intentionally induce or persuade an employee of another Party to this Contract to become an employee or agent of such Party.

Article 10: Provision of Materials, Equipment, Supplies and Services

10.1 The Parties intend that all materials, equipment, supplies, and services required in connection with the Contract will be provided by the Parties and that the Joint Venture will not acquire any materials, equipment, supplies, or services directly. In the event the Joint Venture shall procure any such materials, equipment, supplies, or services, such procurement shall be in accordance with any procurement guidelines, directives, and procedures issued or approved by the Management Committee. In addition, and to the extent applicable, any procurement activities by the Parties, Joint Venture, or both shall be conducted in accordance with applicable laws and regulations, as implemented through the Contract.

10.2 If any Party provides equipment or temporary facilities to the Joint Venture, the Party shall insure or self-insure such equipment or temporary facilities and the cost of such insurance or self-insurance shall be included in the equipment or facilities rate quoted to the Joint Venture. The Joint Venture and the other Parties will be identified as an additional insured on any such insurance when appropriate, as determined by the Management Committee.

Article 11: Compensation

11.1 In accordance with the billing period provided in the Contract, unless otherwise approved by the Management Committee, each Party shall prepare and submit by the tenth (10th) of each month, for Work performed during the prior month, invoices to the Joint Venture.

11.2 Each Party shall submit invoices in the manner required under the Contract. Each invoice shall be subject to the terms of the Contract.

11.3 The Project Manager, on behalf of the Joint Venture, will in turn prepare and submit invoices to the Owner in accordance with the provisions of the Contract and any applicable task order. Unless expressly agreed to by the Parties and permitted pursuant to the terms of the Contract, the Joint Venture shall not add any profit, fee, or other amounts to the invoices submitted by the Parties. The Parties may invoice the monthly staff costs for personnel incurred directly in the management and administration of the project subject to any restrictions in the terms of the Contract.

11.4 Subject to the provisions of Section 4.6, the Joint Venture will, upon receipt of payment from the Owner, deposit same in the Joint Venture bank account and within five (5) business days issue payments against such account to each Party for the amount(s) invoiced by each Party to the Joint Venture and allowed by the Owner, less any withholdings authorized by this Agreement and directed by the Management Committee. In the event the Owner pays less than the full amount due with respect to any invoice, such shortfall shall be allocated to the Party responsible for performing the specific Services, Work, or both, for which payment was withheld or, in the absence of information reasonably sufficient to determine the basis for such short payment, any shortfall shall be allocated between the Parties in proportion to their respective shares of the applicable invoice. No Party will unreasonably restrain or refuse to authorize withdrawal of funds for payment of proper invoices relating to performance of the Services, Work, or both.

11.6 Expenses incurred by the Parties in self performing Work under a Subcontract or Task Order Agreement shall not be considered Joint Venture expenses and, to the extent allowed under the Contract, may be included by the Parties in their respective invoices to the Joint Venture for Services provided, Work performed, or both. Unless stated otherwise in this Agreement or authorized in writing by the Management Committee, personnel expenses not directly related to the performance of the Project including but not limited to back office functions such as human resources, legal counseling and tax compliance of the Parties shall not be considered a Joint Venture expense.
11.7 Each Party shall have full and sole responsibility for the payment of any taxes, duties, fees, or assessments of any nature whatsoever levied upon it individually in connection with its Services, Work, or both, under a Task Order Agreement, including any personal income taxes levied or imposed on any of its employees or personnel or any of its subcontractor's employees or personnel.

11.8 All personnel involved in the performance of the Services, Work, or both, shall be employed by the Parties and shall remain in the employ of the respective Party. Each Party shall advance and pay all payroll costs and expenses incurred by reason of their respective personnel working in connection with the performance of the Services, Work, or both, and each Party agrees to indemnify and hold the Joint Venture and each other Party harmless from any claims and liabilities arising out of the responsibilities of that Party toward its employees, any of its related companies, and any of their personnel under all applicable laws, including labor and tax laws.

11.9 If a Party, with the prior written approval of the Management Committee, maintains a Joint Venture office dedicated exclusively for the management and administration of the DISD project independent of the Parties primary business office(s) and any of the other Party's(ies) personnel are located at the office during the duration of the project, the host Party may issue a quarterly invoice directly to the visiting Party(ies) for the pro rata cost of office space and furnishings utilized by visiting Party's(ies) personnel during the time they are engaged in the performance of Services, Work, or both, for this Joint Venture at such Joint Venture office.

11.10 The basis for the calculations of such invoices under Section 11.9 above shall be determined by the Management Committee. Such invoices shall not constitute a billing to, or on behalf of, the Joint Venture, but rather a billing directly between the Parties. The visiting Party shall pay such invoices within thirty (30) days of receipt of such invoice.

11.11 When Joint Venture funds are in excess of the needs of working capital required for the operation of the Joint Venture (as determined by the Management Committee), such excess funds, if any, shall be first applied to the return of funds advanced until such advances shall have been entirely repaid, and the balance of such excess shall be distributed as provided in Section 11.13 below, to each Party in accordance with such Party's Agreed Percentage of Participation as reflected in Article 5.

11.12 The Management Committee shall quarterly review the progress of the Services, Work, or both, and the Joint Venture's financial condition to determine whether Joint Venture profits, if any, should be distributed. If the Management Committee determines that earned profits and reserves for contingencies, including cash contributions, are adequate to meet the Joint Venture's needs, it may direct the Managing Business Party to distribute earned Joint Venture profit to the Parties based upon their respective Agreed Percentage of Participation. For the avoidance of doubt, payments to a Party for self-performed services related to the construction project, Work performed, or both, pursuant to a Task Order Agreement shall not be considered distributions of Joint Venture capital or profits.

11.13 The Management Committee shall establish cash reserves and revenue reserve funds to be retained by the Joint Venture from time to time in order to assure adequate funding for all Joint Venture obligations as they relate to future profits, losses, liabilities, and contract performance. At the direction of the Management Committee, the Project Manager shall invoice each of the Parties for approved reserves and capital contributions.

Article 12: Default and Insolvency

12.1 If a Party shall be in default hereunder (as specified in Sections 4.3 (Management Committee meetings), 7.2 (capital contributions), 9.4 (Owner-issued notice of default), 25.8 (breach of covenants), or 25.9 (anti-bribery laws), or Article 15 (assignment and change of control)), and fail to promptly (but in no event more than seven (7) days thereafter) cure such default after written notice or demand; cease or otherwise fail to timely pay for goods or services (including labor), and fail to promptly (but in no event more than seven (7) days thereafter) cure such default after written notice or demand; cease to operate or terminate its business affairs; institute an insolvency proceeding under applicable law; permit the entry of

any order for relief under Chapter 7 of the Bankruptcy Code; or fail to cure a default hereunder after entry of an order for relief under Chapter 11 of the Bankruptcy Code, (such Party being hereinafter referred to as "Defaulting or Insolvent Party"), then from and after such date:

- 12.1.1 All acts, consents and decisions with respect to the performance of the Contract or the management of the Joint Venture shall thereafter be taken solely by the remaining Party without considering the Defaulting or Insolvent Party.
- 12.1.2 The participation of the Defaulting or Insolvent Party in the profits of the Joint Venture shall be limited to that proportion which the Defaulting or Insolvent Party's contributions to the working fund of the Joint Venture bear to the total of such contributions as same may be modified by and subject to the provisions of Section 7.2, but the Defaulting or Insolvent Party shall be charged with, and shall be liable for, any and all losses that may be suffered by the Joint Venture under the Contract, or any additions or supplements thereto or modifications thereof, to the full extent of the Defaulting or Insolvent Party's Percentage of Participation, set forth in Article 5.
- 12.1.3 The non-Defaulting Parties shall have the right to take over and complete the Services, Work, or both. Without limiting the generality of the foregoing, the non-Defaulting Parties may, for the purpose of completing the Work, enter upon the site and take possession of all materials, equipment, scaffolds, tools, appliances and other items thereon, which have been purchased or provided for the performance of the Work, all of which the Defaulting or Insolvent Party hereby transfers, assigns and sets over to the non-Defaulting Parties for such purpose, and to employ any person or persons to complete the Work and provide all of the required labor, services, materials, equipment and other items. The non-Defaulting Parties may complete the Services in whatever fashion it deems most efficient and shall have the right to use the existing work product for purposes of completing the Project. In such event, the non-Defaulting Parties shall receive any and all payments, including fees, which would otherwise be due for such Services, Work, or both, and apply the proceeds thereof (i) to cover all expenses incurred by the non-Defaulting Parties in taking over and completing (by use of its own forces, subcontracting or otherwise) such Services, Work, or both and (ii) to establish a contingency fund to cover any and all outstanding warranties or other obligations of the non-Defaulting Parties with respect to such Services. Work, or both, or any other uncured defect or deficiency for which the non-Defaulting Parties are responsible.
- 12.1.4 The non-Defaulting Party shall have the right to establish a new Joint Venture bank account in accordance with Section 8.7 of this Agreement.

12.2 If a Party is in material default of the requirements of the Contract, including (i) failure to perform or progress the Services within the timeframe specified in the Contract; (ii) serious or repeated breaches of the safety requirements; or (iii) is in breach of the requirements of the Services to be provided, the Work to be performed, or both, by that Party and fails to cure such breach within seven (7) days after written notice or demand, then from and after such date, the non-breaching Party shall have the rights afforded it under Subsections 12.1.1 through 12.1.3 above. Nothing in this Agreement shall be interpreted or construed to relieve the defaulting Party from their obligations under this Agreement or their obligations under the Contract with the Owner.

12.3 In the event of a default of this Agreement, the non-Defaulting Parties shall additionally be entitled to exercise all applicable remedies available to it, whether at law, in equity or otherwise, including an action to recover the losses sustained in excess of its proportionate share hereunder, specific performance, and the right to declare the Joint Venture dissolved and terminated without the necessity for judicial determination. Upon such dissolution, the non-Defaulting Parties shall immediately commence to wind up the Joint Venture's affairs, including completion of the aforesaid Contract, and shall liquidate the assets of the Joint Venture as promptly as reasonably possible.

Article 13: Liabilities

13.1 The liability of the Parties under this Agreement shall be joint and several. Notwithstanding the foregoing, as between the Parties, any liability (whether to the Owner or any third party) that the Joint Venture or any Party (including its parental guarantor, if any) may incur arising from or relating to the Contract or the performance of Services, Work, or both, under the Contract or this Agreement shall be allocated as between the Parties in proportion to the Agreed Percentage of Participation of each Party, except as set forth below:

- 13.1.1 Liability or related losses caused by the negligence, gross negligence, willful misconduct, fraud, or violation of legislation, laws, ordinances, codes or regulations of a Party (including its officers, employees, agents, representatives, and subconsultants and subcontractors at any tier), shall be assumed by such Party;
- 13.1.2 In the event of a default by a Party, liability or losses sustained by the Joint Venture or the non-Defaulting Parties shall be assumed solely by the defaulting Party;
- 13.1.3 Liability or related losses resulting from claims made by an employee of a Party against the Joint Venture or each other Party based on the employee-employer relationship, including the payment of unemployment taxes, withholding taxes, and employment benefits, will be solely assumed by the Party by whom such person is employed;
- 13.1.4 Liability or related losses traceable directly to and caused by a Party (including its officers, employees, agents, representatives, and subconsultants and subcontractors at any tier) shall be assumed by that Party;
- 13.1.5 In the event of a breach by a Party in the performance of its obligations under this Agreement, liability or losses sustained by the Joint Venture, the non-breaching Party, or both, as a result of such breach shall be assumed solely by the breaching Party; and
- 13.1.6 Liabilities or related losses relating to third-party claims resulting from Services provided, Work performed, or both, jointly by the Parties (including their respective officers, employees, agents, representatives, and subconsultants and subcontractors at any tier) shall be allocated to each Party in accordance with each Party's respective, relative degree of fault or responsibility, as determined by an allocation of fault pursuant to either an agreement between the Parties or a finding made by the trier-of-fact in a judicial proceeding.

13.2 With respect to the liabilities allocated in Subsections 13.1.1 through 13.1.5 above, the Party to whom such liability is allocated shall defend, indemnify, and hold harmless the Joint Venture and each other Party from any and all such claims, losses, or liabilities set forth in such subsections (including reasonable attorneys' fees). With respect to the liabilities allocated in Subsection 13.1.6 above, each Party agrees to defend, indemnify, and hold harmless the Joint Venture and each other Party from any and all such claims, losses, and liabilities (including reasonable attorneys' fees) that are in excess of such other Party's relative degree of fault or responsibility, as determined by an allocation of fault pursuant to either an agreement between the Parties or a finding made by the trier-of-fact in a judicial proceeding.

13.3 With respect to any claims, losses, and liabilities not covered by Sections 13.1.1 through 13.1.6 above, each Party agrees to defend, indemnify, and hold harmless the Joint Venture and each other Party from any and all such claims, losses, and liabilities (including reasonable attorneys' fees) arising from or related to the Contract or the performance of the Work, Services, or both, under the Contract, or this Agreement that are in excess of such other Party's Agreed Percentage of Participation, irrespective of the contributory fault, negligence, or strict liability of the indemnified Party(ies).

13.4 If a dispute arises between the Parties as to the allocation of liability and/or related losses each Party should bear, each Party shall provisionally assume a share of such liability in proportion to its Agreed

Percentage of Participation until the dispute is resolved.

13.5 For any such claims, losses, and liabilities, the indemnifying Party's obligations regarding any defense thereof include only the reimbursement of the indemnified Party's(ies) reasonable defense costs incurred to the extent of the indemnifying Party's actual indemnity obligations hereunder.

Article 14: Insurance

14.1 The Parties agree that they will acquire all necessary insurance in connection with the award and performance of a Dallas ISD Contract, including but not limited to general liability or professional liability, builder's risk, worker's compensation or any other insurance required under the Contract. [Optional provisions in the alternative, the Parties agree to provide the specific operational insurance coverage as follows:

- 14.1.1 Workers' Compensation for statutory limits in compliance with the applicable state and federal laws;
- 14.1.2 Employer's Liability with a limit of \$_____;
- 14.1.3 Commercial General Liability, including Products and Completed Operations, Contractual Liability, and Broad Form Property and Personal Injury Liability, with a combined single limit of \$_____ per occurrence and in the aggregate;
- 14.1.4 Automobile Liability Insurance with a combined single limit of _______ for bodily injury and property damage with respect to vehicles either owned, non-owned, and leased by a Party in the performance of Services under the Contract or this Agreement;
- 14.1.5 Commercial General Liability Insurance in the amount of ______ per claim and in the aggregate______;
- 14.1.6 Umbrella Liability in excess of (.2), (.3) and (.4) above, with an aggregate limit of ________ if required by the Contract. (Note: limit requirements can be satisfied by any combination of Primary and Excess coverage); and
- 14.17 Any insurance written on a "claims made" basis shall (a) have a retroactive date of no later than the earlier of the date of this Agreement or the earliest commencement of the Party's Services or Work in relation to the Project and (b) be maintained for at least 3 years after the latest completion of the Services or Work, or termination of the Contract, whichever is later.
- 14.1.8 Each Party shall endorse its Commercial General Liability, Automobile Liability, Contractor's Pollution Liability and, if applicable, Umbrella insurance policies to provide that the Joint Venture is an additional insured under its policies for that Party's interest in the Joint Venture. The other Party and, if required by the Contract, the Owner, shall also be included as an additional insured. Each Party's Professional Liability insurance policy shall, if necessary, be endorsed to include the liability of the insured arising out of the insured's interest in the Joint Venture.]

14.2 The policies and limits specified by Dallas ISD in the Contract represent the minimum coverage to be carried by each of the Parties hereunder. Notwithstanding the foregoing, if the Contract requires the Joint Venture and/or the Parties to maintain additional coverage and/or increased limits, the Parties shall be required to procure such additional insurance in accordance with the terms of the Contract.

14.3 Each Party hereby waives and shall obtain from all of its Commercial General Liability, Automobile Liability, Contractor's Pollution Liability and, if applicable, Umbrella insurance carriers a waiver of any rights of subrogation against each other Party and their directors, agents, employees, and assignees, with respect

to risks associated with the Services provided, Work performed, or both, pursuant to the Contract.

14.4 Unless noted otherwise or with the written approval of the Management Committee, the cost of any insurance required herein (including any deductibles and self-insured-retention amounts) shall be the responsibility of the Party procuring such coverage.

14.5 The Management Committee, in its discretion, shall be responsible for obtaining insurance for the Joint Venture for management risks such as Directors & Officers Liability, Fiduciary Liability, and any other insurance coverage deemed appropriate by the Management Committee, the cost of which shall be an expense of the Joint Venture.

14.6 Absent written approval from the Management Committee, all lower-tier subcontractors, whether retained directly by the Joint Venture or by a Party to the Joint Venture, shall be required to comply with the provisions of this Article 14.

Article 15: Assignment or Change in Control

15.1 Each Party is entering into this Agreement in reliance upon each other Party being and remaining a party to this Agreement. No Party to this Agreement shall, directly or indirectly, sell, assign, transfer, dispose of, pledge or hypothecate its rights, interest or obligations hereunder, or any part thereof, whether directly or by merger with or acquisition by another entity, in this Agreement, the Joint Venture, the Contract, or in any property or monies of the Joint Venture, except with the prior written consent of each other Party, and, if required by the Contract, with the prior written consent of the Owner. A "Change in Control" shall mean the sale of all or substantially all the assets of a Party; any merger, consolidation or acquisition of a Party with, by or into another corporation, entity or person; or any change in the ownership of more than fifty percent (50%) of the voting capital stock of a Party.

15.2 No Party shall, without the written consent of each other Party, assign, transfer or sublet any claims, causes of action or rights against each other Party arising from or under this Agreement; or any proceeds from claims arising from or under this Agreement or the Contract as security, collateral or the source of payment for any notes or liabilities to any third party; or any control of any claims or causes of action arising from or under this Agreement or the Witten consent of each other Party.

15.3 Any such attempted sell, assignment, transfer, disposal, pledge, hypothecation, or sublet without the written consent of each other Party shall be void and confer no rights upon any third person and shall constitute a default hereunder. The provisions of this Article shall survive the completion or termination of this Agreement for any reason and shall remain enforceable between the Parties.

Article 16: Disputes

16.1 The Parties shall attempt in an amicable manner to adjust and settle any disagreement that may arise between them under or in connection with this Agreement. Any controversy or claim arising out of or relating to this Agreement will first be referred in writing to the Management Committee for its decision.

16.2 In the event any dispute between the Parties is not resolved by the Management Committee, either Party may submit such dispute to the Chief Executive Officer of each Party. Submittal of the dispute shall be in writing and summarize in detail the dispute or contested issues. Upon receipt of the dispute, the receiving Party shall designate within ten (10) days a responsible executive with authority to negotiate a settlement or resolution of any dispute. The Parties designated responsible executives for all Parties shall convene within thirty (30) days of the submittal at such location as the Parties may agree. The responsible executives shall hear such dispute at a time, place, and under such procedural rules as they may specify, and shall act only by unanimous consent. It is the intention of the Parties that the responsible parties shall mutually resolve disputes without litigation. However, nothing herein shall be deemed to require any Party to exhaust this procedure prior to exercising whatever rights it might have at law or equity and any litigation shall be stayed pending exhaustion of this dispute or controversy to the Chief Executive Officer but intend

that through this mechanism, disputes may be discussed and resolved without the need of litigation.

16.3 If the dispute is not resolved in accordance with Section 16.2 above, the Parties shall submit their disputes to mediation within seven (7) days thereafter or as soon thereafter as may be arranged with the mediator. The Parties shall mutually agree to one mediator. In the event they cannot mutually agree to such a mediator, the mediator shall be selected under the Construction Industry Rules of the American Arbitration Association, unless otherwise agreed between the Parties.

16.4 If mediation is unsuccessful in resolving all disputes between the Parties or the dispute cannot be settled by mediation within sixty (60) days, then the Parties agree to consider the use of binding arbitration to resolve their dispute in the following manner or either Party may file a claim in a court of competent jurisdiction with venue in Dallas County. In the event the Parties agree to resolve their dispute by means of binding arbitration, the Parties shall mutually agree to one arbitrator. In the event they cannot mutually agree to such an arbitrator, one arbitrator shall be selected in accordance with the Construction Industry Rules of the American Arbitration Association, unless otherwise agreed between the Parties. The arbitrator thus selected shall thereafter proceed to ascertain the facts relating to such dispute and to make a determination thereof; the determination of the arbitrator shall be final, binding and conclusive upon the Parties and enforceable at law in a court having jurisdiction over the Party against whom enforcement of the arbitrator's decision is sought to be enforced. The then-current Construction Industry Rules of the American Arbitration will be applied.

16.5 Notwithstanding the foregoing, if and to the extent that a dispute between the Parties relates to a claim, controversy or dispute involving the Owner and/or the Contract (such that in the interest of judicial economy and to avoid the possibility of inconsistent judgments, a single dispute resolution proceeding is warranted), then the Parties agree that the dispute resolution provisions in the Contract, if any, shall apply and take precedence over the provisions of this Article 16.

16.6 The Parties shall not allow any dispute to affect or threaten the progress and completion of the Services, Work, or both. Each Party shall remain responsible for the performance of its obligations under this Agreement and the Contract and shall continue to perform and prosecute the Services, Work, or both, as directed by the Project Manager during any dispute resolution process notwithstanding any such dispute.

Article 17: Distributions and Tax Allocations

17.1 Subject to the terms and conditions of this Agreement, including Articles 11 and 12, distributions may be made to the Parties during the term of this Agreement at such times, in such amounts, and subject to such conditions as the Management Committee may from time to time determine.

17.2 Should the Joint Venture make any advances or loans to either Party, then distributions to be made pursuant to Section 17.1 above shall be applied in repayment of such advances or loans, together with interest, until repaid in full, notwithstanding the fact that such advances or loans may not then be due and payable according to the terms of any instrument evidencing such advance or loan.

17.3 No distribution shall be made pursuant to this Agreement if the making of such distribution would create an event of default under any loan agreement, any mortgage, or other security instrument to which the Joint Venture is subject, or otherwise materially adversely affect the ability of the Joint Venture to perform its obligations under any other agreement to which the Joint Venture is subject. Any distribution pursuant to this Article, to the extent not permitted by the previous sentence, shall be deferred until such time as it will not create an event of default or materially adversely affect the ability of the Joint Venture to perform its obligations. If any such distribution can at any time only be made in part, it shall be made to the Parties in proportion to the amounts that would have been paid to them but for this Article 17.

17.4 Except as provided in Section 17.1 above, and except for distributions upon termination or withdrawal as provided herein, the Joint Venture shall make no further distributions.

17.5 Tax Allocations. All gross income, gains, losses, deductions, and credits of the Joint Venture, as

determined for US federal income tax purposes, shall be allocated for such purposes among the Parties in the same proportions as the corresponding items of revenue, gains, losses, and expenses are allocated pursuant to Article 5 above.

- 17.6 Designation of Tax Matters Partner/Partnership Representative
 - 17.6.1. Designation. The Management Committee shall designated an individual as the Tax Matters Partner within the meaning of IRC §6231(a)(7) as in effect for taxable years beginning on or before December 31, 2017 and the Partnership Representative within the meaning of IRC §6223(a) as in effect for taxable years beginning after December 31, 2017 and shall act in any similar capacity under applicable state, local, or foreign law (in such capacity and hereinafter, the "Tax Matters Partner").
 - 17.6.2. Elections. Except as otherwise expressly provided to the contrary in this Agreement, all tax elections, including federal, state, local, and foreign tax elections, shall be made by the Tax Matters Partner in its sole discretion. To the extent applicable, the Tax Matters Partner will make the small partnership election as described in IRC §6221(b) as in effect for taxable years beginning after December 31, 2017.
 - 17.6.3. Expenses of Tax Matters Partner; Indemnification. The Tax Matters Partner shall be reimbursed for all reasonable expenses, including legal and accounting fees, claims, liabilities, losses, and damages, incurred in connection with any administrative or judicial proceeding with respect to the tax liability of the Parties attributable to this Agreement. The payment of any and all such then-existing expenses shall be made before any distributions are made to each Party. Neither the Tax Matters Partner nor any Party shall have any obligation to provide funds for such purpose.

17.7 Requirement to Prepare and File Tax Return. The Tax Matters Partner shall cause the preparation and timely filing of all tax and information returns required to be filed pursuant to the Internal Revenue Code and all other tax returns deemed necessary and required in each jurisdiction in which the Joint Venture does business. Copies of the returns, or pertinent information from the returns, shall be furnished to the Parties no later than two months before the extended due date of the Joint Venture's federal income tax return. The Tax Matters Partner will direct that any tax imposed upon the partnership be paid by the partnership to federal, state, city or other municipalities as required by law.

17.8 Capital Structure of Joint Venture

Names of Party	Percentage Interests	Capital Contribution
	%	\$
	%	\$
	%	\$

17.9 Amounts Withheld. All amounts withheld pursuant to the Internal Revenue Code or any provision of any state, local, or foreign tax law with respect to any payment, distribution, or allocation to the Parties shall be treated as amounts paid or distributed, as the case may be, to the Parties. The Joint Venture is authorized to withhold from payments and distributions, or with respect to allocations to the Parties, and to pay over to any federal, state, local, or foreign government, any amounts required to be so withheld

pursuant to the Internal Revenue Code or any provisions of any other federal, state, local, or foreign law, and shall allocate any such amounts to the Parties with respect to which such amount was withheld and shall offset amounts otherwise distributable to such Party.

Article 18: Completion of Project, Division of Profit

Upon completion of the Project, after providing for and paying all costs disbursed or incurred for its performance, and all other costs and charges required by the Contract and ordinarily and usually charged as costs in performance of such a Contract, including payment of all claims not secured by insurance, or by providing proper reserves for any such claims, which shall have either been brought against the Parties or may be reasonably anticipated, and after providing adequate reserves for any other contingency, if any, that shall be determined by the Management Committee to be reasonably necessary; and after repaying all sums advanced by the Parties for working capital, any undistributed profits thereafter remaining, resulting from the performance of the Contract, shall be distributed and divided between the Parties in accordance with their ratable proportion as determined under Articles 5, 7, and 12. Any reserves, when no longer required, or so much thereof as shall remain, shall be similarly distributed.

Article 19: Successors and Assigns

Subject to the foregoing provisions herein contained, this Agreement shall inure to the benefit of, and be binding upon the Parties, their successors, trustees, permitted assigns, receivers, and legal representatives, but shall not inure to the benefit of any other person, firm or corporation.

Article 20: Entire Agreement

20.1 This Agreement constitutes the entire understanding and Agreement between the Parties with respect to the subject matter hereof and supersedes all prior or contemporaneous representations, understandings or agreements of any kind, whether verbal or written.

20.2 This Agreement shall not be modified except by written amendment duly executed by authorized representatives of the Parties. Any such written amendments shall be forwarded to the district for review and approval. Each Party has had the opportunity to avail itself of legal advice and counsel. No Party shall be deemed to be the drafter or author of this Agreement. In the event this Agreement is subject to interpretation or construction by a court of law or panel of arbitration, such court or panel shall not construe this Agreement or any portion hereof against either Party as the drafter of this Agreement.

20.3 Failure of a Party to insist upon strict and punctual performance of any terms or conditions of this Agreement shall not be construed to constitute a waiver of, or estoppel against, any other Party later asserting the right to require such performance. Neither shall a waiver or estoppel in one instance constitute a waiver or estoppel with respect to a later default, whether similar or dissimilar in nature.

20.4 If any provision of this Agreement is held invalid or unenforceable by any court of competent jurisdiction, the other provisions of this Agreement will remain in full force and effect.

Article 21: Confidential Information

21.1 Subject to any applicable requirements of the Contract, 1) information relating to this Agreement or the Contract which is gathered, exchanged, or otherwise obtained by the Parties during the term of this Agreement shall be maintained in confidence and shall not be utilized except for purposes in furtherance of this Agreement and the exercise of rights, obligations, duties, and privileges set forth herein; and 2) such information will not be disclosed to any third parties or to a Party's own personnel except where there is good faith need to know; provided however, that no Party shall be liable for any utilization or disclosure if the information falls into any of the following categories:

21.1.1. Information which at the time of disclosure is or thereafter becomes within the public

domain other than by reason of the disclosing Party's breach of this Agreement.

- 21.1.2. Information that prior to disclosure hereunder was already in the recipient's possession and was not the subject of any confidentiality obligation of the disclosing Party.
- 21.1.3. Information which, subsequent to disclosure hereunder, is obtained by the disclosing Party from a third party lawfully in possession of such information and which information is not subject to a confidentiality obligation.

21.2 For the purposes of this Agreement, specific information disclosed shall not be deemed to be in the public domain or in the prior possession of the disclosing Party merely because it is embraced by more general information in the public domain or by more general information in the prior possession of the Party.

21.3 Nothing herein shall be construed as giving a Party any right, title, interest in, or ownership of information, or any portion thereof, that is now or is hereafter covered by any patent or license. The Parties' rights in respect thereof shall be subject to all rights of the patent owner and/or licensor.

21.4 A Party shall not be restricted in releasing information in response to a subpoena, court order, or similar legal process, but shall, if not restricted under a subpoena, court order, or similar legal process, promptly notify each other Party of the request or order for information before responding to same and provide each other Party with a copy thereof so that each other Party may take such action as it deems appropriate to protect its information.

21.5 Except as otherwise provided herein or in the Contract, engineering documents, drawings, and specifications prepared by a Party as part of the Services, Work, or both, shall be the property of the Party preparing same. A Party shall retain all right, title, and interest in its standard drawings and details, designs, specifications, databases, computer software and any other proprietary property ("Party Data"). To the extent the work product contains or requires the use of Party Data by any other Party, the owning Party hereby grants to the other Party(ies) a non-exclusive, non-transferrable and royalty free license to use such Party Data solely for the purposes for which the work product was developed under the Contract.

21.6 The confidentiality obligations provided in this Article 21 shall survive the termination or expiration of this Agreement and remain binding upon the Parties for two (2) years following the termination of this Agreement or completion of the Contract, whichever is later.

21.7 No news release, including photographs and films, public announcement, denial, or confirmation shall be made by a Party concerning the subject matter of this Agreement without first obtaining the consent of each other Party and, if applicable, the Owner.

Article 22: Applicable Law

This Agreement shall be governed and construed in accordance with the laws of the State of Texas, without reference to its conflict of laws principles.

Article 23: Miscellaneous

23.1 Records; Generally. Each Party agrees to keep accurate and complete cost, correspondence, and other records related to this Agreement. Each Party further agrees to make such records available to each other Party upon ten (10) calendar days' written notice. The joint venture parties agree to maintain records showing the subcontractor/supplier awards, subcontractor payment history, efforts to identify and award contracts to M/WBEs, and copies of executed contracts with M/WBEs. The joint venture parties agree to provide access to books, records and accounts to authorized district, state and federal officials for the purpose of verifying M/WBE participation and good faith efforts.

23.2 Financial Records.

23.2.1 All financial records and proprietary or confidential information of each Party to which the Joint Venture or the other Party(ies) has/have access shall be held and retained by the Joint Venture and such other Party(ies) in strict confidence and not be disclosed without the prior written consent of the Party to whom such records or information belong.

23.3 Other Business Activities. During the term of this Joint Venture, each of the Parties may, and shall be free to, participate and engage in any other business activities, subject to any applicable organizational and personal conflict of interest rules or regulations. Nothing in this Agreement shall restrict, or be construed as a limitation of the powers or rights of any Party hereto to pursue other unrelated opportunities or Projects at the District or enter into other joint venture arrangements for its sole benefit independent of the solicitation the subject of this Agreement.

23.4 Notice. Any notice required or permitted to be given under this Agreement shall be deemed served if sent by registered mail, personal delivery, or other means whereby receipt is acknowledged to the following addresses or such other addresses as the Parties may designate:

For		
	Attention: Telephone:	
For	:	
	Attention: Telephone:	
For	:	
	Attention: Telephone:	

23.5 Waiver of Consequential Damages. No Party shall be liable to the other Parties for any special, indirect, punitive, exemplary, incidental, or consequential damages of any nature, including loss of actual or anticipated profits or revenues, loss of opportunity, loss by reason of shutdown, non-operation, increased expense of manufacturing or operation, loss of use, cost of capital, damage to or loss of property or equipment, or claims of customers, regardless of whether due to or based upon contract, tort, negligence, or strict liability. The foregoing limitation of liability shall not apply to third party claims for which a Party is otherwise entitled to indemnity under this Agreement.

23.6 Nothing in this Agreement shall be deemed to create any right in anyone not a party and this Agreement shall not be construed in any respect to be a contract in whole or in part for the benefit of anyone not a party.

23.7 Counterparts. This Agreement may be executed in one or more counterparts, each of which will be deemed to be an original copy of this Agreement and all of which, when taken together, will be deemed to constitute one and the same agreement.

23.8. Recruitment of Employees. The Parties acknowledge the value of team performance and trust, both of which could be adversely impacted by movement of employees from one Party to another Party. Accordingly, the Parties agree that they will not initiate efforts aimed at hiring the other Parties personnel that are actively engaged in activities covered by this Agreement without prior consent of the other Party. Should an employee of one Party become an employee of another Party, that individual shall be barred from working on activities covered by the Agreement for a period of not less than twenty-four (24) months. The Management Committee may waive the 24-month period at its discretion. This section shall not restrict

the right of a Party to solicit generally in the media or other sources for required personnel nor prevent the hiring of an employee of one Party who independently seeks employment with another Party without personal solicitation by the other Party.

23.9 Representations, Warranties, and Covenants. Each Party represents, warrants, and covenants to each other Party, as of the Effective Date, as follows:

- 23.9.1 It is a duly organized and validly existing corporation in good standing under the laws of the state in which it is incorporated or formed; it is duly qualified to do business in each jurisdiction in which the nature of the business transacted by it requires such qualifications; it has all corporate powers as may be required to conduct its business and carry out the transactions contemplated hereby;
- 23.9.2 The execution and delivery of this Agreement and the performance by it of the transactions contemplated hereby have been duly authorized by all necessary corporate action and this Agreement constitutes a legal, valid, and binding obligation enforceable in accordance with its terms;
- 23.9.3 It has, and at all times during the term hereof shall maintain, all governmental authorizations necessary to perform its obligations under this Agreement and the Contract; and
- 23.9.4 There is no action, suit, proceeding, claim, or dispute pending or, to its knowledge, threatened against or affecting it or its assets before any governmental body that is reasonably expected to have a material adverse effect on it or its ability to perform its obligations under this Agreement or the Contract.

23.10 Marketing Efforts. The Parties acknowledge that marketing efforts related to the Contract need to be coordinated by and between the Parties. The Project Manager will be responsible for coordinating any such efforts. All marketing efforts directly associated with the Contract or this Agreement shall be coordinated through the Project Manager, who will decide whether a proposed Owner visit, or other marketing effort is necessary or appropriate.

23.11 Survival. The provisions of this Agreement which by their nature are intended to survive the termination or dissolution of the Joint Venture, including indemnities and any expressed limitations of or releases from liability, shall continue as valid and enforceable obligations of the Parties notwithstanding any such termination or dissolution.

Article 24: Compliance

24.1 Management Systems. Each Party shall use its own management systems to conduct and record its business for the Joint Venture. Such systems shall, at a minimum, include the following components: financial management, accounting, MWBE subcontractor payment tracking, procurement, property control, estimating, and contract administration. All management systems must comply with any applicable Contract requirements.

Article 25: Anti-Bribery and Anti-Corruption Laws

25.1 No Party shall, directly or indirectly, undertake nor cause nor permit to be undertaken any activity that:

- 25.1.1 is illegal under applicable law or regulation; or
- 25.1.2 would have the effect of causing the Joint Venture or the Parties or their respective subsidiaries or affiliates to be in violation of the applicable laws or regulations, including the U.S. Foreign Corrupt Practices Act or the UK Bribery Act, as applicable.

25.2 In connection with this Agreement, no Party shall give, offer, promise, or authorize, directly or indirectly, anything of value to:

- 25.2.1 an official, officer, employee or any other person acting in an official capacity for or on behalf of any government (including any department, agency, or instrumentality thereof), state-owned enterprise, international organization, or any subdivisions, agents or advisors thereto, whether paid or unpaid (any such person referred to collectively as "Official"), including the government(s) of the territories in which work will be performed hereunder;
- 25.2.2 any person(s) or party(s) while knowing or having reason to know that such thing of value is to be given, offered, or promised to an Official in order to:
 - 25.2.2.1 influence any official act or decision, or;
 - 25.2.2.2 induce an Official to do or omit to do any act in violation of his or her lawful duty, or;
 - 25.2.2.3 induce an Official to use his or her influence to affect or influence a decision or act of any government, instrumentality, or international organization, or;
 - 25.2.2.4 assist the joint venture or the Parties hereto or any other person in obtaining or retaining business for or with, or in directing business to the Parties or any other person, or;
 - 25.2.2.5 obtain or secure an unfair or improper advantage for the joint venture or the Parties in any respect.

25.3 In connection with this Agreement, no Party shall make a contribution or give, offer, promise or authorize, directly or indirectly, anything of value to any political party, official of a political party or candidate for office on behalf of or associated with the joint venture or the Parties or in connection with the purpose of this Agreement or the contract with the Owner.

25.4 In connection with this Agreement, no Party shall engage in any acts of bribery, kickback or other improper inducement, including bribery of a person in the private sector. Without limiting the generality of the foregoing, no Party shall give, offer, promise or authorize, either directly or indirectly, a financial or other advantage to any person to induce a person to perform improperly a relevant function or activity or to reward such improper performance or where the Party knows or believes that the acceptance of the advantage in itself constitutes the improper performance of a relevant function or activity.

25.5 No Party shall subcontract any part of the Services nor retain or engage a consultant to carry out sales or marketing obligations in connection with the scope of this Agreement without obtaining the JV Management Committee's prior written consent. The Joint Venture Management Committee shall have the right, in accordance with this Agreement, to reject a request to engage or retain any such consultant.

25.6 The Parties hereby covenant that neither they nor any of their respective officers, directors, agents or representatives or employees assigned to the Project an employee of the Owner or any governing body having jurisdiction over the Project. The Parties further covenant that no Official, political party official, or candidate for political office is deriving any benefit, directly or indirectly, from this JV Agreement. The Parties agrees to notify the Joint Venture Management Committee immediately of any changes to this covenant.

25.7 In no case shall any Party be obligated to take any action or make any payment to any other Party or anyone else that would cause the Joint Venture or the Parties to suffer a penalty or contravene applicable laws or regulations, including the laws of the territories in which work will be performed and those of the United States.

25.8 Notwithstanding any other provisions of this Agreement, if any Party breaches any of the covenants contained in this section, the other Parties shall have the right to immediately terminate this Agreement without penalty. In such instance, the breaching Party shall indemnify the other Parties and the Joint Venture for any penalties, losses, and expenses resulting from such breach of the provisions of this section.

25.9 Each Party agrees to promptly notify the Management Committee and the other Parties in the event it becomes aware of or discloses any potential violation of Anti-Bribery Laws in connection with this Agreement. In addition, a Party shall be in default of this Agreement if such Party is (i) found to have violated Anti-Bribery Laws by a governmental body empowered to make such a finding, or (ii) the subject of a governmental investigation involving violations of Anti-Bribery Laws in connection with this Agreement and the other Parties (that are not a target of such investigation), in their reasonable discretion, believe that the on-going investigation materially impairs the ability of the Joint Venture to provide the Services, perform the Work, or both, and/or complete the Contract.

[SIGNATURES ON THE FOLLOWING PAGE]

NOTARY REQUIRED

IN WITNESS WHEREOF, the Parties have caused this Agreement to be signed by their duly authorized representatives, in duplicate counterparts, each having the same effect, as of the date and year first above written.

Signature:	
Name:	
Title:	
Date:	
Signature:	
Name:	
Title:	
Date:	
Signature:	
Name:	
Title:	
Date:	

EXHIBIT A

Scope of Services

Identify the distinct, clearly defined portion of the work provided by each M/WBE joint venture partner. The work must be separate, clear and distinguishable. Specify the nature of the work and what it will entail. Describe the portion of the work or elements controlled by the M/WBE joint venture partner. Provide the estimated value of those services commensurate with the percentage ownership interest.

(1) General Description of Work to be Performed by the Joint Venture:

(2) Division of Work and Allocation of Responsibilities:

EXHIBIT B

Project Management Staffing Plan

Provide a staffing plan to be determined per the established participation percentages. Provide information relating to the approximate number of employees that will be required to perform the scope of work. Specify the number of employees to be provided by the M/WBE joint venture partner(s), titles, resumes and job responsibilities.

EXHIBIT C

Letter from Financial Institution or Bonding Surety Company

6.3 Provide documentation to substantiate the financial strength or bonding capacity of each M/WBE joint venture partner(s). This document should be commensurate of each M/WBE joint venture partner(s) percentage split. *Or* Provide an Up-Front Joint Agreement (SAA Form #1), and an executed copy of the indemnity agreement signed by all Parties associated with the SAA Form #1.

STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

A101

Dallas ISD Construction Services 00 52 10 Issued 10/31/2016 CSP 207459 August 16, 2024

DRAFT AIA[°] Document A101[™] - 2017

Standard Form of Agreement Between Owner and Contractor

where the basis of payment is a Stipulated Sum

AGREEMENT made as of the XX day of XXXXX in the year 20XX (*In words, indicate day, month and year*)

BETWEEN the Owner: (*Name*, , *address and other information*)

The Dallas Independent School District, a political subdivision of the State of Texas Dallas, Texas 9400 North Central Expressway Dallas, Texas 75231

and the Contractor: (Name, , address and other information)

<<GC Company Name>> <<GC Address>> <<GC City/State/Zip>> (###) ###-#### Phone

<u>The Work, unless otherwise expressly stated, shall be considered as a single project</u> (whether one or more campuses or facilities) and is generally described as follows:(Name and location)

<<BP# XXX:>> <<ORG #XXX XX Elementary School>> <<ORG Address>> <<Dallas, Texas 75XXX>>

The Architect is: (Name, address and other information)

<<A/E Company Name>> <<A/E Address>> <<A/E City/State/Zip>> (###) ###-#### Phone

The <u>Program Manager is:</u> (Name, address and other information) <<Insert PMF Company Name>> 3801 Herschel Avenue Dallas, TX 75219

The Owner and Contractor agree as follows.



ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete Al01[™]-2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201[™]-2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.



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1

Version 3/25/2022 FINAL

TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS
- 10 INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

2

§ 1.1 The Contract Documents consist of this Agreement between Owner and Contractor, A101-2017, as amended (hereinafter the "Agreement"); Conditions of the Contract, as amended (General, Supplementary, and other Conditions, including but not limited to A201-2017, as amended); Contractor's proof of Payment and Performance Bonds and proof of insurance; all sections of the Project Manual and Construction Documents, Drawings, Specifications, Geotechnical Reports, Addenda issued prior to receipt of bids or proposals; other documents listed in this Agreement, and Modifications issued after execution of this Agreement. The Contract Documents form the Contract for Construction (the "Contract"), and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated written agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents and/or supplemented for this Project, shall refer to the Contract Documents as amended for this Project. This Agreement may not be amended or revised except by written agreement signed by the Owner and Contractor.

"Construction Documents" means: all Drawings, specifications, submittals, transmittals, deliverables, instructions to Contractors, and other documents, including those in electronic form, prepared by the Architect and the Architect's consultants and which set forth in detail the requirements for construction of the Project.

§ 1.2 This Agreement represents the entire and integrated agreement between the Owner and the Contractor and supersedes all prior negotiations, representations or agreements, either written or oral. Any revision, amendment, or modification to the Standard Form of this Agreement shall be valid, binding, and enforceable only if said revision, amendment or modification is made conspicuous by being underlined, lined-through, or highlighted in this Agreement signed by Contractor and the authorized representative of Owner's Board of Trustees. In the event of conflict, terms and conditions contained in the Agreement shall take precedence over terms and conditions contained in the General Conditions shall take precedence over all other terms and conditions contained in the other Contract Documents. If the Request for Proposals and the Proposal are included in the Contract Documents, then the Request for Proposals shall take precedence over the Proposal, unless specifically agreed otherwise herein.

§ 1.3 The Board of Trustees, by majority vote, is the only representative of the Owner, an independent school district, having the power to enter into or amend a contract, to approve changes in the scope of the Work, to approve and execute a Change Order or Construction Change Directive modifying the Contract Sum, or to agree to an extension to the date of Substantial or Final Completion or to terminate a contract. The Owner designates the following as the individual authorized to sign documents on behalf of the Board of Trustees, following appropriate Board action: (*insert name and title of designee*) ______, or other Board designee.

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ARTICLE 2 THE WORK OF THIS CONTRACT

<u>Unless otherwise provided in these Contract Documents, the Contractor shall be responsible for performing or causing to be performed all Work including labor and materials, necessary to build, construct, erect and equip in accordance with the Contract Documents except to the extent specifically indicated in the Contract Documents to be the responsibility of others.</u>

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be: *(Check one of the following boxes.)*

- [« »] The date of this Agreement.
- [**« X »**] A date set forth in a notice to proceed issued by the Owner.

The Agreement, including Conditions of the Contract, as well as all other Contract Documents that require signature of the Parties, including the A201-2017, as amended, must be signed first by the Contractor's representative. The Contractor shall have ten days from receipt of the documents requiring signature from the Owner to sign the Agreement and all other Contracts requiring signature to return to the Owner the signed documents along with proof of insurance and the Payment and Performance bonds. Once Owner has approved of the Contracts and the proof of insurance and the Payment and Performance bonds, Owner shall sign the Agreement and all other Contract Documents requiring signature of the parties. When Owner has signed and approved all required documents, District shall issue a Notice to Proceed to Contractor.

[« »] Established as follows:

(Insert a date or a means to determine the date of commencement of the Work.)

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

»

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall diligently prosecute and achieve Substantial Completion of the entire Worknot later than the Substantial Completion Date. The period for reaching the Substantial Completion Date shall begin to run from the Commencement Date and shall not include the Commencement Date. For additions and renovations the Substantial Calculation Date shall be established with the number of calendar days required to substantially complete the work, unless otherwise provided. For new schools the Substantial Completion Date shall be a specific date, unless otherwise provided.

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents,

Portion of Work	Substantial Completion Date	
<mark>Full</mark>	< <insert date="">></insert>	

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 <u>Subject to additions and deletions and other provisions in the Contract Documents, the Owner agrees to pay</u> the Contractor for the Contractor's performance of the contract the following amount for construction and completion of the Work: **XXXXX DOLLARS AND XX CENTS** (\$ 0.00).

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§ 4.2 Alternates§ 4.2.1 Alternates, if any, included in the Contract Sum:

ltem	Price	
See Exhibit "A" attached		
§ 4.2.2 [Paragraph Deleted].		
§ 4.3 Allowances, if any, included in the Contract Sun (<i>Identify each allowance.</i>)	n:	
Item	Price	
See Exhibit "C" attached		
§ 4.3.1 Owner Controlled Contingency Allowance:		
All construction contracts shall contain a contingency	allowance. The Owner Controlle	d Contingency Allowance is
to be used only for expenditures which do not require	a Change Order. The Owner Con	trolled Contingency
unforeseen conditions. The Owner Controlled Conting	gency Allowance may be used to p	pay claims. Use of the Owner
Controlled Contingency Allowance must be authorized	d in advance by the Superintender	nt of Schools or designee.
§ 4.4 Unit prices, if any:		
(Identify the item and state the unit price and quantity	limitations, if any, to which the u	nit price will be applicable.)
ltem	Units and Limitations	Price per Unit (\$0.00)
See Exhibit "B" attached		
C 4 E T ' '1.4 1 1		
(Insert terms and conditions for liquidated damages, if	any.)« § 4.5.1 Substantial Compl	etion. Time is of the essence
in all phases of the Work. It is specifically understood	and agreed by and between Owr	her and Contractor that time
is of the essence in the Substantial Completion of the l	Project and Owner shall sustain d	amages as a result of
Contractor's failure, neglect or refusal to achieve said	deadlines. Such damages are, an	d will continue to be,
constitute agreement by Owner and Contractor that the	e amounts stated below are the mi	inimum value of the costs
and damages caused by failure of Contractor to compl	ete the Work within the allotted of	or agreed extended times of
Substantial Completion, that such sums are liquidated	damages and shall not be constru	ed as a penalty, and that such
sums may be deducted from payments due Contractor	if such delay occurs. It is expres	sly understood that the said
sum per day is agreed upon as a fair estimate of the pe	cuniary damages which will be su	ustained by the Owner in the
provided for herein. Said sum shall be considered as 1	i ume, or within the agreed exten	aed time, if any, otherwise
penalty, said damages being caused by, but not limited	to, additional compensation for	personnel, attorneys fees,
architectural fees, engineering fees, program managen	nent fees, inspection fees, storage	costs, food service costs,
transportation costs, utilities costs, costs of temporary	facilities, loss of interest on mono	ey, and other increased costs,
all of which are difficult to exactly ascertain. Failure t	to complete the Work within the c	lesignated or agreed
a part of the consideration inducing the Owner to exec	ute this Agreement that the Owner	er may deduct from any
Payment made to the Contractor a sum equal to		
XXXXX DOLLARS AND XX CENTS (\$ 0.00)) / Day)	
per day for each and every additional calendar day bey	ond the agreed date of Substantia	al Completion.
§ 4.5.2. Final Completion. Timely final completion is a	an essential condition of this cont	ract. Contractor agrees to
achieve final completion of the Work within 60 days of Final completion means actual completion of the Work	of the designated or extended subs k, including any extras or Change	stantial completion date. Orders reasonably required
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and criminal penalties, and will be prosecuted to the maximum 12:06:53 on 11/17/2017 under Order No.0175484999 which expire Macan Paral Under Content of the second	m extent possible under the law. This es on 01/11/2018, and is not for resa	draft was produced by AIA software at le.
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or contemplated under the Contract Documents other than warranty work as further defined in the Form of Contractor's Final Completion Notice attached hereto and incorporated herein as **Exhibit "D"**.

§ 4.6 Other Allowances, if any, are as follows:

(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

See Exhibit "C" attached

ARTICLE 5 PAYMENTS § 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month.

« »

§ 5.1.3 The Contractor shall concurrently submit monthly Applications for Payment to the Architect and Program Manager on AIA Form G702 for approval. Continuation sheets shall be submitted on AIA Form G703. If the Architect and Program Manager approve the application, then <u>Architect</u> shall submit a Certificate for Payment to the Owner. The Architect <u>and Program Manager</u> may require any additional information deemed necessary and appropriate to substantiate the Application for Payment. Materials that are verified to be on the jobsite or other approved location for use in the Project may also be incorporated into the Application for Payment. The Architect shall have seven (7) days from date of receipt from the Contractor of an Application for Payment to approve or reject all or any part of the Application for Payment. The Owner shall pay the undisputed amounts certified by the Architect and approved by the Program Manager and Owner to the Contractor within ______(_30___) days of receipt of the Certificate for Payment from the Architect unless otherwise provided in the Contract Documents. Undisputed amounts unpaid after the date on which payment is due shall bear interest pursuant to Texas Government Code Section 2251.025.

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum, less any unused Owner's contingency, among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect and Program Manager may require. This schedule of values, unless objected to by the Architect and Program Manager, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall indicate the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document <u>A201TM</u>–2017, as amended, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values; and
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing.
- .3

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

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- .2 The amount, if any, for Work that remains uncorrected and for which the Architect and Program Manager has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document <u>A201–2017</u>, as amended;
- **.3** Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document <u>A201–2017</u>, as amended, or amounts certified by the Architect and disputed by the Owner; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner shall withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

«_Five Percent (__5__%) »

If Owner is entitled to deduct liquidated damages, or any other damages or amounts provided in the Contract Documents, including clean-up fees, then Owner shall be entitled to deduct such liquidated damages, amounts and fees at any time. If Contractor fails or refuses to complete the Work, or has unsettled claims with Owner, any payment to Contractor shall be subject to deduction for such amounts as the Architect, if applicable, shall determine as the cost for completing incomplete Work and the value of unsettled claims.

§ 5.1.7.1.1 [Paragraph Deleted.]

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

«NONE. »

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Final Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7.

§ 5.1.8 [Paragraph Deleted.]

§ 5.1.9 Except with the Owner's prior written approval, or as otherwise provided in Section 9.3.2 of the AIA Document A201-2017, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.1.10 If Contractor fails or refuses to complete the Work, or has unsettled claims with Owner, any payment to Contractor shall be subject to deduction for such amounts as the Architect if applicable, shall determine as the cost for completing incomplete Work and the value of unsettled claims.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, minus disputed sums, authorized deductions and liquidated damages, shall be made by the Owner to the Contractor after

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct nonconforming Work as provided in Article 12 of AIA Document <u>A201–2017</u> as amended, and to satisfy other requirements, if any, which extend beyond final payment;

- **.3** a final Certificate for Payment has been issued by the Architect and approved by the Program Manager; and
- 4. Dallas ISD Board of Trustees has voted to accept the Work and approve the Final Payment.

^{.2}

§ 5.2.2 The Owner's final payment of undisputed sums to the Contractor shall be made no later than 30 days after Dallas ISD Board of Trustees' vote approving Final Payment.

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest pursuant to Texas Government Code Section 2251.025.

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1

All disputes relating to this Agreement shall be resolved pursuant to the terms of Article 15 of the AIA Document A2012017, as amended.

§ 6.2 [Paragraph Deleted]

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA DocumentA20<u>1-2017</u> as amended.

§ 7.1.1 [Paragraph Deleted]

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201-2017 as amended.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document <u>A201-2017</u> as amended or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative is the Superintendent of Schools or the Superintendent's designee: (*Name, address, and other information*)

<<Insert DPM Name>> Dallas Independent School District 3801 Herschel Avenue Dallas, Texas 75219 (###) ###-#### (Phone) <<Email: XXXXXXX @dallasisd.org>>

§ 8.3 The Contractor's representative: (*Name, address, email address, and other information*)

<<GC Representative Name>> <<GC Representative Title>> <<GC Company Name>> <<GC Address>> <<GC City/State/Zip>> (###) ###-#### (Phone) <<Email: XXXX@XXX>>

§ 8.4 <u>The Contractor's representative may not be changed without written consent of the District, which shall not be</u> <u>unreasonably withheld.</u>

§ 8.5 Insurance and Bonds

§ 8.5.1 The Contractor shall purchase and maintain insurance as set forth in Article 11 of AIA Document <u>A201™</u>_ <u>2017 as amended</u>, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

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§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document <u>A101TM</u> 2017 Exhibit <u>A</u> A201TM 2017 as amended, and elsewhere in the Contract Documents.

§ 8.6 [Paragraph Deleted]

« »

§ 8.7 Other provisions:

«§ 8.7.1 <u>This Agreement, in its entirety, is deemed performable in Dallas County, Texas. Any litigation to construe</u> or enforce any term or condition of the Contract Documents shall be brought in the State Courts of Dallas County, <u>Texas. In the event of such litigation, the prevailing party shall be entitled to recover reasonable attorney fees and cost of court.</u>

§ 8.7.2 As a material consideration of the making of this Agreement, the modifications to this Agreement shall not be construed against the maker of said modifications.

§ 8.7.3 Notwithstanding anything to the contrary in this Agreement, or in any document forming a part hereof, there shall be no mandatory arbitration for any dispute arising hereunder

§ 8.7.4 Articles 1.5 and 1.6 of AIA Document A20<u>1-2017</u> as amended shall govern Contractor's use of the Construction Documents

§ 8.7.5 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors. As part of that responsibility, Contractor shall enforce the Owner's alcohol-free, drug-free, tobacco-free, harassment-free and weapon-free policies and zones, which will require compliance with those policies and zones by Contractor's employees, subcontractors, and all other persons carrying out the Contract

§ 8.7.6 Contractor shall require all construction workers, whether Contractor's own forces or the forces of Contractor's subcontractors, to wear identification badges on the front of their persons during all times that they are on Owner's property. Such identification badges shall contain a current photograph and the worker's full name in a typeface large enough to be seen from a reasonable distance

§ 8.7.7 Contractor shall require all construction workers, whether Contractor's own forces or the forces of Contractor's subcontractors, to park their personal motor vehicles on Owner's property only in the parking places designated by the Owner. Any vehicles not parked in the appropriate locations shall be towed at the vehicle owner's sole expense.

§ 8.7.8 Contractor shall follow, and shall require all employees, agents or subcontractors to follow, applicable ordinances of the municipality in which the Project is located. In addition, if not covered by the municipality's tree ordinance, Contractor shall barricade and protect all trees on the Project

§ 8.7.9 Contractor shall institute a theft deterrence program designed to restrict construction worker access to properties of Owner that are currently in use, to maintain supervision of Contractor's and Contractor's subcontractor's forces, and to reimburse the Owner or those persons suffering a theft loss which results from Contractor's forces or Contractor's subcontractor's forces' actions, omissions, or failure to secure the Work or connecting or adjacent property of Owner.

§ 8.7.10 The Contractor may not assign its responsibilities, duties, obligations and rights under this Agreement, without the express written consent of the Owner. This does not prevent Contractor from engaging subcontractors to perform various phases of the Project, but Contractor shall be fully responsible to Owner for the work, actions and omissions of all such subcontractors

§ 8.7.11 This Agreement, in its entirety, shall be binding upon all the parties hereto, their respective successors, heirs, executors, administrators or assigns.

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§ 8.7.12 Execution of this Agreement shall constitute approval and acceptance of all terms, covenants and conditions as modified and contained in the Contract Documents.

§ 8.7.13 This Agreement is subject to all applicable federal and state laws, rules, and regulations. Invalidity of any portion of this Agreement under the laws of the State of Texas or of the United States shall not affect the validity of the remainder of this Agreement.

§ 8.7.14 By signing this Agreement, the undersigned certifies as follows: "Under Section 231.006, Texas Family Code, the vendor or applicant certifies that the individual or business entity named in the contract, bid, or application is not ineligible to receive the specified grant, loan, or payment and acknowledges that this contract may be terminated, and payment may be withheld if this certification is inaccurate."

§ 8.7.15 Unless otherwise noted, terms in this Agreement shall have the same meaning as those in the edition of AIA Document A201-<u>2017</u>, General Conditions of the Contract for Construction, as amended for the Project.

§ 8.7.16 To the extent that any portion of the Work requires a trench excavation exceeding five (5) feet in depth, in accordance with Texas Health and Safety Code Section 756.023(a), the Contractor shall fully comply, and shall require any applicable subcontractor to comply, with:

- .1 The Occupational Safety and Health Administration standards for trench safety in effect for the construction of the Work;
- .2 The special shoring requirements, if any, of the Owner; and
- .3 Any geotechnical information obtained by Owner for use by the Contractor in the design of the trench safety system.
- .4 Trench excavation safety protection shall be a separate pay item, and shall be based on linear feet of trench excavated. Special shoring requirements shall also be a separate pay item, and shall be based on the square feet of shoring used. Said cost shall be included within the Contract Sum.

§ 8.7.17 No delay or omission by Owner in exercising any right or power accruing upon the noncompliance or failure of performance by Contractor of any of the provisions of this Agreement shall impair any such right or power or be construed to be a waiver thereof. A waiver by Owner of any of the covenants, conditions or agreements hereof to be performed by Contractor shall not be construed to be a waiver of any subsequent breach thereof or of any other covenant, condition or agreement herein contained.

§8.7.18 Contractor stipulates that Owner is a political subdivision of the State of the Texas, and, as such, enjoys immunities from suit and liability as provided by the constitution and laws of the State of Texas. By entering into this Agreement, Owner does not waive any of its immunities from suit and/or liability, except as otherwise specifically provided herein, and as specifically authorized by law.

§ 8.7.19 By executing this Agreement, Contractor_verifies that <u>it</u> does not boycott Israel, and it will not boycott Israel during the terms of this Contract.

§ 8.7.20 Contractor verifies and affirms that it is not a foreign terrorist organization as identified on the list prepared and maintained by the Texas Comptroller of Public Accounts. If Contractor has misrepresented its inclusion on the Comptroller's list, such omission or misrepresentation will void this Contract »

§ 8.7.21 <u>All sums due hereunder are payable in Dallas, Dallas County, Texas.</u>

§ 8.7.22 This Agreement, in its entirety, shall be binding on all the parties hereto, their respective successors, heirs, executors, administrators or assigns.

§ 8.7.23 Execution of this Agreement shall constitute approval and acceptance of all terms, covenants and conditions as modified and contained in the Contract Documents.

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 <u>AIA Document A101TM 2017</u>, This executed 2017 edition of the Standard Form of Agreement Between Owner and Contractor, AIA Document<u>A101TM 2017</u>, as amended.
- .2 AIA Document A101TM 2017, Exhibit A, Insurance and Bonds
- .3 <u>AIA Document A201[™] 2017</u>, The General and Supplementary Conditions are <u>the 2017 edition</u> of the General Conditions of the Contract for Construction, AIA Document <u>A201[™]-2017</u>, as amended and attached to this Agreement.

« »

.7

.5 Drawings are as follows and are dated MMMMM DD, 20YY unless a different date is shown below: See Exhibit "F" attached



.6 Specifications are those contained in the Project Manual dated as in subparagraph 9.1.8, and are as follows:

<u>See Exhibit "E" attached</u> Section	Title	Date Pages
Addenda, if any:		
Number	Date	Pages
Addendum #1 with associated	MMMM DD, 20YY	1 through XX
attachments		
Addendum #2 with associated	MMMM DD, 20YY	1 through XX
attachments		
Addendum #3 with associated	MMMM DD, 20YY	1 through XX
attachments		

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:

(*Check all boxes that apply and include appropriate information identifying the exhibit where required.*)

- [« »] AIA Document E204TM–2017, Sustainable Projects Exhibit, dated as indicated below: (*Insert the date of the E204-2017 incorporated into this Agreement.*)
- [« »] The Sustainability Plan:

« »

Title	Date	Pages	
[« »] Supplementary and other Manual dated:	Conditions of the Contract are the	ose contained in the	Project
Document	Title	Date	Pages
Project Manual	Volumes X & X of X	MMMM DD,	1 through

.9 Other documents, if any, listed below:

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(List here any additional documents that are intended to form part of the Contract Documents. AIA Document <u>4201TM 2017</u> A201TM 2017 as amended provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of the Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.) See Exhibit "G" attached **ARTICLE 10 INSURANCE AND BONDS** The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201[™]–2017 as amended. This Agreement is entered into as of the day and year first written above, above and shall be executed by the parties in one original document. The original document shall be retained by the Owner. One copy of the original shall be provided to the Contractor and one copy shall be provided to the Program Manager. DALLAS INDEPENDENT SCHOOL DISTRICT <INSERT CONTRACTOR LEGAL NAME> **OWNER** (*Signature*) **CONTRACTOR** (Signature) <<Insert DISD Signer Name & Title>> << Insert GC's Signer Name & Title>> (Printed name and title) (Printed name and title) Approved As To Form: DALLAS ISD LEGAL COUNSEL(Signature) Date

DRAFT AIA Document A101[™] - 2017 Exhibit A

Insurance and Bonds

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the « » day of « » in the year « 2022 » (In words, indicate day, month and year.)

for the following **PROJECT**: (Name and location or address)

« » « »

THE OWNER:

(Name, legal status and address)

«Dallas Independent School District, a political subdivision of the State of Texas » «9400 North Central Expressway » «Dallas, Texas 75231 »

THE CONTRACTOR:

(Name, legal status and address)

« »

- «»
- « »

The Architect:

(Name, legal status, address and other information)

« » « » « » « »

« »

TABLE OF ARTICLES

- A.1 GENERAL
- A.2 OWNER'S INSURANCE
- A.3 CONTRACTOR'S INSURANCE AND BONDS
- A.4 SPECIAL TERMS AND CONDITIONS

Version 10/27/2022

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Document A201^m-2017, General Conditions of the Contract for Construction. Article 11 of A201[™]-2017 contains additional insurance provisions.





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ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201TM–2017, General Conditions of the Contract for Construction.

ARTICLE A.2 **OWNER'S INSURANCE**

§ A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

§ A.2.2 Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability insurance.

§ A.2.3 Required Property Insurance

§ A.2.3.1 Contractor shall provide builder's risk insurance as required in A.3.3.2.1.

§ A.2.3.1.1 -

(NOT USED Indicate below the cause of loss and any applicable sub-limit.)

Causes of Loss	Sub-Limit	
«N/A»		

§ A.2.3.1.2

(**NOT USED** Indicate below type of coverage and any applicable sub-limit for specific required coverages.)

Coverage	Sub-Limit	
«N/A »		

§ A.2.3.1.3

§ A.2.3.1.4

§ A.2.3.2 Occupancy or Use Prior to Substantial Completion. The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.3.3.2.1 have consented in writing to continuance or replacement of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

§ A.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner may purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.3.3.2, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

§ A.2.4

(NOT USED Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)

[« »] § A.2.4.1



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§ A.2.5 Other Optional Insurance.

The Owner may purchase and maintain the insurance selected below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to *the description(s) of selected insurance.*)

- [« »] § A.2.5.1 Cyber Security Insurance for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information. (Indicate applicable limits of coverage or other conditions in the fill point below.)
 - « »

[«»] § A.2.5.2 Other Insurance

(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage « »

Limits

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS § A.3.1 General

§ A.3.1.1 Certificates of Insurance. The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) at least five business days after execution of the Contract documents and prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on all of Contractor's insurance policies, except Contractor's workers compensation insurance. These certificates and the insurance policies required by this Article shall contain a provision that coverages afforded under the policies will not be canceled, reduced, or restricted for any reason, other than nonpayment of premium, until at least 30 days' prior written notice of such cancellation, reduction, or restriction has been given to the Owner and Contractor. An additional certificate, policy, and endorsement evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 of the AIA A201-2017 General Conditions as amended for the Project, and thereafter upon renewal or replacement of such coverage. Information concerning reduction or restriction of

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coverage on account of revised limits or claims paid under the General Aggregate, or cancellation or expiration of the insurance shall be furnished by written notice to the Owner from the Contractor within three business days of the date Contractor knew or should have known of the cancellation, reduction, or restriction. At least 30 calendar days prior to the date of expiration of any required insurance policy. Contractor shall provide Owner written notice of the impending expiration. In addition, Contractor shall also provide copies of all policies, declarations, and endorsements for such insurance to Owner as required by Section 11.0.2 of the 2017 AIA A201 General Conditions as amended for this Project.

§ A.3.1.2 Deductibles and Self-Insured Retentions. The Contractor shall disclose to the Owner any deductible or selfinsured retentions applicable to any insurance required to be provided by the Contractor. If the insurance required by this Section A.3.1 is subject to deductibles or self-insured retentions, the Contractor shall be responsible for all loss not covered because of such deductibles or retentions. For any claim made against the Contractor's policies of insurance, the deducible shall not exceed \$2,500 for Contract Sum (or Guaranteed Maximum Price, if the Project is a Construction Manager at Risk project) of less than \$4 million. For a Contract Sum (or Guaranteed Maximum Price, if the Project is a Construction Manager at Risk project), of \$4 million or more, the deductible shall not exceed \$5,000.

§ A.3.1.3 Additional Insured Obligations. To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage and any other insurance required by the Agreement, with the exception of Workers' Compensation insurance, to be endorsed to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

§ A.3.2 Contractor's Required Insurance Coverage

§ A.3.2.1 The Contractor and the Contractor's subcontractors shall purchase and maintain such insurance as will protect them and the Owner from claims which may arise out of, or result from, the Contractor's operations under the Contract whether such operations be by Contractor or by any Subcontractor, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them maybe liable, in the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. (See also the insurance requirements included in Article 11 of the AIA A201-2017 General Conditions as amended for this Project). The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions.

(DO NOT USE If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

The insurance required by this Section shall be written for not less than the limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents. The limits of liability for such insurance shall be in at least the following amounts as specified below.

(NOTE: Amounts of insurance coverage have been left blank so that Districts can enter the appropriate amounts for their Projects. DO NOT LEAVE ANY BLANK UNFILLED IF THAT COVERAGE IS REQUIRED OR CHOSEN FOR THE PROJECT. If a particular coverage will not be used for the Project, delete the unused section. If the District has questions on the appropriate amounts or types of coverage, it is strongly suggested that the District contact its legal counsel and insurance agent.)

« »

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§ A.3.2.2 Commercial General Liability

§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than « One Million Dollars and no/100» (\$ « 1,000,000 ») each occurrence, « Two Million Dollars and no/100 » (\$ « 2,000,000 ») general aggregate, and « Two Million Dollars and no/100 » (\$ « 2,000,000 ») aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person, with a sublimit not less than \$5,000 for medical expenses per person for bodily injury, included within the limits noted above;
- .2 personal injury and advertising injury with a limit not less than \$1,000,000, \$2,000,000 aggregate;
- .3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of the Work and out of completed operations, said coverage to be maintained for two years after Final Completion (to be maintained for a period of two years after Final Payment; Contractor shall continue to provide evidence of such coverage to Owner on an annual basis during this period and Owner shall be named by endorsement as an Additional Insured for such coverage) and must include Completed Operations coverage for Contractor, its subcontractors, and Owner;
- .5 the Contractor's contractual liability, including but not limited to, indemnity obligations under Section 3.18 of the General Conditions; and
- .6 General Aggregate per Project endorsement.

§ A.3.2.2. The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- .1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- .2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
- .3 Claims for bodily injury other than to employees of the insured.
- .4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.
- .5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
- .6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
- .7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
- .8 Claims related to roofing, if the Work involves roofing.
- .9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
- .10 Claims related to earth subsidence or movement, where the Work involves such hazards.
- .11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

A.3.2.2.3	Coverage

will include: Independent Contractors Premise operations Defense costs in addition to the limits

X, C, and U coverage

Broad form property damage including products/completed operations.

Contractual Liability sufficient to cover indemnity requirements in Section 3.18.1, subject to, policy terms and conditions

Contractor's Professional Liability endorsement CG 22 79 or equivalent (policy shall not contain a professional liability exclusion for "means and methods")

Additional insured, primary and non-contributing

If the additional insured endorsement maintained by the Contractor does not include completed operations coverage then the Contractor must purchase this coverage using form CG-20-37 (latest edition) or an equivalent form providing additional insureds with coverage for "completed operations".

Waiver of subrogation in favor of Owner, Program Manager and Architect



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A standard ISO CGL 2001 occurrence coverage form or equivalent No modification or restriction of the standard ISO CGL coverage form Paragraph I – "damage to your work" exclusion. The "subcontractor exception" will not be removed via CG 22 94. If there is work within fifty (50) feet of a railroad, endorse with CG 2417.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned, hired, or any other vehicles used, by the Contractor, with policy limits of not less than « » (\$ « ») than those stated below per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage. (Note: Texas statutory minimum for school districts is \$100,000 per person, \$300,000 per occurrence, and \$100,000 property damage.) Such minimum limits shall be stated as follows, or in a combined single limit policy in the amount of at least \$1,000,000.

.1	Bodily Injury (per person)	\$300,000
.2	Bodily Injury (per accident)	\$300,000
.3	Property Damage	\$300,000 L

Business Automobile Liability (including owned, non-owned, hired, or borrowed vehicles);

Combined single limit \$300,000

Coverage will include:

Contractual Liability Additional insured, primary and non-contributing Waiver of subrogation in favor of Owner, Program manager, and Architect Pollution liability which includes upset, overturn, and collision Motor Carrier Act Endorsement (MCS 90), if applicable.

§ A.3.2.4 The Contractor may not achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance In no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

A.3.2.4.1 Umbrella Excess Liability coverages shall be in at least the following amounts:

- \$ each occurrence .1
- .2 \$ aggregate
- .3 Aggregate Per Project Endorsement

Limits as follows:

If Contract Sum is \$1,000,000 or less \$1,000,000 each occurrence and \$2,000,000 annual aggregate

If Contract Sum is greater than \$1,000,000 up to \$5,000,000 \$5,000,000 each occurrence and annual aggregate

If Contract Sum is greater than \$5,000,000 up to \$10,000,000 \$10,000,000 each occurrence and annual aggregate

If Contract Sum is greater than \$10,000,000 to \$25,000,000 \$25,000,000 each occurrence and annual aggregate

If Contract Sum is greater than \$25,000,000 \$50,000,000 each occurrence and annual aggregate

Coverage will include: Occurrence based form



Follow form of the primary coverage (commercial general liability, employer's liability, auto liability) except for per project aggregate Pay on behalf wording **Completed Operations** Waiver of subrogation to follow form of the primary Additional insured to follow form of the primary Annual aggregate limit A drop down feature § A.3.2.5 Workers' Compensation . .1 State: **Statutory Benefits** .2 Employer's Liability \$500,000 per accident

> \$500,000 disease, policy limit \$ 500,000 disease, each employee

Coverage will include:

Waiver of subrogation in favor of Owner, Program Manager and Architect Alternate Employers Endorsement, if applicable Voluntary Compensation endorsement All States coverage on an "if any" basis

A.3.2.5.1 Texas Workers' Compensation Insurance. A copy of a certificate of insurance, a certificate of authority to self-insure issued by the Texas Department of Insurance (TDI), or a coverage agreement (DWC-81, DWC-82, DWC-83, or DWC-84), showing statutory worker's compensation insurance coverage for the Contractor's employees providing services on a Project is required for the duration of the Project.

A.3.2.5.1.1 Duration of the Project include the time from the beginning of the Work on the project until the Contractor's Work on the Project has been completed and accepted by the Owner.

A.3.2.5.1.2 Persons providing services on the Project ("subcontractor" in Texas Labor Code Section 406.096) include all persons or entities performing all or part of the services the Contractor has undertaken to perform on the Project, regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operations, employees of any such entity, or employees of any entity that furnishes persons to provide services on the Project.

A.3.2.5.1.3 Services include, without limitation, providing, hauling or delivering equipment or materials, or providing labor, transportation, or other services related to the Project. Services do not include activities unrelated to the Project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

A.3.2.5.1.4 The Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code 401.011(44) for all employees of the Contractor providing services on the Project for the duration of the Project.

A.3.2.5.1.5 The Contractor must provide a certificate of coverage to the Owner prior to being awarded the Contract.

A.3.2.5.1.6 If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the Project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the Owner showing that coverage has been extended.

A.3.2.5.1.7 The Contractor shall obtain from each person providing services on the Project, and provide to the Owner:

.1 A certificate of coverage, prior to that person beginning work on the Project, so the Owner will have, on file, certificates of coverage showing coverage for all persons providing services on the Project; and

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No later than seven days after receipt by the Contractor, a new certificate of coverage showing .2 extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project.

A.3.2.5.1.8 The Contractor shall retain all required certificates of coverage for the duration of the Project and for one year thereafter.

A.3.2.5.1.9 The Contractor shall notify the Owner, in writing by certified mail or personal delivery, within ten (10) days after Contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project.

A.3.2.5.1.10 The Contractor shall post on each Project site a notice, in the text form and manner prescribed by the TDI, informing all persons providing services on the Project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

A.3.2.5.1.11 The Contractor shall contractually require each person with whom it contracts to provide services on the Project to:

.1 Provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the stator requirements of Texas Labor Code 401.011(44) for all of its employees providing services on the Project for the duration of the Project:

Provide to the Contractor, prior to that person beginning work on the Project, a certificate of .2 coverage showing that coverage is being provided for all employees of the person providing services on the project for the duration of the Project;

.3 Provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;

.4 Obtain from each other person with who it contracts, and provide to the Contractor:

A certificate of coverage, prior to the other person beginning work on the Project; and .1

.2 A new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the Project.

Retain all required certificates of coverage on file for the duration of the Project and for one year .5 thereafter;

Notify the Owner in writing by certified mail or persona delivery, within ten (10) days after the .6 person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project; and

Contractually require each person with whom it contracts to perform as required by items 1 - 6, .7 with the certificates of coverage to be provided to the person for whom they are providing services.

A.3.2.5.1.12 By signing this Contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the Owner that all employees of the Contractor who will provide services on the Project will be covered by worker's compensation coverage for the duration of the Project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier, or, in the case of a self-insured, with the TDI's Division of Self-Insurance Regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

A.3.2.5.1.13 The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor that entitles the Owner to declare the Contract void if the Contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the Owner.

A.3.2.5.1.14 The coverage requirement recited above does not apply to sole proprietors, partners, and corporate officers who are excluded from coverage in an insurance policy or certificate of authority to self-insure that is delivered, issued or delivery, or renewed on or after January 1, 1996.

28 TAC § 110.110(i).

§ A.3.2.6 Employers' Liability with policy limits not less than « Five Hundred Thousand Dollars and no/100» (\$ « 500,000 ») each accident, « Five Hundred Thousand Dollars and no/100 » (\$ « 500,000 ») each employee, and « Five Hundred Thousand Dollars and no/100» (\$ « 500,000») policy limit.

§ A.3.2.7

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than « One Million Dollars and no/100 » (\$ « 1,000,000 ») per claim and « One Million Dollars and no/100 » (\$ « 1,000,000 ») in the aggregate. Contractor's Professional Liability, if applicable:

If the Work performed by the Contractor or its subcontractors will include some responsibility for design, the Contractor will purchase or cause to be purchased and maintained a professional liability policy. The limits of coverage will not be less than:

Coverage will include:



A retroactive date that is the earlier of the start of design or the Work Coverage for negligent acts, errors or omissions arising out of design or engineering services An extended reporting period of 5 years after final completion

A waiver of subrogation in favor of Owner, Program Manager and Architect

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than « Three Million Dollars and no/100 » (\$ « 3,000,000 ») per claim and « Three Million Dollars and no/100 » (\$ « 3,000,000 ») in the aggregate

Contractors Pollution Liability, if applicable Contractor will purchase a policy covering third-party bodily injury, property damage, and loss of use claims, including clean-up costs, as a result of pollution conditions arising from contractor's operations and completed operations. Completed operations coverage will remain in effect through annual renewal for no less than 5 years after final completion of the Work. The limits of coverage will be not less than:

Coverage will include:

Mold and other fungi and bacteria No exclusion for EIFS, if applicable Additional insured, primary and non-contributing A waiver of subrogation in favor of Owner, Program Manager and Architect A retroactive date no later than the start of the Work, if applicable. Occurrence form, if available.

§ A.3.2.10 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than « Four Million Dollars and no/100 » (\$ « 4,000,000 ») per claim and « Four Million Dollars and no/100 » (\$ « 4,000,000 ») in the aggregate.

§ A.3.2.11 « » (\$ « ») « » (\$ « »)

§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than « Ten Million Dollars and no/100 » (\$ « 10,000,000 ») per claim and « Ten Million Dollars and no/100 » (\$ « 10,000,000 ») in the aggregate.

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§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)

« »

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.

(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the *appropriate fill point.*)

[« X »] § A.3.3.2.1 Builder's Risk Property insurance in the amount of the Contract Sum which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall disclose to the Owner the amount of any deductible, and the Contractor shall be responsible for losses within the deductible. The Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below:

(DO NOT USE) Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)

Builder's Risk. Unless otherwise provided, Contractor shall purchase and maintain, from .1 an insurance company or insurance companies lawfully authorized to issue insurance in the state of Texas, a property insurance written on builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis, including boiler and machinery insurance, Coverage, if not included in the base coverage, shall include coverage against the perils of fire, (with extended coverage) and physical loss or damage including, without limitation or duplication of coverage, lightning, collapse, earthquake, flood, wind storm, hurricane, hail, explosion, riot, civil commotion, smoke, aircraft, land vehicles, theft, vandalism, malicious mischief, falsework, testing and start-up, temporary buildings, debris removal including demolition occasioned by enforcement of any applicable legal requirements, and all other perils, and shall include materials stored on-site, off-site, and in transit. The Contractor's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Final Completion, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees. Such coverage shall be primary coverage.

.2 **Causes of Loss.** The insurance required by this Section A.3.3.2.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:

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Causes of Loss Sub-Limit. Specific Required Coverages. The insurance required by this .3 Section A.3.3.2.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition, occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows: (Indicate below type of coverage and any applicable sub-limit for specific required coverages.)

.4 Adjustment of Loss. The Owner, as a fiduciary, shall have power to adjust and settle any loss arising out of the Work, with insured, regardless of the purchaser of the insurance policy. The Contractor, upon receipt of proceeds, shall as fiduciary, pay all subcontractors their just shares of insurance proceeds received by the Contractor, and, by appropriate agreements, shall require subcontractors to make payment to their sub-subcontractors in similar manner. The Owner shall deposit, in a separate account, proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, then replacement of damaged property shall be performed by the Contractor with the insurance proceeds upon issuance of a Notice to Proceeds from the Owner.

.5 Occupancy or Use Prior to Substantial Completion. The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.3.3.2.1 have consented, in writing, to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

.6 Employee Theft or Dishonesty. If this Builder's Risk policy excludes Employee Theft or Dishonesty coverage, including Third Parties, Contractor shall obtain separate coverage sufficient to protect Owner's interest and in an amount agreeable to Owner.

Cancellation. The insurance policies required by this Section A.3.3.2 shall contain a .7 provision that coverages afforded under the policies will not be canceled for any reason, other than nonpayment of premium, or reduced or restricted due to a material change in coverage until at least 30 days prior written notice of such cancellation or material change has been given to the Owner. Contractor shall provide Owner 30 days prior written notice of the expiration of any policy required by Section A.3.1.1.

.8 Construction Manager at Risk. If Contractor is a Construction Manager at Risk. Then, as specified in each AIA A133 Exhibit A Amendment, the amount of Builder's Risk insurance coverage shall be an amount equal to the Guaranteed Maximum Price; otherwise, in the total amount of the Contract Sum.

.9 **Deductibles.** For any claim made against the builder's risk insurance, the deductible shall not exceed \$2,500 for a Contract Sum (or Guaranteed Maximum Price, if the Project is a Construction Manager at Risk project), of less than \$4 million. For a Contract Sum (or Guaranteed Maximum Price, if the project is a Construction Manager at Risk project), of \$4 million or more, the deductible shall not exceed \$5,000. Contractor shall be responsible for losses within such deductible amounts.

« »

[«»] § A.3.3.2.2 «» (\$ «») «» (\$ «»)

[«»] § A.3.3.2.3 «» (\$ «») «» (\$ «»)

[« »] § A.3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the

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construction site on an "all-risks" completed value form.

[« »] § A.3.3.2.5 [« »] § A.3.3.2.6 Other Insurance (List below any other insurance coverage to be provided by the Contractor and any applicable limits.) Limits Coverage « » § A.3.4 Performance Bond and Payment Bond The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, subject to the requirements of A201-2017, Article 11.1.2.1, as follows: (Specify type and penal sum of bonds.) Penal Sum (\$0.00) Туре Payment Bond «\$ or 100% of the Contract Sum as amended Performance Bond \$ or 100% of the Contract Sum as amended» The form of Payment and Performance Bonds shall be subject to the requirements of Texas law, current as of the date of this Agreement. SPECIAL TERMS AND CONDITIONS ARTICLE A.4 Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows: « See A201-2017, Article 11 » This Agreement entered into as of the day and year first written above. **OWNER** CONTRACTOR Dallas Independent School District

GENERAL AND SUPPLEMENTARY CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

A201

Dallas ISD Construction Services 00 52 11 Issued 10/31/2016 CSP 207459 August 16, 2024

RAFT AIA Document A201[™] - 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

BP# XXX: ORG #XXX XX Elementary School School Address Dallas, Texas 75XXX

THE OWNER: (Name, legal status and address)

The Dallas Independent School District, a political subdivision of the State of Texas 9400 North Central Expressway Dallas, Texas 75231

THE PROGRAM MANAGER:

(Name, legal status and address)

PMF Name **PMF Address** PMF City/State/Zip »« »

THE ARCHITECT:

(Name, legal status and address)

A/E Name **A/E Address** A/E City/State/Zip

TABLE OF ARTICLES

- **GENERAL PROVISIONS** 1
- 2 OWNER
- 3 CONTRACTOR
- Δ **ARCHITECT ADMINISTRATION OF THE CONTRACT**
- 5 SUBCONTRACTORS
- CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS 6
- CHANGES IN THE WORK 7
- TIME 8
- 9 **PAYMENTS AND COMPLETION**
- PROTECTION OF PERSONS AND PROPERTY 10

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.





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- 11 INSURANCE AND BONDS
- 12 UNCOVERING AND CORRECTION OF WORK
- 13 MISCELLANEOUS PROVISIONS
- 14 TERMINATION OR SUSPENSION OF THE CONTRACT
- 15 CLAIMS AND DISPUTES

Version 10/27/2022



2

INDEX

(Topics and numbers in bold are Section headings.)

Acceptance of Nonconforming Work 9.6.6, 9.9.3, 12.3 Acceptance of Work 9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, 12.3 Access to Work 3.16, 6.2.1, 12.1 Accident Prevention 10 Acts and Omissions 3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 8.3.1, 9.5.1, 10.2.5, 10.2.8, 13.3.2, 14.1, 15.1.2, 15.2 Addenda 1.1.1 Additional Costs, Claims for 3.7.4, 3.7.5, 10.3.2, 15.1.5 **Additional Inspections and Testing** 9.4.2, 9.8.3, 12.2.1, 13.4 **Additional Time, Claims for** 3.2.4, 3.7.4, 3.7.5, 3.10.2, 8.3.2, 15.1.6 **Administration of the Contract** 3.1.3, 4.2, 9.4, 9.5 Advertisement or Invitation to Bid 1.1.1 Aesthetic Effect 4.2.13 Allowances 3.8 **Applications for Payment** 4.2.5, 7.3.9, 9.2, 9.3, 9.4, 9.5.1, 9.5.4, 9.6.3, 9.7, 9.10 Approvals 2.1.1, 2.3.1, 2.5, 3.1.3, 3.10.2, 3.12.8, 3.12.9, 3.12.10.1, 4.2.7, 9.3.2, 13.4.1 Arbitration 8.3.1, 15.3.2, 15.4 ARCHITECT Architect, Definition of 4.1.1 Architect, Extent of Authority 2.5, 3.12.7, 4.1.2, 4.2, 5.2, 6.3, 7.1.2, 7.3.4, 7.4, 9.2, 9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1, 13.4.1, 13.4.2, 14.2.2, 14.2.4, 15.1.4, 15.2.1 Architect, Limitations of Authority and Responsibility 2.1.1, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2, 4.2.3, 4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 5.2.1, 7.4, 9.4.2, 9.5.4, 9.6.4, 15.1.4, 15.2 Architect's Additional Services and Expenses 2.5, 12.2.1, 13.4.2, 13.4.3, 14.2.4 Architect's Administration of the Contract 3.1.3, 3.7.4, 15.2, 9.4.1, 9.5 Architect's Approvals 2.5, 3.1.3, 3.5, 3.10.2, 4.2.7

Architect's Authority to Reject Work 3.5, 4.2.6, 12.1.2, 12.2.1 Architect's Copyright 1.1.7, 1.5 Architect's Decisions 3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.2.14, 6.3, 7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4.1, 9.5, 9.8.4, 9.9.1, 13.4.2, 15.2 Architect's Inspections 3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.4 Architect's Instructions 3.2.4, 3.3.1, 4.2.6, 4.2.7, 13.4.2 Architect's Interpretations 4.2.11, 4.2.12 Architect's Project Representative 4.2.10 Architect's Relationship with Contractor 1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5, 3.7.4, 3.7.5, 3.9.2, 3.9.3, 3.10, 3.11, 3.12, 3.16, 3.18, 4.1.2, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.3.2, 13.4, 15.2 Architect's Relationship with Subcontractors 1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.3 Architect's Representations 9.4.2, 9.5.1, 9.10.1 Architect's Site Visits 3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4 Asbestos 10.3.1 Attorneys' Fees 3.18.1, 9.6.8, 9.10.2, 10.3.3 Award of Separate Contracts 6.1.1, 6.1.2 Award of Subcontracts and Other Contracts for **Portions of the Work** 5.2 **Basic Definitions** 1.1 **Bidding Requirements** 1.1.1 Binding Dispute Resolution 8.3.1, 9.7, 11.5, 13.1, 15.1.2, 15.1.3, 15.2.1, 15.2.5, 15.2.6.1, 15.3.1, 15.3.2, 15.3.3, 15.4.1 Bonds, Lien 7.3.4.4, 9.6.8, 9.10.2, 9.10.3 Bonds, Performance, and Payment 7.3.4.4, 9.6.7, 9.10.3, 11.1.2, 11.1.3, 11.5 **Building Information Models Use and Reliance** 1.8 **Building Permit** 3.7.1 Capitalization 1.3 Certificate of Substantial Completion 9.8.3, 9.8.4, 9.8.5 **Certificates for Payment** 4.2.1, 4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4, 15.1.4

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Certificates of Inspection, Testing or Approval 13.4.4 Certificates of Insurance 9.10.2 **Change Orders** 1.1.1, 3.4.2, 3.7.4, 3.8.2.3, 3.11, 3.12.8, 4.2.8, 5.2.3, 7.1.2, 7.1.3, **7.2**, 7.3.2, 7.3.7, 7.3.9, 7.3.10, 8.3.1, 9.3.1.1, 9.10.3, 10.3.2, 11.2, 11.5, 12.1.2 Change Orders, Definition of 7.2.1 **CHANGES IN THE WORK** 2.2.2, 3.11, 4.2.8, 7, 7.2.1, 7.3.1, 7.4, 8.3.1, 9.3.1.1, 11.5 Claims. Definition of 15.1.1 Claims, Notice of 1.6.2. 15.1.3 **CLAIMS AND DISPUTES** 3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, 9.10.4, 10.3.3, 15, 15.4 Claims and Timely Assertion of Claims 15.4.1 **Claims for Additional Cost** 3.2.4, 3.3.1, 3.7.4, 7.3.9, 9.5.2, 10.2.5, 10.3.2, 15.1.5 **Claims for Additional Time** 3.2.4, 3.3.1, 3.7.4, 6.1.1, 8.3.2, 9.5.2, 10.3.2, 15.1.6 Concealed or Unknown Conditions, Claims for 3.7.4 Claims for Damages 3.2.4, 3.18, 8.3.3, 9.5.1, 9.6.7, 10.2.5, 10.3.3, 11.3, 11.3.2, 14.2.4, 15.1.7 Claims Subject to Arbitration 15.4.1 **Cleaning Up** 3.15, 6.3 Commencement of the Work, Conditions Relating to 2.2.1, 3.2.2, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 5.2.1, 5.2.3, 6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.2, 15.1.5 Commencement of the Work, Definition of 8.1.2 **Communications** 3.9.1, 4.2.4 Completion, Conditions Relating to 3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1, 9.10, 12.2, 14.1.2, 15.1.2 **COMPLETION, PAYMENTS AND** 9 Completion, Substantial 3.10.1, 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 12.2, 15.1.2 Compliance with Laws 2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 10.2.2, 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14.1.1, 14.2.1.3, 15.2.8, 15.4.2, 15.4.3 Concealed or Unknown Conditions 3.7.4, 4.2.8, 8.3.1, 10.3 Conditions of the Contract 1.1.1, 6.1.1, 6.1.4

Consent, Written 3.4.2, 3.14.2, 4.1.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 13.2, 15.4.4.2 **Consolidation or Joinder** 15.4.4 **CONSTRUCTION BY OWNER OR BY** SEPARATE CONTRACTORS 1.1.4.6 Construction Change Directive, Definition of 7.3.1 **Construction Change Directives** 1.1.1, 3.4.2, 3.11, 3.12.8, 4.2.8, 7.1.1, 7.1.2, 7.1.3, 7.3, 9.3.1.1 Construction Schedules, Contractor's 3.10, 3.11, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2 **Contingent Assignment of Subcontracts** 5.4. 14.2.2.2 **Continuing Contract Performance** 15.1.4 Contract, Definition of 1.1.2 CONTRACT, TERMINATION OR SUSPENSION OF THE 5.4.1.1, 5.4.2, 11.5, 14 **Contract Administration** 3.1.3, 4, 9.4, 9.5 Contract Award and Execution, Conditions Relating to 3.7.1, 3.10, 5.2, 6.1 Contract Documents, Copies Furnished and Use of 1.5.2, 2.3.6, 5.3 Contract Documents, Definition of 1.1.1 **Contract Sum** 2.2.2, 2.2.4, 3.7.4, 3.7.5, 3.8, 3.10.2, 5.2.3, 7.3, 7.4, 9.1, 9.2, 9.4.2, 9.5.1.4, 9.6.7, 9.7, 10.3.2, 11.5, 12.1.2, 12.3, 14.2.4, 14.3.2, 15.1.4.2, 15.1.5, 15.2.5 Contract Sum, Definition of 9.1 Contract Time 1.1.4, 2.2.1, 2.2.2, 3.7.4, 3.7.5, 3.10.2, 5.2.3, 6.1.5, 7.2.1.3, 7.3.1, 7.3.5, 7.3.6, 7, 7, 7.3.10, 7.4, 8.1.1, 8.2.1, 8.2.3, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1, 12.1.2, 14.3.2, 15.1.4.2, 15.1.6.1, 15.2.5 Contract Time, Definition of 8.1.1 **CONTRACTOR** 3 Contractor, Definition of 3.1.6.1.2 **Contractor's Construction and Submittal** Schedules 3.10, 3.12.1, 3.12.2, 4.2.3, 6.1.3, 15.1.6 2 Contractor's Employees 2.2.4, 3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3, 11.3, 14.1, 14.2.1.1 **Contractor's Liability Insurance** 11.1

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Contractor's Relationship with Separate Contractors and Owner's Forces 3.12.5, 3.14.2, 4.2.4, 6, 11.3, 12.2.4 Contractor's Relationship with Subcontractors 1.2.2, 2.2.4, 3.3.2, 3.18.1, 3.18.2, 4.2.4, 5, 9.6.2, 9.6.7, 9.10.2, 11.2, 11.3, 11.4 Contractor's Relationship with the Architect 1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5.1, 3.7.4, 3.10, 3.11, 3.12, 3.16, 3.18, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.4, 15.1.3, 15.2.1 Contractor's Representations 3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2 Contractor's Responsibility for Those Performing the Work 3.3.2, 3.18, 5.3, 6.1.3, 6.2, 9.5.1, 10.2.8 Contractor's Review of Contract Documents 3.2 Contractor's Right to Stop the Work 2.2.2.9.7 Contractor's Right to Terminate the Contract 14.1 Contractor's Submittals 3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 9.2, 9.3, 9.8.2, 9.8.3, 9.9.1, 9.10.2, 9.10.3 Contractor's Superintendent 3.9, 10.2.6 Contractor's Supervision and Construction Procedures 1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.4, 7.3.6, 8.2, 10, 12, 14, 15.1.4 Coordination and Correlation 1.2, 3.2.1, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1 Copies Furnished of Drawings and Specifications 1.5, 2.3.6, 3.11 Copyrights 1.5, 3.17 Correction of Work 2.5, 3.7.3, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, 12.2, 12.3, 15.1.3.1, 15.1.3.2, 15.2.1 **Correlation and Intent of the Contract Documents** 1.2 Cost, Definition of 7.3.4 Costs 2.5, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3, 7.3.3.3, 7.3.4, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6, 11.2, 12.1.2, 12.2.1, 12.2.4, 13.4, 14 **Cutting and Patching** 3.14, 6.2.5 Damage to Construction of Owner or Separate Contractors 3.14.2, 6.2.4, 10.2.1.2, 10.2.5, 10.4, 12.2.4 Damage to the Work 3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4, 12.2.4 Damages, Claims for 3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.3.2, 11.3, 14.2.4, 15.1.7

Damages for Delay 6.2.3, 8.3.3, 9.5.1.6, 9.7, 10.3.2, 14.3.2 Date of Commencement of the Work. Definition of 8.1.2 Date of Substantial Completion, Definition of 8.1.3 Day, Definition of 8.1.4 Decisions of the Architect 3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 6.3, 7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.4.2, 14.2.2, 14.2.4, 15.1, 15.2 **Decisions to Withhold Certification** 9.4.1. 9.5. 9.7. 14.1.1.3 Defective or Nonconforming Work, Acceptance, Rejection and Correction of 2.5, 3.5, 4.2.6, 6.2.3, 9.5.1, 9.5.3, 9.6.6, 9.8.2, 9.9.3, 9.10.4, 12.2.1 Definitions 1.1, 2.1.1, 3.1.1, 3.5, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 5.1, 6.1.2, 7.2.1, 7.3.1, 8.1, 9.1, 9.8.1, 15.1.1 **Delays and Extensions of Time 3.2**, **3.7.4**, 5.2.3, 7.2.1, 7.3.1, **7.4**, **8.3**, 9.5.1, **9.7**, 10.3.2, **10.4**, 14.3.2, **15.1.6**, 15.2.5 **Digital Data Use and Transmission** 1.7 Disputes 6.3, 7.3.9, 15.1, 15.2 **Documents and Samples at the Site** 3.11 Drawings, Definition of 1.1.5 Drawings and Specifications, Use and Ownership of 3.11 Effective Date of Insurance 8.2.2 Emergencies **10.4**, 14.1.1.2, **15.1.5** Employees, Contractor's 3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3.3, 11.3, 14.1, 14.2.1.1 Equipment, Labor, or Materials 1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2 Execution and Progress of the Work 1.1.3, 1.2.1, 1.2.2, 2.3.4, 2.3.6, 3.1, 3.3.1, 3.4.1, 3.7.1, 3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.6, 8.2, 9.5.1, 9.9.1, 10.2, 10.3, 12.1, 12.2, 14.2, 14.3, 1, 15.1.4 Extensions of Time 3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2, 10.4, 14.3, 15.1.6, 15.2.5 **Failure of Payment** 9.5.1.3, 9.7, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2 Faulty Work (See Defective or Nonconforming Work) **Final Completion and Final Payment** 4.2.1, 4.2.9, 9.8.2, 9.10, 12.3, 14.2.4, 14.4.3

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Financial Arrangements, Owner's 2.2.1. 13.2.2. 14.1.1.4 **GENERAL PROVISIONS** 1 **Governing Law** 13.1 Guarantees (See Warranty) **Hazardous Materials and Substances** 10.2.4. 10.3 Identification of Subcontractors and Suppliers 5.2.1 Indemnification 3.17, 3.18, 9.6.8, 9.10.2, 10.3.3, 11.3 Information and Services Required of the Owner 2.1.2, **2.2**, 2.3, 3.2.2, 3.12.10.1, 6.1.3, 6.1.4, 6.2.5, 9.6.1, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2, 14.1.1.4, 14.1.4, 15.1.4 **Initial Decision** 15.2 Initial Decision Maker, Definition of 1.1.8 Initial Decision Maker, Decisions 14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5 Initial Decision Maker, Extent of Authority 14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5 Injury or Damage to Person or Property 10.2.8, 10.4 Inspections 3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 12.2.1, 13.4 Instructions to Bidders 1.1.1 Instructions to the Contractor 3.2.4, 3.3.1, 3.8.1, 5.2.1, 7, 8.2.2, 12, 13.4.2 Instruments of Service, Definition of 1.1.7 Insurance 6.1.1, 7.3.4, 8.2.2, 9.3.2, 9.8.4, 9.9.1, 9.10.2, 10.2.5, 11 Insurance, Notice of Cancellation or Expiration 11.1.4, 11.2.3 Insurance, Contractor's Liability 11.1 Insurance, Effective Date of 8.2.2, 14.4.2 Insurance, Owner's Liability 11.2 **Insurance, Property** 10.2.5, 11.2, 11.4, 11.5 Insurance, Stored Materials 9.3.2 **INSURANCE AND BONDS** 11 Insurance Companies, Consent to Partial Occupancy 9.9.1 Insured loss, Adjustment and Settlement of 11.5

1.2.1, 4.2.7, 4.2.12, 4.2.13 Interest 13.5 Interpretation 1.1.8, 1.2.3, **1.4**, 4.1.1, 5.1, 6.1.2, 15.1.1 Interpretations, Written 4.2.11, 4.2.12 Judgment on Final Award 15.4.2 Labor and Materials, Equipment 1.1.3, 1.1.6, **3.4**, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4. 14.2.1.1. 14.2.1.2 Labor Disputes 8.3.1 Laws and Regulations 1.5, 2.3.2, 3.2.3, 3.2.4, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 9.9.1, 10.2.2, 13.1, 13.3.1, 13.4.2, 13.5, 14, 15.2.8, 15.4 Liens 2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8 Limitations, Statutes of 12.2.5, 15.1.2, 15.4.1.1 Limitations of Liability 3.2.2, 3.5, 3.12.10, 3.12.10.1, 3.17, 3.18.1, 4.2.6, 4.2.7, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 9.6.8, 10.2.5, 10.3.3, 11.3, 12.2.5, 13.3.1 Limitations of Time 2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7, 5.2, 5.3, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15, 15.1.2, 15.1.3, 15.1.5 Materials, Hazardous 10.2.4. 10.3 Materials, Labor, Equipment and 1.1.3, 1.1.6, 3.4.1, 3.5, 3.8.2, 3, 8.3, 3.12, 3.13, 3.15.1, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5, 1.3, 9.10.2, 10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2 Means, Methods, Techniques, Sequences and Procedures of Construction 3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2 Mechanic's Lien 2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8 Mediation 8.3.1, 15.1.3.2, 15.2.1, 15.2.5, 15.2.6, 15.3, 15.4.1, 15.4.1.1 Minor Changes in the Work 1.1.1, 3.4.2, 3.12.8, 4.2.8, 7.1, 7,4 MISCELLANEOUS PROVISIONS 13 Modifications, Definition of 1.1.1 Modifications to the Contract 1.1.1, 1.1.2, 2.5, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7, 10.3.2 Mutual Responsibility 6.2

6

Intent of the Contract Documents

Nonconforming Work, Acceptance of 9.6.6, 9.9.3, 12.3 Nonconforming Work, Rejection and Correction of 2.4, 2.5, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4, 12.2 Notice **1.6**, 1.6.1, 1.6.2, 2.1.2, 2.2.2, 2.2.3, 2.2.4, 2.5, 3.2.4, 3.3.1, 3.7.4, 3.7.5, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 7.4, 8.2.2 9.6.8, 9.7, 9.10.1, 10.2.8, 10.3.2, 11.5, 12.2.2.1, 13.4.1, 13.4.2, 14.1, 14.2.2, 14.4.2, 15.1.3, 15.1.5, 15.1.6, 15.4.1 Notice of Cancellation or Expiration of Insurance 11.1.4, 11.2.3 Notice of Claims 1.6.2, 2.1.2, 3.7.4, 9.6.8, 10.2.8, 15.1.3, 15.1.5, 15.1.6, 15.2.8, 15.3.2, 15.4.1 Notice of Testing and Inspections 13.4.1, 13.4.2 Observations, Contractor's 3.2, 3.7.4 Occupancy 2.3.1, 9.6.6, 9.8 Orders, Written 1.1.1, 2.4, 3.9.2, 7, 8.2.2, 11.5, 12.1, 12.2.2.1, 13.4.2, 14.3.1 **OWNER** 2 Owner, Definition of 2.1.1 **Owner, Evidence of Financial Arrangements** 2.2, 13.2.2, 14.1.1.4 **Owner, Information and Services Required of the** 2.1.2, 2.2, 2.3, 3.2.2, 3.12.10, 6.1.3, 6.1.4, 6.2.5, 9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2, 14.1.1.4, 14.1.4, 15.1.4 Owner's Authority 1.5, 2.1.1, 2.3.32.4, 2.5, 3.4.2, 3.8.1, 3.12.10, 3.14.2, 4.1.2, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1, 7.3.1, 8.2.2, 8.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2, 10.3.2, 11.4, 11.5, 12.2.2, 12.3, 13.2.2, 14.3, 14.4, 15.2.7 **Owner's Insurance** 11.2 Owner's Relationship with Subcontractors 1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2 **Owner's Right to Carry Out the Work** 2.5, 14.2.2 **Owner's Right to Clean Up** 6.3 **Owner's Right to Perform Construction and to Award Separate Contracts** 6.1 **Owner's Right to Stop the Work** 2.4 Owner's Right to Suspend the Work 14.3 Owner's Right to Terminate the Contract 14.2, 14.4

Ownership and Use of Drawings, Specifications and Other Instruments of Service 1.1.1, 1.1.6, 1.1.7, 1.5, 2.3.6, 3.2.2, 3.11, 3.17, 4.2.12, 5.3 **Partial Occupancy or Use** 9.6.6. 9.9 Patching, Cutting and 3.14. 6.2.5 Patents 3.17 **Payment, Applications for** 4.2.5, 7.3.9, 9.2, 9.3, 9.4, 9.5, 9.6.3, 9.7, 9.8.5, 9.10.1, 14.2.3, 14.2.4, 14.4.3 **Payment.** Certificates for 4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4 Payment, Failure of 9.5.1.3, 9.7, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2 Payment, Final 4.2.1, 4.2.9, 9.10, 12.3, 14.2.4, 14.4.3 Payment Bond, Performance Bond and 7.3.4.4, 9.6.7, 9.10.3, 11.1.2 **Payments**, **Progress** 9.3, 9.6, 9.8.5, 9.10.3, 14.2.3, 15.1.4 **PAYMENTS AND COMPLETION** 9 Payments to Subcontractors 5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 14.2.1.2 PCB 10.3.1 **Performance Bond and Payment Bond** 7.3.4.4, 9.6.7, 9.10.3, **11.1.2** Permits, Fees, Notices and Compliance with Laws 2.3.1, 3.7, 3.13, 7.3.4.4, 10.2.2 PERSONS AND PROPERTY, PROTECTION OF 10 Polychlorinated Biphenyl 10.3.1 Product Data, Definition of 3.12.2 **Product Data and Samples, Shop Drawings** 3.11, 3.12, 4.2.7 **Progress and Completion** 4.2.2, 8.2, 9.8, 9.9.1, 14.1.4, 15.1.4 **Progress Payments** 9.3, 9.6, 9.8.5, 9.10.3, 14.2.3, 15.1.4 **Project**, Definition of 1.1.4 **Project Representatives** 4.2.10 **Property Insurance** 10.2.5, 11.2 **Proposal Requirements** 1.1.1**PROTECTION OF PERSONS AND PROPERTY**

7

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Site Inspections 3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2, 9.9.2, 9.4.2, 9.10.1, 13.4 Site Visits. Architect's 3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4 Special Inspections and Testing 4.2.6, 12.2.1, 13.4 Specifications, Definition of 1.1.6 **Specifications** 1.1.1, 1.1.6, 1.2.2, 1.5, 3.12.10, 3.17, 4.2.14 Statute of Limitations 15.1.2, 15.4.1.1 Stopping the Work 2.2.2. 2.4. 9.7. 10.3. 14.1 Stored Materials 6.2.1, 9.3.2, 10.2.1.2, 10.2.4 Subcontractor, Definition of 5.1.1 **SUBCONTRACTORS** 5 Subcontractors, Work by 1.2.2, 3.3.2, 3.12.1, 3.18, 4.2.3, 5.2.3, 5.3, 5.4, 9.3.1.2, 9.6.7 **Subcontractual Relations** 5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 14.1, 14.2.1 **Submittals** 3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.4, 9.2, 9.3, 9.8, 9.9.1, 9.10.2, 9.10.3 Submittal Schedule 3.10.2, 3.12.5, 4.2.7 Subrogation, Waivers of 6.1.1, 11.3 Substances, Hazardous 10.3 **Substantial Completion** 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 12.2, 15.1.2 Substantial Completion, Definition of 9.8.1 Substitution of Subcontractors 5.2.3, 5.2.4 Substitution of Architect 2.3.3 Substitutions of Materials 3.4.2, 3.5, 7.3.8 Sub-subcontractor, Definition of 5.1.2 Subsurface Conditions 3.7.4 Successors and Assigns 13.2 Superintendent 3.9, 10.2.6 **Supervision and Construction Procedures** 1.2.2, **3.3**, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1, 3, 6.2.4, 7.1.3, 7.3.4, 8.2, 8.3.1, 9.4.2, 10, 12, 14, 15.1.4

8

Suppliers 1.5, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.5.4, 9.6, 9.10.5. 14.2.1 Surety 5.4.1.2, 9.6.8, 9.8.5, 9.10.2, 9.10.3, 11.1.2, 14.2.2, 15.2.7 Surety, Consent of 9.8.5, 9.10.2, 9.10.3 Surveys 1.1.7, 2.3.4 Suspension by the Owner for Convenience 14.3 Suspension of the Work 3.7.5. 5.4.2. 14.3 Suspension or Termination of the Contract 5.4.1.1, 14 Taxes 3.6, 3.8.2.1, 7.3.4.4 **Termination by the Contractor** 14.1. 15.1.7 Termination by the Owner for Cause 5.4.1.1, 14.2, 15.1.7 Termination by the Owner for Convenience 14.4 Termination of the Architect 2.3.3 Termination of the Contractor Employment 14.2.2

TERMINATION OR SUSPENSION OF THE CONTRACT 14

Tests and Inspections 3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 10.3.2, 12.2.1, **13.4 TIME 8**

Time, Delays and Extensions of

3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, **8.3**, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.6, 15.2.5 Time Limits 2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2, 5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15.1.2, 15.1.3, 15.4 **Time Limits on Claims** 3.7.4, 10.2.8, 15.1.2, 15.1.3 Title to Work 9.3.2, 9.3.3 UNCOVERING AND CORRECTION OF WORK 12 **Uncovering of Work** 12.1 Unforeseen Conditions, Concealed or Unknown 3.7.4, 8.3.1, 10.3 Unit Prices 7.3.3.2, 9.1.2 Use of Documents 1.1.1, 1.5, 2.3.6, 3.12.6, 5.3 Use of Site 3.13, 6.1.1, 6.2.1 Values, Schedule of 9.2, 9.3.1 Waiver of Claims by the Architect 13.3.2 Waiver of Claims by the Contractor 9.10.5, 13.3.2, 15.1.7 Waiver of Claims by the Owner 9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.3.2, 14.2.4, 15.1.7 Waiver of Consequential Damages 14.2.4, 15.1.7 Waiver of Liens 9.3, 9.10.2, 9.10.4 Waivers of Subrogation 6.1.1, 11.3 Warranty 3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.2, 9.10.4, 12.2.2, 15.1.2 Weather Delays 8.3, 15.1.6.2 Work, Definition of 1.1.3 Written Consent 1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.10.3, 13.2, 13.3.2, 15.4.4.2 Written Interpretations 4.2.11, 4.2.12 Written Orders 1.1.1, 2.4, 3.9, 7, 8.2.2, 12.1, 12.2, 13.4, 2, 14.3.1



ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents consist of the Contract between Owner and Contractor, A101-2017, as amended, OR the Contract between the Owner and Construction Manager at Risk A133-2019, as amended, and the A133-2019 Exhibit A (hereinafter the AgreementContract); Conditions of the Contract as amended (General, Supplementary) and other Conditions, including but not limited to A201-2017, as amended); Contractor's proof of Payment and Performance Bonds and proof of insurance, are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), all sections of the Project Manual and Construction Documents (as defined in Section 1.1.3 below) including Drawings, Specifications, and Addenda issued prior to receipt of bids or proposals, to execution of the Contract, other documents listed in the AgreementContract, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the AgreementContract, the Contract Documents do not include other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, Contractor's bid or portions of Addenda relating to bidding requirements). All sections of the Project Manual shall be a part of the AgreementContract. In the event of conflict, terms and conditions contained in the AgreementContract, as amended, shall take precedence over terms and conditions contained in the General Conditions, as amended. The terms and conditions in the General Conditions, as amended, shall take precedence over all other terms and conditions contained in the other Contract Documents. - Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

1.1.1.1 The Contract, represents the entire and integrated agreement between the Owner and the Contractor and supersedes all prior negotiations, representations, or agreements, either written or oral. Any revision, amendment, or modification to the Standard Form of the Contract shall be valid, binding, and enforceable only if said revision, amendment, or modification is made conspicuous by being underlined, lined-through, or highlighted in this Contract signed by Contractor and the authorized representative of Owner's Board of Trustees.

§ 1.1.2 The Contract

The Contract Documents form the Contract for <u>ConstructionConstruction (the "Contract"</u>). The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a <u>written</u> Modification<u>signed</u> by the Contractor, approved by Owner's Board of Trustees, and signed by the representative of the Owner's Board of Trustees who is authorized to sign contracts. As a material consideration for the making of the Contract, modifications to the Contract shall not be constructed against the maker of said modifications. The Contract Documents shall not be construct to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor. The Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

The Program Manager and/or Architect shall, however, be entitled to performance and enforcement of obligations of the Contractor under the Contract intended to facilitate performance of the duties of the Architect and/or the Program Manager.

1.1.2.1 To be effective, all Contract Documents including the A201-2017, as amended requiring signatures must be signed first by the Contractor representative and then by the Owner's authorized representative, after approval by Owner's Board of Trustees. If an approved Contact Document requiring Contractor's signature has not been signed, then the missing signature shall be provided within a reasonable period of time. Failure of Contractor to sign an approved Contract Document after notice and a reasonable opportunity to sign, shall be considered a material breach of the Contract by Contractor.

§ 1.1.3 The Work; Construction Documents

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project. The Work includes all labor, parts, supplies, skill, supervision, transportation, services, and other facilities and things necessary, proper or incidental to the carrying out and completion of the terms of the Contract Documents and all other items of cost or value needed to produce, construct and fully complete the public Work identified by the Contract Documents.

"Construction Documents" means: all Drawings, Specifications, geotechnical reports, Addenda, submittals, transmittals, deliverables, instructions to Contractors, and other documents, including those in electronic form, prepared by the Architect and the Architect's consultants and which set forth in detail the requirements for construction of the Project. The Construction Documents shall include Drawings and Specifications that establish, in detail, the quality levels of materials and systems required for the Project. The Construction Documents shall reflect all agreements between Owner and Architect concerning Owner's budgetary constraints, programmatic needs and expectations as to quality, functionality of systems, maintenance costs, and usable life of equipment and facilities. Said Construction Documents shall reflect the Owner's educational program and educational specifications, the State educational adequacy standards in 19 TAC § 61.104036, and the standards set forth in the Owner's architect agreement Section 3.1.4 of AIA document B101-2017. The Architect shall provide Construction Documents which are sufficient for Owner to complete construction of the Project, are free from material defects or omissions, and which shall comply with all applicable laws, ordinances, codes, rules, and regulations, as of the date of issuance of Construction Documents.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and or by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments PROJECT MANUAL of Service

<u>Construction</u> Instru<u>Documents of Service are include</u> representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. <u>Construction</u> Instru<u>Documents of Service may</u> include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials. <u>The Project Manual is a volume assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.</u>

§ 1.1.8 PROGRAM MANAGERSInitial Decision Maker

The Owner may use Program Managers to carry out some of the functions of administration of the Owner's construction program. The Contractor, Architect, and Program Manager (when applicable) shall cooperate with each other in the performance of their respective functions. The management and reporting systems used by the Owner and/or Program Manager, including the assignment of the Program Manager, may be changed by Owner during the Project.

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

1.1.9 Addenda

Addenda are written or graphic instrument issued by the Owner prior to the execution of the Contract, which modify or interpret the bidding or proposal documents, including Drawings and Specifications, by additions, deletions, clarifications, or corrections. Addenda will become part of the Contract Documents and Construction Documents when the Contract is executed. The Contractor and subcontractors shall include all addenda items on their copies of the Drawings and Specifications.

1.1.10 All references to "Contractor" shall include "Construction Manager at Risk" as appropriate.

1.1.11 The Owner may retain Program Manager(s) to carry out some of the functions of the administration of the Owner's construction program. The Contractor, Architect, and Program Manager(s) (when applicable) shall cooperate with each other in the performance of their respective functions. The management and reporting systems used by the Owner and/or Program Manager(s) including the assignment of the Program Manager, may be changed by Owner during the Project.[Omitted]

1.1.11 Approved, Approved Equal, Approved Equivalents, Or Equal

The terms "Approved" and "Approved Equal" relate to the substitution of materials, equipment, or procedure in writing by the Architect prior to receipt of bids.

1.1.12 Abbreviations

AIA:	American Institute of Architects. (All references to AIA documents refer to AIA's trademarked
	documents. Each reference to a specific document shall refer to the documents as amended for the
	Project.)
AIEE:	American Institute of Electrical Engineers
ACI:	American Concrete Institute
AHERA:	Asbestos Hazardous Emergency Response Act
AISI:	American Iron and Steel Institute
AISC:	American Institute of Steel Construction
ANSI:	American National Standards Institute
ASA:	American Standards Association
ASTM:	American Society of Testing Materials
AWSC:	American Welding Society Code
CERCLA:	Comprehensive Environmental Response, Compensation, and Liability Act
EPA:	Environmental Protection Agency
FS:	Federal Specification
NEC:	National Electrical Code
OSHA:	Occupational Safety and Health Administration
SPR:	Simplified Practice Recommendation
TAS:	Texas Accessibility Standards
UL:	Underwriters Laboratories, Inc.

1.1.13 Bids or Bidding The term "Bids" or "Bidding" shall include any kind of competitive purchasing under Texas Government Code Chapter 2269.

1.1.14 Miscellaneous Other Words

1.1.14.1 Business Day

The term "business day" is a day that Owner's Administration Building is scheduled to be open for normal business purposes, unless closed by the Owner's Superintendent of Schools for inclement weather or other reason. Days on which the Administration Building is normally closed are: Thanksgiving Break, Winter Break, Spring Break, and Summer Break, as well as other federal, state, or local days specified in the calendar approved by the Owner's Board of Trustees on an annual basis. A business day does not include a day on which the Owner's Administration Building is open only for the purposes of conducting candidate filing, early voting, elections, or other special events.

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1.1.14.2 Calendar Day

A calendar day is a day on the Gregorian Calendar. The Contract Time is established in calendar days. Extensions of time granted, if any, will be converted to calendar days.

1.1.14.3 Holidays

Owner-approved holidays for Contractor's Work are limited to: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

1.1.14.4 Work Day

Work days are all calendar days except Holidays.

1.1.14.5 Anticipated Weather Days

An allowance of regular Work Days, established as anticipated Work Days lost due to weather delays; said allowance shall be included in Contractor's proposed completion time. Only lost weather days in excess of Anticipated Weather Days shall be considered by Owner for time extensions based upon weather. Section 15.1.5.3 lists required Anticipated Weather Days.

1.1.15 Contract Sum

"Contract Sum" shall have the same meaning as in Section 5.1 of the Contract (A133-20109), for the Project when the Project is a Construction Manager at Risk Project OR the same meaning as in Article 4 of the Contract (A101-2017) for the Project.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract. The most recently issued contract document takes precedence over previously issued forms of the same document. Figures given on Drawings govern scale management, and large-scale details govern smaller scale Drawings. If an item is shown one place in the Drawings, but not another, or called for in a schedule or the specifications but not shown on the Drawings or shown on the Drawings and Specifications for dimensions.

1.2.1.2 During the course of the Work, should any conflict be found in or between the Contract Documents, the Contractor shall be deemed to have estimated the Work on the basis of the greater quantity or better quality, or the most stringent requirement, unless he shall have obtained an interpretation in writing from the Architect as to what shall govern before the submission of his Proposal. The Architect, in case of such conflict, may interpret or construe the documents so as to obtain the most substantial and complete performance of the Work consistent with the Contract Documents and reasonably inferable therefrom, in the best interest of Owner, and the Architect's interpretation shall be final. The terms and conditions of this clause shall not relieve any part of any other obligation under the Contract Documents.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.2.4 Relation of Specifications And Drawings

General Requirements in the Specifications govern the execution of all Specifications. Summary paragraphs present a brief indication of the Work, but do not limit the Work as later detailed. The Drawings and Specifications are correlative and have equal authority and priority. Should the Drawings and Specifications have internal inconsistencies, then the Contractor shall base the bids and construction on the more expensive combination of quality and quantity of work indicated. For purposes of construction, the Architect shall determine the appropriate Work, after the Contractor brings the inconsistency to the Architect's attention. Failure to report an inconsistency shall be evidence that Contractor has elected to proceed in the more expensive manner.

1.2.5 Optional Materials, Equipment and Processes Materials, Equipment, and Processes

Exact location and arrangement of the various pieces of equipment specified shall be determined with the approval of the Architect after equipment has been selected and/or as the Work progresses. All equipment shall, insofar as possible, be installed in such a manner as will not interfere with architectural or structural portions of the building. Should changes become necessary because of a failure of the Contractor to comply with the Contract Documents which results in equipment requiring more area than shown on the Contract Documents, the Contractor shall be fully responsible for completing any required modifications or eliminating any interferences. Where in the Drawings and Specifications, certain products, manufacturer's trade names, or catalog numbers are specified, it is done for the express purpose of establishing a standard of function, dimension, appearance, and quality of design in harmony with the Work, and is not intended for the purpose of limiting competition. Materials or equipment shall not be substituted unless the Architect has specifically accepted such substitution for use on this Project. When more than one material, process, or brand is specified for a particular item of Work, the choice shall be the Contractor's. The final selection of color and pattern will be made by the Owner from the range available within the option selected by the Contractor, unless the item is specified to match a specific color or sample furnished. Where particular items are specified, products of those named manufacturers are required unless Contractor submits for consideration proposed substitutions of materials equipment, or processes from those set out in the Contract Documents. Submittals of proposed substitutions should contain sufficient information to allow the Architect and Owner to determine if the proposed substitution is in fact equal to or better than the requirements in the Contract Documents. The Architect shall review and respond to proposed substitutions within fifteen (15) days of receipt. Contractor shall bear all risk caused by submitting substitutions, including all costs. The Owner may approve substitutions only when the substitution is clearly provided by the Contract to be equal in performance characteristics to the requirements of the Contract Documents, equally compatible with the existing installations and complementary to the architectural design for the Work. Contractor shall bear all related costs associated with the substitution. Certain special construction and equipment details may not be regularly included as part of the named manufacturer's standard catalog equipment, but shall be obtained by the Contractor from the manufacturer as required for the proper evaluation and/or function of the equipment. Reasonable minor variations in equipment are expected and will be acceptable, if approved by the Architect and Owner, however, indicated and specified performance and material requirements are the minimum. The Owner and the Architect reserve the right to determine the quality of equipment and materials that deviate from any of the indicated and specified requirements.

1.2.5.1Product and Reference Standards

When specific products, systems or items of equipment are referred to in the Contract Documents, any ancillary devices which the Contractor knows, or in accordance with the standard of care for a General Contractor should have known, is necessary for proper functioning shall also be provided. When standards, codes, manufacturer's instructions and guarantees are required and no edition is specified by the Contract Documents, the current edition at the time of Contract execution shall apply whether or not the proper edition was set out in the Contract Documents. References to standards, codes, manufacturer's instructions and guarantees shall apply in full, except:

—.1 They do not supersede more stringent standards set out in the Contract Documents, and —.2 Any exclusions or waivers that are inconsistent with the Contract Documents do not apply.

1.2.6 Standards And Requirements

When the Contract Documents refer to standards, building codes, manufacturers' instructions, or other documents, unless otherwise specified, then the current edition as of the date of execution of the Contract by the last party to execute said Contract shall apply. It shall be the responsibility of the Architect to address revisions or amendments to applicable codes or standards which arise after the date of execution of the Contract and until Final Completion, pursuant to the terms of the Contract between Owner and Architect. Requirements of public authorities apply as minimum requirements only and do not supersede more stringent specified requirements.

General Requirements in the Specifications govern the execution of all Work. Summary paragraphs present a brief indication of the Work, but do not limit the Work as later detailed. Should the Drawings and Specifications have internal inconsistencies, then the Contractor shall base the bids and construction on the most expensive combination of quality and quantity of work indicated. For purposes of construction, the Architect shall determine the appropriate Work, after the Contractor brings the inconsistency to the Architect's attention. Failure to report an inconsistency shall be evidence that Contractor has elected to proceed in the more expensive manner.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles and identified references to Paragraphs, Subparagraphs, and Clauses in the documents, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 All ownership rights, whether common law, statutory, or other reserved rights, including copyright ownership of the Construction Documents, are controlled by the Contract between the Owner and Fthe Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of ServiceConstruction Documents. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of anythe Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are granted a limited licenseauthorized to use and reproduce the <u>Construction Documents</u>Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the <u>Construction Documents</u>Instruments of <u>Service</u>. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of <u>ServiceConstruction Documents</u> on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants. <u>All copies of the Construction Documents</u>, except the Contractor's record set, shall be returned or suitably accounted for to the copyright holder upon completion of the Work.

1.5.3 The Drawings, Specifications and other Documents, including those in electronic form, prenared by the Architect and the Architect's consultants are Instruments of Service through which the Work to be executed by the Contractor is described. The Contractor may retain one record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim copyright in the Drawings, Specifications and other documents prepared by the Architect or Architect's consultants, and unless otherwise indicated the Architect and the Architect's consultants shall be deemed the authors of them and will retain all common law, statutory and other reserved rights, in addition to the copyrights. All copies of Instruments of Service, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the written consent of the Owner, Architect and Architect's consultants. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect and Architect's consultants appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect and Architect's consultants. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants copyrights or other reserved rights.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement<u>Written notice shall be deemed to have been duly served if delivered at, or sent by registered or certified mail, or by courier service providing proof of delivery to the last business address known to the party giving notice, or if sent by electronic facismile transmission, to the last business number known to the party giving notice, with electronic confirmation of receipt; or, if sent by electronic mail, to the email address of the Owner's or Contractor's designated representative, with electronic confirmation of receipt.</u>

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

If Fthe parties intend to transmit Construction Documents or any other information or documentation in digital form, they shall endeavor to establish necessaryshall agree upon protocols governing suchthe transmissions, unless otherwise already provided in the Contract or the Contract Documents and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203TM 2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 EXECUTION OF CONTRACT DOCUMENTS

1.8.1 The Contract Documents must be signed by the Owner and Contractor. The AgreementContract between Owner and Contractor, as amended, including Conditions of the Contract, as amended, as well as all other Contract Documents that required signature of the Parties, including the A201-2017, as amended, must be signed first by the Contractor's representative. After signing the AgreementContract and all other Contract Documents requiring signature, Contractor shall return the Contract Documents along with proof of insurance and payment and performance bonds to Owner. Once Owner has approved of the Contract Documents and the proof of insurance and payment and performance bonds, Owner shall sign the AgreementContract and all other Contract Documents requiring signature of the parties. When Owner has signed and approved all required documents, District shall issue a Notice to Proceed to Contractor.

1.8.2 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents. Should the Contractor find discrepancies, omissions or conflicts within the Contract Documents, or be in doubt as to their meaning, the Contractor shall at once notify in writing the Architect, the Program Manager and Owner, and Architect will issue a written Architect's Supplemental Instruction to all parties that is consistent with the Owner's Scope of the Work.

Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203TM 2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202TM 2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model. and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the <u>independent school district oe enity person or entity</u> identified as such in the Agreement and is referred to throughout in the Contract Documents as if singular in number. The <u>Board of Trustees</u>, by majority vote, is the only representative of the Owner, an independent school district, having the power to: enter into a contract; amend a contract, including but not limited to, AIA Document A133 Exhibit A; approve changes in the scope of the Work; approve and execute a Change Order or Construction Change Directive modifying the Contract Sum or Guaranteed Maximum Price; agree to an extension to the date of Substantial or Final Completion; or terminate a contract. The Board will act as soon as reasonably possible to avoid undue delays. The Board shall

designates authorized representatives to act on its behalf for day-to-day operations under the Contract. Unless otherwise designated in the Contract Documents, Owner's authorized in writing a representative who shall be the Superintendent of Schools, who may delegate responsibilities as appropriate. have express authority to bind the Owner Except as otherwise provided in the Contract Documents, the Architect does not have such authority. Neither Architect nor Contractor may rely upon the direction of any employee of Owner who has not been designated in writing by the Superintendent or Board of Trustees; Owner shall not be financially responsible for actions taken by the Architect or Contractor in reliance upon direction from unauthorized persons with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein It shall be distinctly understood that by virtue of this Contract, no mechanic, contractor, material person, artisan, or laborer, skilled or unskilled, shall ever in any manner have, claim, or acquire any lien upon the buildings or any of the improvements of whatsoever nature or kind so erected or to be erected by virtue of this Contract or upon any of the land on which said buildings of any of the improvements are so erected, built, or situated, such property belonging to a political subdivision of the State of Texas. It shall be further understood that this Contract is not written for the benefit of their parties.

2.1.3 The Owner shall require the Contractor and the Architect to meet periodically at mutually-agreed-upon intervals, for the purpose of establishing procedures to facilitate cooperation, communication, and timely responses among the participants. By participating in this arrangement, the parties do not intend to create additional contractual obligations or modify the legal relationship which may otherwise exist.

2.1.4 The Owner may require that the Contractor use and/or respond to certain Owner-furnished forms or inquiries during the course of the Project. From time to time, there may be future revisions, changes, additions, or deletions to these forms. The fact that the Owner modifies and increases reasonable reporting requirements shall not serve as the basis for a claim for additional time or compensation by the Contractor.

2.1.5 The Contractor stipulates and agrees that the Owner has no duty to discover any design errors or omissions in the Drawings, Plans, Specifications, and other Construction Documents, and has no duty to notify Contractor of same. By entering into the Contract Documents or any Contract with any Architect, Owner does not warrant the adequacy and accuracy of any Drawings, Plans, Specifications, or other Construction Documents.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, tThe Owner, being a public body under the laws of the State of Texas, must have adequate funds and/or financing as provided by law prior to award and execution of shall furnish to the Contractor Documentsreasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2. At any time prior to the Owner's receipt of the executed AgreementContract with the required bonds and insurance, the Owner may, at its sole option and without cause, reject the offer described in his AgreementContract by delivering to the Contractor a written notice stating so. Such notice shall be signed by the Owner's Director of Purchasing or designee and shall be effective on receipt by the Contractor. The rejection of the offer described in this AgreementContract shall cause no obligation or duty to the District save return of bid or proposal security, if any, if rejection is without cause. This paragraph does not pertain to rejection for cause by the Owner or for the Contractor's failure to provide required bonds or insurance Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work affected by the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until

reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The "Architect" is the person-Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect identified as such in the AgreementContract and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect. Owner shall notify Contractor if successor architect has been employed by Owner. The term "Architect" means the Architect or the Architect's authorized representative.

§ 2.3.4 If requested to do so, in writing, by Contractor, prior to start of the Work, Tthe Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work. The survey shall not relieve Contractor from its obligations to examine the site, or exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 Information or services reasonably necessary for the Work and under the Owner's control shall be furnished by the Owner with reasonable promptness where requested in writing by the Contractor. Under normal circumstances, fourteen (14) District Business days will be considered a reasonable time for Owner response. In any circumstance where information or services from the Owner, Program Manager or Architect is required, Contractor shall promptly notify in writing the Architect, with copy to the Program Manager, of the particular need. Absent such notification, any Claim based upon lack of such information or services shall be waived. The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services. Absent such timely notification, any Claim based upon lack of such information or services shall be waived.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Constructionaet Documents, as provided for in the Project Manual, for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to <u>fails to correct non-conforming or defective Work, fails to correct Work which is not in accordance with Contract Documents, or correct defective Work, fails to correct Work that is not in accordance with the requirements of the Contract Documents or the Construction Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3. The authorized Owner's representative having the legal right to stop the Work shall be limited to the Owner's Superintendent of Schools or designee.</u>

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of <u>written</u> notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and tThe Architect mayshall, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's, <u>Program Manager</u> and other consultants' additional services, if any, made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, then the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, then the Contractor may file a Claim pursuant to Article 15.

2.5.1 After the Work is complete the Owner may make emergency repairs to the Work if necessary to prevent further damage, or if the Contractor does not promptly respond to a notice of a condition requiring repairs. Contractor shall be responsible to Owner for this cost if the reason for the repairs is defects in Contractor's Work. If payments then or thereafter due the Contractor are not sufficient to cover such costs, the Contractor shall pay the difference to the Owner.

2.6 OWNER'S OCCUPANCY

Contractor agrees that the Owner may place and install as much equipment and furnishings during the progress of the building as is possible before completion of various parts of the Work, or may occupy portions of the Work before substantial completion of the entire Work, and further agrees that such placing and installing of equipment and furnishings or occupancy of portions of the Work shall not in any way evidence the substantial completion of the entire Work, nor does it affect claims for liquidated damages in case Substantial Completion is not achieved as required unless the failure to reach Substantial Completion is the result of the early move-in or occupancy. Owner will accept the responsibility for any damages to the Work caused by such occupancy.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the <u>AgreementContract</u> and is referred to throughout the Contract Documents as if singular in number. The <u>Contractor shall be lawfully licensed</u>, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this <u>Contract</u>. The term "Contractor" means the Contractor or the Contractor's authorized representative, and includes the <u>Construction Manager at Risk</u>, if applicable.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect <u>or Program Manager</u> in the <u>Architect's</u> administration of the Contract, <u>activities of the Owner (or Owner's Program Manager, if applicable)</u>, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

3.1.4 The Contractor represents and warrants the following to the Owner (in addition to the other representations and warranties contained in the Contract Documents), as an inducement to the Owner to execute this Contract, which

representations and warranties shall survive the execution and delivery of the Contract and the Final Completion of the Work:

.1 that it is financially solvent, able to pay its debts as they mature, and possessed of sufficient working capital to complete the Work and perform its obligations under the Contract Documents;

.2 that it is able to furnish the tools, materials, supplies, equipment, and labor required to timely complete the Work and perform its obligation hereunder and has sufficient experience and competence to do so;

.3 that it is authorized to do business in the State where the Project is located and properly licensed by all necessary governmental, public, and quasi-public authorities having jurisdiction over it, the Work, or the site of the Project; and

.4 that the execution of the Contract and its performance thereof are within its duly-authorized powers.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents. The Contractor represents and warrants by submission of a Proposal that he has carefully examined the Contract Documents, any soil test reports, drainage studies, geotechnical or other reports, and the site of the Work, and that, from his own investigations, he has satisfied himself as to the nature and location of the Work, the character, quality and quantity of surface and subsurface materials likely to be encountered, the character of equipment and other facilities needed for the performance of the Work, the general and local conditions and all other materials which may in any way affect the Work or its performance. Should the Contractor find discrepancies, omissions or conflicts within the Contract Documents, or be in doubt as to their meaning, the Contractor shall at once notify in writing the Architect and Owner, and Architect will issue a written addendum to all parties that is consistent with the Owner's Scope of the Work The Contractor shall not be entitled to any additional time or compensation for any additional work caused by the Contractor's fault, improper construction, or by Contractor's failure to carefully study and compare the Contract Documents to actual observable site conditions prior to execution of the Work.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various <u>Drawings and other</u> Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. <u>His recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents. <u>Contractor shall not perform any Work involving an error, inconsistency, or omission without further instructions to Contractor or revised Construction Documents from the Architect.</u></u>

§ 3.2.3 <u>Neither the Owner nor</u> The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require,

3.2.3.1 Any design errors or omissions noted by the Contractor during this review shall be reported promptly to the Architect, but it is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents

§ 3.2.4 If the Contractor has knowledge that any of the products or systems specified will perform in a manner that will limit the Contractor's ability to satisfactorily perform the Work or to honor his warranty, or will result in a limitation of or interference with the Owner's intended use, then the Contractor shall promptly notify the Architect and Owner in writing, providing substantiation for his position. Any necessary changes, including substitution of

materials, shall be accomplished by appropriate Modification. If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2, or 3.2.3.1, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2, or 3.2.3.1, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. <u>Contractor shall take field measurements</u>, verify field conditions, and shall carefully compare them to the Construction Documents. If tThe Contractor performs those obligations, the <u>Contractor</u>_shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities when the <u>Contractor recognized or should have recognized</u> such error, inconsistency, omissions or difference, and failed to report it to the Architect. <u>Contractor shall not be</u> entitled to additional compensation or additional Work caused by <u>Contractor's failure to carefully study and</u> compare the Construction Documents prior to the execution of the Work.

3.2.5 Prior to performing any Work, and only if applicable, Contractor shall locate all utility Henes as shown and located on the plans and specifications, including the telephone company lines and cables, sewer lines, water pipes, gas lines, electrical lines, including, but not limited to, all buried pipelines and buried telephone cables, and shall perform any Work in such a manner so as to avoid damaging any such lines, cables, pipes, and pipelines. In addition, Contractor shall independently determine the location of same. Contractor shall be responsible for any damage done to such utility lines, cables, pipes, and pipelines during its Work, and shall be responsible for any loss, damage, or extra expense resulting from such damage. Repairs shall be made immediately to restore all service. Any delay for such break shall be attributable to Contractor. In addition, and only if applicable, Contractor shall review the appropriate AHERA and hazardous materials surveys for the particular campuses involved in the Project, and shall notify all Subcontractors and Sub-subcontractors of the necessity to review said surveys. Contractor shall perform any Work in such a manner as to avoid damaging, exposing, or dislodging any asbestos-containing materials that are clearly identified and located in AHERA and other hazardous material surveys. Before performing any portion of the Work, the Contractor shall fully investigate all physical aspects of the Project Site and verify all dimensions, measurements, property lines, grades and elevations, existing improvements, and general suitability of existing conditions at the Project site. If applicable, Contractor shall comply with U.S. Environmental Protection Agency rules concerning renovating, repairing, or painting work in schools built prior to 1978 involving lead-based paint.

3.2.6 The Owner shall be entitled to deduct from the Contract Sum, amounts paid to the Architect for the Architect to evaluate and respond to the Contractor's requests for information, where such information was available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, Owner provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation. If, in the reasonable opinion of the Architect, the Contractor does not make reasonable effort to comply with any of the above requirements of the Contract Documents, and this causes Architect or his Consultants to expend an unreasonable amount of time in the discharge of the duties imposed by the Contract Documents, then the Contractor shall bear the cost of compensation for the Architect's additional services made necessary by such failure.

3.2.7 The Contractor shall arrange meetings prior to commencement of the Work of all major Subcontractors to allow the Subcontractors to demonstrate an understanding of the Construction and Contract Documents to the Architect and to allow the Subcontractors to ask for interpretations, when necessary. The Contractor and each Subcontractor shall be evaluated and satisfy themselves as to the conditions and limitations under which the Work is to be performed, including:

 .1
 The location, condition, layout, drainage, and nature of the Project site and surrounding areas;

 .2
 Generally prevailing climatic conditions;

 .3
 Anticipated labor supply and costs;

 .4
 Availability and cost of materials, tools, and equipment; and

 .5
 Other similar issues.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract

Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely <u>written_notice</u> to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects, in writing, to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures

<u>Contractor shall attend weekly, or as otherwise directed by Owner, job site progress meetings. Program Manager</u> <u>shall conduct such meetings; and, shall manage Architect's recording, transcribing and distributing minutes to</u> <u>attendees, Architect, and other appropriate parties</u>

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors. It is understood and agreed that the relationship of Contractor to Owner shall be that of an independent Contractor. Nothing contained herein or inferable here from shall be deemed or construed to (1) make Contractor the agent, servant or employee of the Owner, or (2) to create any partnership, joint venture, or other association between the Owner and Contractor. Any direction or instruction by Owner or any of its authorized representatives in respect to the Work shall relate to the results the Owner desires to obtain from the Work, and shall in no way affect Contractor's independent Contractor status described herein. As part of that responsibility, Contractor shall enforce the Owner's alcohol-free, drug-free, tobacco-free, harassmentfree, and weapon-free policies and zones, which will require compliance with those policies and zones by Contractor's employees, subcontractors, and all other persons carrying out the Contract. Contractor shall require all construction workers, whether Contractor's own forces or the forces of Contractor's subcontractors, while on Owner's property to refrain from committing any criminal conduct, using tobacco products, possessing or drinking alcoholic beverages, possessing or using illegal drugs or controlled substances, carrying or possessing weapons, speaking profane and/or offensive language, or engaging in any inappropriate interactions of any nature whatsoever with students and employees, including talking, touching, staring or otherwise contributing to a hostile or offensive environment for Owner's students and employees. All areas of campus, other than the defined construction area, shall be off limits to Contractor's forces, unless their work assignment specifies otherwise. Contractor shall also require adequate and appropriate dress and identification of Contractor's employees, subcontractors, and all other persons carrying out the Work. Contractor shall require all construction workers, whether Contractor's own forces or the forces of Contractor's subcontractors, to wear identification tags on the front of their persons during all times that they are on Owner's property. Such identification tags shall contain a current photograph and the worker's full name in a typeface large enough to be seen from a reasonable distance. The Contractor shall further ensure that no on-site fraternization shall occur between personnel under the Contractor's and Subcontractor's direct br indirect supervision and Owner's students or employees and the general public. Failure of an individual to adhere to these standards of conduct shall result in the immediate removal of the offending employee from all construction on any of Owner's property. Repeated removal of Contractor's or Contractor's subcontractor's forces, or one serious infraction, shall constitute a substantial breach of the Contract justifying the immediate termination by Owner pursuant to Article 14. Contractor shall require all construction workers, whether Contractor's own forces or the forces of Contractor's subcontractor, to park their personal motor vehicles on Owner's property only in the parking places designated by the Owner's campus principal. Any vehicles not parked in the appropriate locations shall be towed at the vehicle owner's sole expense. Contractor shall follow, and shall require all employees, agents, or subcontractors to follow, the tree ordinance of the municipality in which the Project is located. In addition, if not covered by the municipal tree ordinance, Contractor shall barricade and protect all trees on the Project, which shall be included in the Cost of the Work. Contractor shall institute a theft deterrence program designed to restrict construction worker access to properties of Owner that are currently in use, to maintain supervision of Contractor's and Contractor's subcontractor's forces, and to reimburse the Owner or those persons suffering a theft loss which results from Contractor's forces or Contractor's subcontractor's forces' actions, omissions, or failure to secure the Work connecting or adjacent to property of Owner.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work. <u>Contractor shall execute the Work in a good and workmanlike manner, continuously and diligently in accordance with generally accepted standards of construction practice for construction of projects similar to the Project, using qualified, careful and efficient workers and in conformity with the provisions of the Contract Documents.</u>

3.3.4 The Contractor shall properly and efficiently coordinate the timing, scheduling, and routing of all Work performed by all sub-contractors and sub-subcontractors.

3.3.5 To the extent that any portion of the Work requires a trench excavation exceeding five (5') feet in depth, in accordance with Texas Health and Safety Code § 756.023(a), Contractor shall fully comply, and shall require any applicable subcontractor to comply, with:

.1 The Occupational Safety and Health Administration standards for trench safety in effect for the Construction of the Work;

.2 The special shoring requirements, if any, of the Owner;

.3 Any geotechnical information obtained by Owner for use by the Contractor in the design of the trench safety system; and

.4 Trench excavation safety protection shall be a separate pay item, and shall be based on linear feet of trench excavated. Special shoring requirements shall also be a separate pay item, and shall be based on the square feet of shoring use.

3.3.6 The Contractor shall review Subcontractor safety programs, procedures, and precautions in connection with performance of the Work. However, the Contractor's duties shall not relieve any Subcontractor(s) or any other person or entity (e.g. a supplier), including any person or entity with whom the Contractor does not have a contractual relationship, of their responsibility or liability relative to compliance with all applicable federal, state, and local laws, rules, regulations, and ordinances which shall include the litigation to provide for the safety of their employees, persons, and property and their requirements to maintain a work environment free of recognized hazards. The foregoing notwithstanding, the requirements of this Paragraph are not intended to impose upon the Contractor any additional obligations that the Contractor would not have under any applicable state or federal laws, including, but not limited to, any rules, regulations, or statutes pertaining to the Occupations Safety and Health Administration.

3.3.7 It is understood and agreed that the relationship of Contractor to Owner shall be that of an independent contractor. Nothing contained in this Contract or inferable from this Contract shall be deemed or construed to: 1) make Contractor the agent, servant or employee of the Owner; or 2) create any partnership, joint venture, or other association between Owner and Contractor. Any direction or instruction by Owner or any of its authorized representatives in respect of the Work, shall relate to the result the Owner desires to obtain from the Work, and shall in no way affect Contractor's independent contractor status. Pursuant to Texas Labor Code § 214.008, the Contractor, in accordance with Texas Labor Code Chapter 201, any individual the Contractor or subcontractor or subc

§ 3.4 Labor and Materials

§ 3.4.1 These Contract Documents shall not be construed to deny or diminish the right of any person to work because of the person's membership or other relationship status with respect to any organization. Texas Government Code § 2269.054. These Contract Documents shall also not prohibit, require, discourage or eneourage a person, or discriminate against a person bidding on this contract from entering into or declining to enter into, or adhering to, an agreement with a collective bargaining organization relating to this Project. Texas Government Code § 2269.0541. Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for qualified, careful, and efficient workers and labor, eligible to work in accordance with state and federal law. Contractor shall appropriately classify all workers in accordance with the Fair Labor Standards Act, its implementing regulations, and Texas Labor Code § 214.008. In addition, unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. Before ordering any material or doing any Work, Contractor shall verify all dimensions and check all conditions in order to assure Contractor that they are the same as those in Drawings, Specifications, and other Construction Documents. Any inconsistency shall be brought to the attention of the Architect. In the event that discrepancies occur between ordered material and actual conditions and Architect was not notified beforehand, then costs to correct such discrepancies shall be borne by Contractor.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the <u>prior written</u> consent of the Owner, after evaluation by the Architect <u>and Program Manager and in</u> accordance with a Change Order or Construction Change Directive.

3.4.2.1 After evaluation by the Architect, substitutions and alternates may be rejected by the Architect or Program Manager without explanation and will be considered only under one or more of the following conditions: (i) the proposal is required for compliance with interpretation of code requirements or insurance regulations then existing; (ii) specified products are unavailable through no fault of the Contractor; (iii) and when, in the judgment of the Architect, a substitution would be substantially in the Owner's best interests, in terms of cost, time, or other considerations.

3.4.2.2 The Contractor must submit to the Architect: (i) a full explanation of the proposed substitution and submittals of all supporting data, including technical information, catalog cuts, warranties, test results, installation instructions, operating procedures, and other like information necessary for a complete evaluation for the substitution: (ii) a written explanation of the reasons the substitution should be considered, including the benefits to the Owner and the Work in the event the substitution is acceptable; (iii) the adjustment, if any, in the Contract Sum; (iv) the adjustment, if any, in the time of completion of the Contract and the construction schedule; and (v) an affidavit stating (a) the proposed substitution conforms to and meets all requirements of the pertinent Specifications and the requirements shown on the Drawings, and (b) the Contractor accepts the warranty and will coordinate the Work to be complete in all respects, as if originally specified by the Architect. Proposals for substitution shall be submitted in writing to the Architect in sufficient time to allow the Architect no less than fifteen (15) working days for review. No substitutions will be considered or allowed without the Contractor's submittals of complete substantiating data and information.

3.4.2.3 Whether or not the Architect accepts any proposed substitution, the Contractor shall reimburse the Owner for any fees charged by the Architect or other consultants for evaluating each proposed substitution.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. <u>THE CONTRACTOR RELEASES, INDEMNIFIES AND HOLDS HARMLESS</u> <u>THE OWNER FOR CONTRACTOR'S FORCES' NON-COMPLIANCE WITH OWNER'S DRUG-FREE, ALCOHOL-FREE, WEAPON-FREE, HARASSMENT-FREE, AND TOBACCO-FREE ZONES, CONTRACTOR'S FORCES' NON-COMPLIANCE WITH CRIMINAL LAW, OR CONTRACTOR'S OR CONTRACTOR'S FORCES' NON-COMPLIANCE WITH IMMIGRATION LAW OR REGULATIONS. Any individual found by Owner to have violated these restrictions is subject to permanent removal from the Project, at the Owner's request. Contractor shall place similar language in its subcontract agreements, requiring the Subcontractors and Sub-subcontractors to be responsible for their own forces, and Contractor shall cooperate with the Owner to ensure Subcontractor and Sub-subcontractor compliance.</u>

3.4.4 Including, but not limited to, the specific requirement of Article 10, Contractor, its subcontractors and vendors shall bear responsibility for compliance with all federal, state, and local laws, regulations, guidelines, and ordinances pertaining to work safety and applicable to the Work. Contractor further recognizes that the Owner and Architect do not owe the Contractor any duty to supervise or direct his work so as to protect the Contractor from the consequences of his own conduct.

3.4.5 Pursuant to Texas Education Code § 44.034, Contractor must give advance written notice to the Owner if the Contractor or an owner or operator of the Contractor has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony. The Owner may terminate this Contract if the Owner determines that the Contractor failed to give such notice or misrepresented the conduct resulting in the conviction. This paragraph requiring advance notice does not apply to a publicly-held corporation.

3.4.6 CRIMINAL HISTORY CHECKS

3.4.6.1 So that Owner can obtain the national criminal history record information required by Texas Education Code Section 22.08341 on all "covered employees" (as defined in Section 3.4.6.3) of Contractor, its subcontractors, or any subcontracting entities who will perform the Work, Contractor shall submit to Owner the name and all necessary identifying information necessary to enable Owner to obtain the national criminal history information on those covered employees before they begin the Work. Contractor's submission will include the employee's written authorization for Owner to obtain such criminal history information. Owner may, in its sole discretion, prohibit the use of any employee to perform the Work after its review of the criminal history information, but cannot disclose the criminal history information to Contractor. Contractor's violation of this section shall constitute a substantial failure under Article 14.

3.4.6.2 Contractor will not assign any "covered employee" with a "disqualifying criminal history," as those terms are defined below, to work on the Project. If Contractor receives information that a covered employee has a reported disqualifying criminal history, then Contractor will immediately remove the covered employee from the Project and notify the Owner in writing within three (3) business days. If the Owner objects to the assignment of any covered employee on the basis of the covered employee's criminal history record information, then Contractor agrees to discontinue using that covered employee to provide services on Owner's Project. If Contractor has taken precautions or imposed conditions to ensure that the employees of Contractor and any subcontractor will not become covered employees, Contractor will ensure that these precautions or conditions continue throughout the time the contracted services are provided.

3.4.6.3 For the purposes of this Section, "covered employees" means employees, agents, or applicants of Contractor who has or will have continuing duties related to the services to be performed on Owner's Project and has or will have direct contact with Owner's students. The Owner will decide what constitutes direct contact with Owner's students. "Disqualifying criminal history" means: any conviction or other criminal history information designated by the Owner; any felony or misdemeanor conviction that would disqualify a person from obtaining educator certification under Texas Education Code § 21.060, and 19 Texas Administrative Code § 249.16; or one of the following offenses, if at the time of the offense, the victim was under 18 years of age or enrolled in a public school; a felony offense under Texas Penal Code Title 5 Offense Against Persons; an offense for which a defendant is required to register as a sex offender under Texas Code of Criminal Procedure Chapter 62; or an equivalent offense under federal law or the laws of another state.

3.4.7 OWNER'S ADDITIONAL REQUIREMENTS RELATED TO CRIMINAL HISTORIES

In addition, as provided in Section 3.4.6.1 above, Owner or Contractor will at least annually obtain criminal history record information that relates to any employee, agent, or applicant of the Contractor, if the person has or will have duties related to the Project, and the duties are or will be performed on Owner's Project, or at another location where students are likely to be present. Contractor shall assume all expenses associated with the background checks and shall immediately remove any employee, agent, or subcontractor who was convicted of a felony or a misdemeanor involving moral turpitude from Owner's property, or other location where students are likely to be present. Owner shall determine what constitutes "moral turpitude" or a "location where students are likely to be present."

3.4.7.1 If the Contractor is the person or owner or operator of the business entity, that individual may not self-certify regarding the criminal history record information and its review, and must submit original evidence acceptable to the Owner with this AgreementContract showing compliance

3.4.8 PREVAILING WAGE RATES

3.4.8.1 Contractor, Contractor's Subcontractors and Sub-subcontractors shall pay all workers not less than the general prevailing rate of per diem wages for work of a similar character where the project is located as detailed in the "Minimum Wage Schedule" attached to this Contract. Wages listed are minimum rates only. However, no claims for additional compensation above the Contract Sum shall be considered by the Owner because of payments of wage rates in excess of the applicable rate provided herein. Texas Government Code § 2258.001 *et seq.*

3.4.8.2 Contractor shall forfeit, as a penalty to the Owner, \$60 for each laborer, worker, or mechanic, employed for each calendar day or part of the day that the worker is paid less than the wage rates stipulated in the Contract Documents.

3.4.8.3 Owner reserves the right to receive and review payroll records, payment records, and earning statements of employees of Contractor, and of Contractor's Subcontractors and Sub-subcontractors.

3.4.8.4 In executing the Work under the Contract Documents, Contractor shall comply with all applicable state and federal laws, including but not limited to, laws concerned with labor, equal employment opportunity, safety and minimum wages.

3.4.8.5 If no schedule is attached to the Contract, Contractor shall use the wage rates contained in the Project Manual for the Project. If no wage rates are in the Project Manual, then the parties shall use the wage rate determined by the U.S. Department of Labor in accordance with the Davis-Bacon Act, 40 U.S.C. § 276a, (which can be accessed on the internet at https://www.wdol.gov/or https://beta.sam.gov/) effective as of the date of this Contract.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require, or permit and that the Work will conform to the requirements of the Contract Documents.permit. The Contractor further warrants that Contractor shall perform the Work in a good and workmanlike manner, continuously and diligently in accordance with generally accepted standards of construction practice for construction of projects similar to the Project, except to the extent the Contract Documents expressly specify a higher degree of finish or workmanship, in which case the standard shall be the higher standard. All material shall be installed in a true and straight alignment, level and plumb; patterns shall be uniform; and jointing of materials shall be flush and level, unless otherwise directed in writing by the Architect. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance (unless such maintenance is Contractor's responsibility), improper operation, or normal wear and tear and normal usage, but such exclusions shall only apply after Owner has taken occupancy of the damaged or defective portion of the Project. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. Notwithstanding anything in the Contract Documents to the contrary, Owner and Contractor expressly agree that the warranties stated herein shall mean the individual warranties associated with each particular Work within the Project, and each such individual warranty shall run from the applicable Work's Final Completion date (unless otherwise expressly provided in the applicable Contract Documents for that particular Work.) Contractor's express warranty is in addition to, and not in lieu of, Owner's other available remedies. All required warranties on equipment, machinery, materials, or components shall be submitted to the Architect on the manufacturer's or supplier's approved forms for delivery to the Owner. The warranties set out in this Subparagraph are not exclusive of any other warranties or guarantees set out in other places in the Contract Documents or expressed or implied under applicable law.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4Contractor shall certify that the ProjectWork has been constructed in general conformance with the Architect's or Engineer's plans, specifications, and Construction Documents, as modified from time to time pursuant to the terms of the Contract Documents. Contractor shall fully complete a "Certification of Project Completion" as required by 19 Texas Administrative Code § 61.104036.



3.5.3 In the event of failure of materials, products, or workmanship, either during construction or the warranty period, the Contractor shall take appropriate measures to ensure correction of defective Work or replacement of the defective items, without cost to the Owner. Such warranty shall be maintained notwithstanding that certain systems may be activated prior to Substantial Completion as required for the satisfactory completion of the Project. Upon written notice from the Owner or Architect, the Contractor shall promptly remedy defects as covered by Contractor's warranty. If Contractor does not respond to the written notice, either by beginning corrective work or notifying Owner in writing regarding when corrective work will begin, within ten (10) days of Contractor's receipt of the written notice, then the Owner may take measures to correct the Work and Contractor will be obligated to reimburse Owner's costs. The provisions of this subparagraph shall be in addition to, and not in lieu of, any other rights and remedies available to the Owner.

3.5.3.1 All required warranties on equipment, machinery, materials, or components shall be submitted to the Architect on the manufacturer's or supplier's approved forms at the time of Substantial Completion

3.5.4 When deemed necessary by the Owner and prior to installation of any item specifically made subject to a performance standard or regulatory agency standard under any provision of the Contract Documents, Contractor shall furnish proof of conformance to the Architect. Proof of conformance shall be in the form of:

	an affidavit from the manufacturer certifying that the item is in conformance	e v	vith	the ap	pplicable
standards; or					
.2	an affidavit from a testing laboratory certifying that the product has been te	ste	d w	ithin t	the past
year and is in c	conformance with the applicable standards; or				
.3	such further reasonable proof as is required by the Architect.				

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3.5.5 The Contractor agrees to issue the warranty (or warranties) in the name of the Owner, or assign the warranty (or warranties) to the Owner at Final Completion of the Work, such assignment to be effective no later than Final Completion, for any and all material, equipment, fixtures, and furniture (if supplied or installed by Contractor or its subcontractor), or other special warranties, and manufacturers' warranties relating to materials and labor used in the Work. Contractor further agrees to perform the Work in such manner so as to preserve any and all manufacturer's warranties. All forms will be required to be submitted prior to Final Payment.

3.5.6 The warranties of Contractor provided in Section 3.5 shall in no way limit or abridge the warranties of the suppliers of equipment and systems which are to comprise a portion of the Work and all such warranties shall be in form and substance as required by the Contract Documents. Contractor shall take no action or fail to act in any way which results in the termination or expiration of such third party warranties or which otherwise results in prejudice to the rights of Owner under such warranties. Contractor agrees to provide all notices required for the effectiveness of such warranties and shall include provisions in the contracts with the providers and manufacturers of such systems and equipment whereby Owner shall have a direct right, but not a duty, of enforcement of such warranty obligations.

3.5.7 Contractor shall maintain a complete and accurate schedule of the date(s) of Substantial Completion, the date(s) of Final Completion, and the dates upon which the warranty under Section 12.2 herein on each phase or building will expire. Contractor shall provide a copy of such schedules to Owner and Architect. Prior to termination of the warranty period under Section 12.2 herein, Contractor shall accompany Owner and Architect on re-inspection of each Work in the Project and Contractor shall be responsible from correcting any warranty items which are observed or reported during the warranty period under Section 12.2 herein. Contractor shall prosecute such warranty work under Section 12.2 herein without interruption until accepted by Owner and Architect, even though such work shall extend beyond the warranty period under Section 12.2 herein. If Contractor fails to provide the schedules to Owner and Architect, Contractor's warranty obligation described herein shall continue until such inspection is conducted and deficiencies are corrected.

3.5.8 Prior to receipt of Final Payment, Contractor shall:

.1 Obtain duplicate original warranties, executed by all subcontractors, making the dates of beginning of the warranties the Date of Final Completion; and the warranties of suppliers and manufacturers, making the dates of beginning of the warranties no later than the Date of Final Completion;

2 Verify that the documents are in proper form and contain full information;

.3 Co-sign warranties when required;

.4 Bind all warranties in commercial quality 8-1/2 X 11 inch three-ring binder, with hardback, cleanable, plastic covers;

.5 Label the cover of each binder with a typed or printed title labeled "WARRANTIES", along with the title of the Project, name, address, and telephone number of Contactor, and name of its responsible principal;

.6 Include a Table of Contents, with each item identified by the number and title of the specification section under which the product is specified;

.7 Separate each warranty with index tab sheets keyed to the Table of Contents listing; and

.8 Deliver warranties and bonds in the form described above, to the Architect who will review same prior to submission to the Owner.

3.5.8.1 Contractor and Owner acknowledge that the Project may involve construction work on more than one school building for the Owner. Each building, or approved phase of each building, shall have its own, separate, and independent date of substantial completion, dates upon which the one-year warranty on each phase or building, which is substantially complete, will expire, and dates of final completion. Contractor agrees to provide notice of the warranty expiration date to Owner and Architect at least one month prior to the expiration of the one (1) year warranty period on each building or each phase of the building that has been substantially completed. If Owner, Architect or Program Manager discovers during the warranty period, deficiencies not previously reported, Contractor shall accompany the Owner, Architect and Program Manager on an inspection of such deficiencies and Contractor shall be responsible for correcting any such deficiencies not caused by the Owner or the use of the building. For extended warranties required by various sections, i.e., roofing, compressors, mechanical equipment, Owner will notify the Contractor of deficiencies and Contractor shall start remedying these defects within fifteen (15 days of initial notification from Owner. Contractor shall prosecute the work without interruption until accepted by the Owner and the Architect, even though such prosecution should extend beyond the limit of the warranty period. If Contractor fails to provide notice of the expiration of the one (1) year warranty period at least one month prior to the expiration date, Contractor's warranty obligation described in this paragraph shall continue until such inspection is conducted and any deficiencies found in the inspection corrected Contractor shall certify that the Work has been constructed in accordance with the Contract Documents. Any work performed by the Contractor that is not in accordance with the Contract Documents is defective and a breach of this agreement unless the Owner has agreed in writing to waive the defect. The Contractor shall provide all reasonable assistance in achieving compliance with building code specifications, accessibility standards, and Texas Education Agency Commissioner's rules in the Work.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect. Owner is an exempt entity under the tax laws of the State of Texas. Texas Tax Code § 151.309; 34 TAC § 3.322. The Owner represents that this Project is eligible for exemption from the State Sales Tax on tangible personal property and material incorporated in the Project, provided that the Contractor fulfills the requirements of the Texas Tax Code § 151.309; § 151.310; § 151.311, and 34 TAC § 3.291 and § 3.287. For the purpose of establishing exemptions, it is understood and agreed that the Contractor may be required to segregate materials and labor costs at the time a Contract is awarded. Contractor will accept a Certificate of Exemption from the Owner, pursuant to Texas Tax Code § 151.054(e), § 151.155, and 34 TAC § 3.287. Contractor shall obtain Certificates of Resale from Contractor's suppliers. Texas Tax Code § 151.154; 34 TAC § 3.285. Failure of Contractor or any Sub-Contractor to obtain Certificates of Resale from their suppliers shall make the Contractor or Sub-Contractor responsible for absorbing the tax without compensation from Owner. Contractor shall pay all necessary local, county, and state taxes, income tax, compensation tax, social security, and withholding payments, as required by law. CONTRACTOR HEREBY RELEASES, INDEMNIFIES, AND HOLDS HARMLESS OWNER FROM ANY AND ALL CLAIMS AND DEMANDS MADE AS A RESULT OF THE FAILURE OF CONTRACTOR OR ANY SUBCONTRACTOR TO COMPLY WITH THE PROVISIONS OF ANY OR ALL SUCH LAWS AND **REGULATIONS.**

3.6.2 + The Dallas Independent School District is an exempt organization as defined by the Limited Sales and Excise Use Tax Act of Texas. The Contractor may issue an exemption certificate in lieu of sales tax on the purchase, rental or lease of all materials, supplies, equipment used or consumed and other tangible personal property incorporated into the property being improved by virtue of this Contract, as well as all materials, supplies, equipment and other tangible personal property used or consumed by the Contractor in performing this Contract with the Dallas Independent School District. The Contractor may issue exemption certificate(s) to its suppliers in lieu of said sales tax for all of said materials and supplies. The uses of said materials and supplies for which an exemption from the said sales tax is claimed and any such exemption certificate(s), shall comply with the applicable rulings of the State Comptroller.

3.6.3 2 The Contractor shall be held to have studied all tax laws for the State of Texas, the County of Dallas, Texas and the City of Dallas, Texas, and shall pay all taxes for which he may be liable as a consumer or user of goods, or otherwise without addition to the contract price. The Contractor shall pay all sales, consumer, use and other similar taxes required by law.

3.6.4 3 Title to all goods or materials purchased under as resale certificate shall vest in the District at the time of initial possession by the Program Manager and shall be used only in performance of Services under this AgreementContract. Program Manager shall cause such items to promptly be marked, labeled or otherwise physically identified as the District's property. Program Manager shall cause items purchased under a resale certificate to send the receiving ticket to the District to be added to inventory before use by the Program Manager. Any tangible personal property purchased under a resale certificate as described above not fully used up in the Services shall remain with the District

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded After Architect has filed the plans and specifications with the Texas Department of Licensing and Regulation, Architect shall notify Contractor that Contractor may make and submit the applications for the building permit. The OwnerContractor shall pay the municipality directly for the building permit and all other development "impact" fees, if any. The Contractor shall continue to be responsible for payment of other permits, governmental fees, licenses and inspections necessary for proper execution of the Contract and which are legally required when bids or proposals are received. Such fees and expenses shall only be reimbursable to Contractor if expressly agreed to herein.

Architect shall assist Contractor in obtaining an Occupancy Permit by accompanying governing officials during inspections, including the architectural barrier inspection and correction, of the Project, if requested to do so by the Program Manager or the Owner. Architect shall assist the Contractor in obtaining the Certificate of Occupancy prior to the issuance of the Certificate of Substantial Completion.

3.7.1.1 The Owner shall pay directly to the governing authority the cost of all permanent property utility assessments and similar connection charges.

3.7.1.2 The Contractor shall pay directly all temporary utility charges, tap charges, and water meter charges, without reimbursement from Owner. After consultation with the Owner, the Contractor shall also obtain all permits and approvals, and pay all fees and expenses, if any, associated with National Pollutant Discharge Elimination System (NPDES) regulations administered by the Environmental Protection Agency (EPA) and local authorities, if applicable, that require completion of documentation and/or acquisition of a "Land Disturbing Activities Permit" for the Project. Also after consultation with the Owner, the Contractor shall obtain all permits and approvals, and pay all fees and expenses, if any, associated with Storm Water Pollution Prevention and Pollution Control Plan (SWPPP) regulations administered by the Texas Commission on Environmental Quality (TCEQ) and local authorities. Contractor's obligations under this Section may or may not require it to obtain or perform engineering services during the pre-construction phase to prepare proper drainage for the construction sites. Any drainage alterations made by Contractor during the construction process, which require the issuance of a permit, shall be at Contractor's sole cost. Reimbursable expenses shall not include any fines or penalties assessed against the Contractor, Contractor's the Project, or the Owner.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work. In addition, Contractor shall authorize posting of any notices required of Owner pursuant to Texas Business and Commerce Code, Section 116.0001, or any notices concerning the Workers Compensation insurance carried by other parties involved in the Project, including without limitation, Architect, at the same location where Contractor posts notices regarding Workers Compensation. If applicable, the Contractor shall procure and obtain all bonds required of the Owner or the Contractor by the municipality in which the Project is located or by any other public or private body with jurisdiction over the Project. In connection with such bonds, the Contractor shall prepare all applications, supply all necessary back-up material, and furnish the surety with any required personal undertakings. The Contractor shall also obtain and pay all charges for all approvals for street closings, traffic control, parking meter removal, and other similar matters as may be necessary or appropriate from time to time for the performance of the Work.

§ 3.7.3 If the Contractor performs Work <u>when Contractor knowsing or reasonably should have known</u> it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, <u>the Contract Documents</u>, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 [Intentionally deleted] Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than three 14(3) business days after first observance of the conditions. Contractor agrees that this is a reasonable notice requirement. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially, report findings and a recommended resolution in writing to Owner and Contractor. If Owner's Board of Trustees and Contractor cannot agree on an equitable adjustment to the Contract Sum or Contract Time, then either party may pursue alternative dispute resolution as provided for in Article 15, within ninety (90) days of the Architect's recommendation. If such conditions will cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, the Architect will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect in writing. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

3.7.6 The Contractor shall be responsible for timely notification to and coordination with all utility companies regarding the provision of services to the Project. The Contractor shall inform the Architect and Program <u>-atManager</u> at once when the Owner's participation is required, and the Architect shall immediately notify the Owner. Connections for temporary and permanent utilities and payment for temporary utilities services required for the Work, whether the Work is new construction or renovation of an existing facility, are the responsibility of the Contractor unless otherwise agreed. If the Work is new construction, the payment for temporary and/or permanent utility services shall be the responsibility of the Contractor until Substantial Completion.

3.7.6.1 The Owner shall pay directly to the relevant jurisdiction those fees presently called "Storm Water Disposal Fees" to the water and sewage departments. Contractor shall ascertain amounts and advise Architect. Water meter charges shall be paid by the Contractor

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§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, unless required to do so by the terms of the Construction Documents.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site-and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, <u>bonds, insurance,</u> and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** whenever costs are more than or less than allowances, the Contract Sum or the Owner's Contingency, at Owner's discretion, unless required to do so by the terms of the Construction Documents, shall be adjusted accordingly by Change Order. The amount of the adjustmentChange Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner-with reasonable promptness_. to avoid delay in the Work, provided that if a decision is needed to avoid delay, Contractor shall notify Architect and Program Manager in writing sufficiently in advance of needed date to allow reasonable time for selections to be made

3.8.4 When performing Work under allowances, Contractor shall solicit and receive not less than three (3) written proposals and shall provide the Work as directed by the Architect, upon Owner's written approval, on the basis of the best value to the District.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. In addition, the Contractor may employ a project manager and necessary assistants who may supervise several Project sites. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor, Important communication shall be similarly confirmed in writing. Other communications shall be similarly confirmed on written request in each case. Questions about plan interpretation or directions shall be submitted to the Architect in the form of a written request for information and the Architect shall respond to such request for information in a reasonable and timely fashion. Contractor's selection of project manager or superintendent(s) shall be approved by Owner, and Contractor shall not replace the project manager or superintendent(s) without Owner's consent or until a replacement project manager or superintendent(s) has been selected in accordance with this Section. The Owner may reject or require removal of any job superintendent, project manager, or employee of the Contractor, Subcontractor, or Sub-Subcontractor involved in the Project. Contractor shall provide an adequate staff for the proper coordination and expedition of the Work. Owner reserves the right to require Contractor to dismiss from the Work any employee or employees that Owner may deem incompetent, careless, insubordinate, or in violation of any provision in these Contract Documents. This provision is applicable to Subcontractor, Sub-Subcontractor, and their employees.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor's superintendent shall be present full-time on the site as soon as possible after commencement of the Work, and shall remained assigned to this Work and present on the site during performance of the Work, throughout the course of the Work, until items requiring completion or correction, identified at Substantial Completion pursuant to Section 9.8, have been completed or corrected. From Substantial Completion occurs within 30 days of Substantial Completionnot employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's eonsent, which shall not unreasonably be withheld or delayed.

3.9.4 Owner shall be notified not less than 24 hours before any time that superintendent will not be present at the site for any reason except periodic illness. If the reason is due to illness, then Owner shall be notified at the beginning of that day. Owner shall be notified of the identity of the acting superintendent. In the event the superintendent is absent from the site and notice has not been provided nor has an acting superintendent been assigned to the Work, then an amount equal to the superintendent's daily rate shall be deducted for the amount owed to the Contractor under general conditions for such day.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare for and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project. The schedule shall not interfere with the operation of Owner's existing facilities and operations without Owner's prior written approval.

3.10.1.2 In the event that the Contractor is entitled to an extension of the Substantial Completion Date or any required interim completion date under the Contract Documents, Owner shall be entitled to direct the acceleration or re-sequencing of the Work in order to achieve the prior scheduled Substantial Completion Date or interim completion dates, and Contractor shall be reimbursed for the amount of the premium portion of overtime actually incurred in respect thereto and shall be entitled to an increase adjustment to the Contract Sum to the extent of the premium portion of overtime so incurred. Before proceeding with any such Owner-directed acceleration plan under this subparagraph, the Contractor shall have received the Owner's prior written approval of the plan and its anticipated not-to-exceed cost.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall prepare and submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect and Program Manager reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

3.10.4 The Contractor shall hold weekly progress meetings at the Project Site, or at such other time and frequency as are acceptable to the Owner. Program Manager shall conduct such meetings; and, shall manage Architect's recording, transcribing and distributing minutes to attendees, Architect, and other appropriate parties. Progress of the Work shall be reported at said meeting with reference to Contractor's construction schedule. The Contractor shall submit to the Architect, with each monthly application for payment, a copy of the progress schedule showing all modifications required, and shall take whatever corrective action is necessary to assure that the project completion schedule is met at no additional cost to Owner, except as allowed herein. In the event that Contractor shall fall behind schedule at any time, Contractor shall develop and deliver a recovery plan to the Owner with a recovery schedule and a program describing the additional manpower, overtime, material expediting, resequencing of the Work, and other steps Contractor shall take to meet the requirements of the Contract. Contractor shall not be entitled to compensation from the Owner or any increase in the Contract Sum for the schedule recovery efforts. No approval or consent by the Owner of any plan for resequencing or acceleration of the Work submitted by Contractor shall constitute a waiver by Owner of any damages or losses which Owner may suffer by reason of such resequencing or the failure of Contractor to meet the Substantial Completion Date or the Final Completion Date.

3.10.5 The process of approving Contractor's schedules and updates to Contractor's schedule shall not constitute a warranty by the Owner that any non-Contractor milestones or activities will occur as set out on Contractor's schedule. Approval of a Contractor's schedule does not constitute a commitment by the Owner to furnish any Owner-furnished information or material any earlier than Owner would otherwise be obligated to furnish that information or material under the Contract Documents. Failure of the Work to proceed in the sequence scheduled by

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Contractor shall not alone serve as the basis for a Claim for additional compensation or time. In the event there is interference with the Work, which is beyond its control, Contractor shall attempt to reschedule the Work in a manner that will hold resulting additional time and costs to a minimum. The construction schedule shall be in a detailed format satisfactory to the Owner, the Architect and Program Manager. If not accepted, the construction schedule shall be program Manager and Architect and re-submitted for acceptance. The Contractor shall monitor the progress of the Work for conformance with the requirements of the construction schedule and shall promptly advise the Owner of any delays or potential delays. The accepted construction schedule shall be updated to reflect actual conditions (sometimes referred to in these Supplementary Conditions as progress reports) as set forth in Subparagraph 3.10.1 or if requested by either the Owner or the Architect.

3.10.6 The Owner shall have the right to reschedule the time of day for the performance of any part of the Work that may interfere with the operation of the Owner's premises or any tenants or invitees thereof. The Contractor shall, upon the Owner's request, reschedule any portion of the Work affecting operation of the premises during hours when the premises are not in operation. Any rescheduling of performance of the Work under this Subparagraph 3.10.6 may be grounds for an extension of the Contract Time, if permitted under Subparagraph 8.3.1, and an equitable adjustment in the Contract Sum, if: 1) the performance of the Work was properly scheduled by the Contractor in compliance with the requirements of the Contract Documents, 2) such rescheduling is required for the convenience of the Owner and is not attributable to any act or omission of Contractor.

3.10.7 The Owner's need for delivery of completed work, or portions thereof, is largely controlled by the necessities of the school calendar and operations of school programs within that calendar. These needs are reflected in any scheduled completion dates and milestone dates set out in the Contract Documents. The Contractor shall perform the work in such a way as to not interfere with school operations, the importance of meeting milestones and completion dates, and Contractor acknowledges and agrees that if these dates are not met, there may be a relaxation in the needed delivery dates because of the school calendar. When it appears to Owner or Contractor that a Contract milestone or completion date cannot be met for reasons not the fault of the Contractor, Contractor will develop with the Owner, Program Manager and Architect a plan and a budget under the Change Order provision of the Contract Documents to meet such a situation either (at Owner's option) by accelerating the Work to overcome the delays, or suspending or otherwise slowing the Work to efficiently take advantage of any relaxation in Owner's need for the completed Work.

§ 3.11 Documents and Samples at the Site

The Contractor shall <u>maintain and make available, at all times</u>, at the Project site, the Construction det Documents, including Change Orders, Construction Change Directives, <u>field test records (including environmental inspection and test records)</u>, inspection certificates or records, <u>manufacturers' certificates</u>, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner<u>at all times</u>, and delivered to the Architect for<u>completion of record</u> drawings.

3.11.2 In addition to any other requirement in the Contract Documents and prior to installation, Contractor shall furnish or cause a subcontractor to furnish for the Owner's and Architect's written approval, a physical sample of each specified item, product, fixture, or device which is visible by the general public and/or attached to an architecturally-finished surface. Samples shall be suitably labeled, adequately protected, and properly stored at the site. Samples which are approved and undamaged will be considered to be suitable for incorporation into the Work.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents and Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By <u>approving and</u> submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3)-checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents. Specific dimensions, quantities, installation and performance of equipment and systems in compliance with the Construction Documents and the Contract Documents remain the Contractor's responsibility.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such <u>written</u> notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall be ar such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy_x completeness, and accuracy of the services, certifications, and approvals performance and design eriteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. A registered architect must prepare

plans and specifications for all the Work, as governed by the Texas Occupations Code Chapter 1051; and a registered engineer must prepare plans, specifications, and estimates for all Work governed by Texas Occupations Code Chapter 1001. In the event that Contractor retains a licensed design professional under the terms of this paragraph, Contractor shall require that the licensed design professional carry commercial general liability and errors and omissions insurance coverage in the same amounts and forms as required by the Architect on this Project. In the event that the licensed design professional retained by the Contractor will be conducting on-site services or observations, the licensed design professional shall also carry worker's compensation insurance and comprehensive automobile liability in the same amounts and form as required of the Architect to this Project.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

3.12.11 The Contractor shall submit complete drawings, data, and samples to the Architect at least fifteen (15) days prior to the date the Contractor needs the reviewed submittals and samples returned. The Contractor shall be prepared to submit color samples on any key items (such as quarry tile, vinyl wall covering, etc.) within fifteen (15) days of the award of Subcontract(s). All color samples required for the Work shall be received within sixty (60) days of the date of the approval of the Contract Sum, if the Project is an A101 project; or Guaranteed Maximum Price, if the Project is an A133 project. Once samples of all key items are received, the Architect will finalize color selections.

3.12.12 The Contractor shall submit the number of copies of product data and samples which the Contractor and subcontractors need for their use, plus two (2) additional sets for the Architect, one (1) additional set for the Owner, and one (1) additional set for each of the Architect's consultants involved with the particular section of Work. Where shop drawings are involved, the Contractor shall submit one (1) high quality reproducible transparency, and one (1) opaque print of the shop drawing for the Architect, plus one (1) additional opaque print for each of the Architect's consultants involved with the particular section of the Architect's consultants involved with the particular section of the Architect and/or his consultants. After final review and correction of the submittal, the Contractor shall send one corrected set to the Architect and each of the Architect's consultants involved with the particular section of the Work.

3.12.13 The Architect's review of Contractor's submittals shall be limited to examination of an initial submittal and one (1) re-submittal. The Architect's review of additional submittals will be made only with the consent of the Owner after notification by the Architect. The Owner shall be entitled to reimbursement from the Contractor of amounts paid to the Architect for evaluation of such additional re-submittals.

3.1.2.14 The Contractor represents and warrants that all shop drawings shall be prepared by persons and entities possessing expertise and experience in the trade for which the shop drawings are prepared and, if required by the Architect or applicable law, by a licensed engineer.

§ 3.13 Use of Site

3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. When the Work is to be performed at an existing school location, Contractor shall schedule and perform the Work in a manner that does not compromise the safety to school students, faculty and staff, and does not unreasonably disrupt or interfere with the continuing normal routine of the school. If a School Operations Parameters Statement is a part of the Contract Documents, Contractor will comply with its terms, at no increase in price.

3.13.2 Only materials and equipment which are to be used directly in the Work shall be brought to and stored on the Project site by the Contractor. After equipment is no longer required for the Work, it shall be properly removed from the Project site. Protection of construction material and equipment stored at the Project site from weather, theft, damage, and all other adversity is solely the responsibility of the Contractor.

3.13.3 The Contractor and its subcontractor shall not erect any sign on the Project site without the prior written consent of the Owner.

3.13.4 Contractor shall ensure that the Work, at all times, is performed in a manner that affords Owner reasonable access, both vehicular and pedestrian, to the site of the Work and all adjacent areas. The Work shall be performed in such a manner that the public area adjacent to the Site of the Work shall be free from all debris, building material, and equipment likely to cause hazardous conditions. Without limitation of any other provision of the Construction Documents, Contractor shall use its best efforts to minimize any interference with the occupancy or beneficial use of any area or building adjacent to the site of the Work, or the building, in the event of partial occupancy.

3.13.5 Without prior approval of the Owner, the Contractor shall not permit any workers to use any existing facilities at the Project site, including, without limitation, lavatories, toilets, entrance and parking areas other than those designated by the Owner. The Contractor shall comply with all rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project site and the Building.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly provided, however, that any such cutting, fitting, or patching can only be performed if the cutting, fitting, or patching results in Work that is in accordance with the Construction Documents and Contract Documents. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

3.14.3 No cutting of structural elements will be permitted unless specifically approved in writing by Architect. Fitting and patching shall only be done with new products, and shall only be performed by those skilled in performing the original Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall, on a daily basis, keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. Contractor shall provide on-site containers for the collection of waste materials, debris and rubbish, and shall periodically remove waste materials, debris and rubbish from the Work and dispose of all such materials at legal disposal areas away from the site. All cleaning operations shall be scheduled so as to ensure that contaminants resulting from the cleaning process will not fall on newly-coated or newly-painted surfaces. Immediately after unpacking materials, all packing case lumber or other packing materials, wrapping or other like flammable waste shall be collected and removed from the building and premises. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project. Care shall be taken by all workers not to mark, soil, or otherwise deface any finish. In the event that any finish becomes defaced in any way by mechanics or workers, the Contractor or any of his Subcontractors shall clean and restore such surfaces to their original condition.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from from the cost thereof shall be charged to the Contractor.

3.15.3 The Contractor shall be responsible for the protection of the Work. Prior to the Architect's inspection for Substantial Completion, the Contractor shall clean exterior and interior surfaces exposed to view, remove temporary labels, stains, putty, soil, paint and foreign substances from all surfaces, including glass and painted surfaces; polish transparent and glossy surfaces; clean equipment and fixtures to a sanitary condition; replace air filters in mechanical equipment; clean roofs, gutters, and downspouts; remove obstructions and flush debris from drainage systems; clean site; sweep paved areas, and rake clean other surfaces; remove trash and surplus materials from the site; clean and polish all floors; clean and polish all hardware; and repair all Work damaged during cleaning.

3.15.4 After construction is complete, Contractor shall: (1) employ skilled workers for final cleaning; (2) remove grease, mastic adhesive, dust, dirt, stains, fingerprints, labels and other foreign materials from all sight-exposed interior and exterior surfaces; (3) wash and shine glazing and mirrors; (4) polish glossy surfaces to a clear shine; (5) vacuum clean carpet and similar soft surfaces; (6) clean (damp mop with clean mop and water) resilient and hard surface floors, repeating as necessary until no visible residue remains on floors; (7) clean plumbing fixtures to a sanitary condition; (8) clean surfaces of all equipment and remove excess lubrication; (9) clean permanent filters and replace disposable filters in ventilating system if units are operated during construction and clean ducts, blowers, and coils; (10) clean light fixtures; (11) remove waste, foreign matter, and debris from roofs, gutters, area ways, and drainage ways; (12) remove waste, debris, and surplus materials from the site; (13) remove stains, spills, and foreign substances from paved areas; and (14) broom clean exterior concrete and paved surfaces, and rake clean the grounds.

§ 3.16 Access to Work

The Contractor shall provide the Owner, <u>Program Manager</u> and Architect <u>and their designated representatives</u> with access to the Work in preparation and progress wherever located. <u>The presence of the Owner</u>, <u>Program Manager or</u> <u>Architect at the Work site does not imply acceptance or approval of the Work. The presence of the Owner, Architect</u>, <u>or their representatives does not constitute acceptance or approval of the Work</u>.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. THE CONTRACTOR SHALL DEFEND SUITS OR CLAIMS FOR INFRINGEMENT OF COPYRIGHTS AND PATENT RIGHTS AND SHALL <u>WAIVE AND RELEASE CLAIMS AGAINST THE OWNER, PROGRAM MANAGER AND ARCHITECT, AND SHALL INDEMNIFY AND HOLD HARMLESS</u> THE OWNER AND ARCHITECT HARMLESS FROM LOSS ON ACCOUNT THEREOF, <u>PROVIDED, HOWEVER, CONTRACTOR BUT</u> SHALL NOT BE RESPONSIBLE TO ARCHITECT FOR SUCH DEFENSE OR LOSS WHEN A PARTICULAR DESIGN, PROCESS, OR PRODUCT OF A PARTICULAR MANUFACTURER OR MANUFACTURERS IS REQUIRED BY THE CONTRACT DOCUMENTS, OR WHERE THE COPYRIGHT VIOLATIONS ARE CONTAINED IN DRAWINGS, SPECIFICATIONS, OR OTHER DOCUMENTS PREPARED BY THE OWNER OR ARCHITECT, AND SHALL NOT BE RESPONSIBLE TO OWNER IF OWNER REQUIRES A PARTICULAR DESIGN, PROCESS, OR PRODUCT THAT CONSTITUTES A COPYRIGHT VIOLATION. However, if the Contractor has reason to believe that the required design, process, or product is an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the<u>such</u> loss unless <u>such</u> the information is promptly furnished to the <u>Owner and</u> Architect in writing.

§ 3.18 Indemnification

§ 3.18.1 TO THE FULLEST EXTENT PERMITTED BY LAW, THE CONTRACTOR SHALL WAIVE AND RELEASE CLAIMS AGAINST AND SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER. ARCHITECT, ARCHITECT'S CONSULTANTS, OWNER'S TRUSTEES, CONSULTANTS, PROGRAM MANAGER, AND OFFICERS, AGENTS AND EMPLOYEES OF ANY OF THEM FROM AND AGAINST CLAIMS, DAMAGES, LOSSES, CAUSES OF ACTION, SUITS, JUDGMENTS AND EXPENSES, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES, ARISING OUT OF OR RESULTING FROM PERFORMANCE OF THE WORK, PROVIDED THAT SUCH CLAIM, DAMAGE, LOSS, OR EXPENSE IS AT TRIBUTABLE TO BODILY INJURY, SICKNESS, DISEASE OR DEATH, OR TO INJURY TO OR DESTRUCTION OF TANGIBLE PROPERTY (INCLUDING THE WORK ITSELF), INCLUDING LOSS OF USE RESULTING THEREFROM, BUT ONLY TO THE EXTENT CAUSED IN WHOLE OR IN PART BY THE WILLFUL OR NEGLIGENT ACTS OR OMISSIONS OF THE CONTRACTOR, A SUBCONTRACTOR, ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY THEM, ANYONE THEY CONTROL OR EXERCISE CONTROL OVER OR ANYONE FOR WHOSE ACTS THEY MAY BE LIABLE, REGARDLESS OF WHETHER OR NOT SUCH CLAIM, DAMAGE, LOSS, OR EXPENSE IS CAUSED IN PART BY A PARTY BY ANY WHILFUL OR NEGLIGENT ACTS OR OMISSIONS OF OWNER OR OWNER'S CONSULTANTS OR OTHER INDEMNIFIED PARTIES. SUCH OBLIGATION SHALL NOT BE CONSTRUED TO NEGATE, ABRIDGE, OR REDUCE OTHER RIGHTS OR OBLIGATIONS OF INDEMNITY THAT WOULD OTHERWISE EXIST AS TO A PARTY OR PERSON DESCRIBED IN THIS SECTION 3.18. ALL COSTS AND EXPENSES SO INCURRED BY ANY OF THE INDEMNIFIED PARTIES IN THAT EVENT SHALL BE REIMBURSED BY CONTRACTOR TO THE INDEMNIFIED PARTIES, AND ANY COST AND EXPENSES SO INCURRED BY INDEMNIFIED PARTIES SHALL BEAR INTEREST UNTIL REIMBURSED BY CONTRACTOR, AT THE RATE OF INTEREST PROVIDED TO BE PAID BY THE JUDGMENT UNDER THE LAWS OF THE STATE OF TEXAS.

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3.18.2 IN CLAIMS AGAINST ANY PERSON OR ENTITY INDEMNIFIED UNDER THIS SECTION 3.18 BY AN EMPLOYEE OF THE CONTRACTOR, A SUBCONTRACTOR, ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY THEM, OR ANYONE FOR WHOSE ACTS THEY MAY BE LIABLE, THE INDEMNIFICATION OBLIGATION UNDER SECTION 3.18.1 SHALL NOT BE LIMITED BY A LIMITATION ON AMOUNT OR TYPE OF DAMAGES, COMPENSATION, OR BENEFITS PAYABLE BY OR FOR THE CONTRACTOR OR A SUBCONTRACTOR UNDER INSURANCE POLICIES, WORKERS' COMPENSATION ACTS, DISABILITY BENEFIT ACTS, OR OTHER EMPLOYEE BENEFIT ACTS.

3.18.3 THE OBLIGATIONS OF THE CONTRACTOR UNDER THIS SECTION 3.18 SHALL NOT EXTEND TO THE LIABILITY OF THE ARCHITECT. THE ARCHITECT'S CONSULTANTS, AND AGENTS, AND EMPLOYEES OF ANY OF THEM, CAUSED BY OR RESULTING FROM: (1) DEFECTS IN PLANS, DESIGNS, OR SPECIFICATIONS PREPARED, APPROVED, OR USED BY THE ARCHITECT OR ENGINEER; OR (2) NEGLIGENCE OF THE ARCHITECT OR ENGINEER IN THE RENDITION OR CONDUCT OF PROFESSIONAL DUTIES CALLED FOR OR ARISING OUT OF THE CONSTRUCTION CONTRACT AND THE PLANS, DESIGNS, OR SPECIFICATIONS THAT ARE A PART OF THE CONSTRUCTION CONTRACT; AND (3) ARISING FROM: (A) PERSONAL INJURY OR DEATH; (B) PROPERTY DAMAGE; OR (C) ANY OTHER EXPENSES THAT ARISE FROM PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE OR AS OTHERWISE LIMITED BY TEXAS CIVIL PRACTICE & REMEDIES CODE SECTION 130.001 ET SEO.

3.18.4 THE OWNER MAY CAUSE ANY OTHER CONTRACTOR WHO MAY HAVE A CONTRACT WITH THE OWNER TO PERFORM CONSTRUCTION OR INSTALLATION WORK IN THE AREAS WHERE WORK WILL BE PERFORMED UNDER THIS AGREEMENT, TO AGREE TO INDEMNIFY AND TO HOLD THE OWNER AND THE CONTRACTOR HARMLESS FROM ALL CLAIMS FOR BODILY INJURY AND PROPERTY DAMAGE TO THE SAME EXTENT AS IS PROVIDED IN SECTION 3.18.1 ABOVE. LIKEWISE, CONTRACTOR AGREES TO INDEMNIFY AND TO HOLD THE OWNER'S OTHER CONTRACTORS HARMLESS FROM ALL CLAIMS FOR BODILY INJURY AND PROPERTY DAMAGE TO THE SAME EXTENT AS PROVIDED IN SECTION 3.18.1 ABOVE.

3.18.5 THE PROVISIONS OF SECTION 3.18 IN ITS ENTIRETY SHALL SURVIVE THE COMPLETION, TERMINATION, OR EXPIRATION OF THIS CONTRACT.

3.18.6 It is agreed with respect to any legal limitations now or hereafter in effect and affecting the validity or enforceability of the indemnification obligations under Paragraph 3.18, such legal limitations are made a part of the indemnification obligation and shall operate to amend the indemnification obligation to the minimum extent necessary to bring the provision into conformity with the requirements of such limitations, and as so modified, the indemnification obligations shall continue in full force and effect.

3.18.7 It is understood and agreed that Subparagraph 3.18.1 above is subject to, and expressly limited by, the terms and conditions of Texas Civ. Prac. & Rem. Code Ann. Sec. 130.001 to 130.005, as amended.

3.18.8 THE OWNER MAY CAUSE ANY OTHER CONTRACTOR WHO MAY HAVE A CONTRACT WITH THE OWNER TO PERFORM CONSTRUCTION OR INSTALLATION WORK IN THE AREAS WHERE WORK WILL BE PERFORMED UNDER THIS AGREEMENT, TO AGREE TO INDEMNIFY AND TO HOLD THE OWNER AND THE CONTRACTOR HARMLESS FROM ALL CLAIMS ATTRIBUTABLE TO BODILY INJURY, SICKNESS, DISEASE, OR DEATH OR TO INJURY TO, OR DESTRUCTION OF TANGIBLE PROPERTY (INCLUDING THE WORK ITSELF) INCLUDING LOSS OF USE, TO THE SAME EXTENT AS PROVIDED IN SUBPARAGRAPH 3.18.1 ABOVE.

3.19 ANTITRUST VIOLATION. To permit the Owner to recover damages suffered in antitrust violations, Contractor hereby assigns to Owner any and all claims for overcharges associated with this Contract which violate the antitrust laws of the United States, 15 U.S.C.A. Section 1 et seq. The Contractor shall include this provision in its agreements with each subcontractor and supplier. Each subcontractor shall include such provisions in agreements with subsubcontractors and suppliers.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the <u>AgreementContract</u>.

§ 4.1.2 <u>Owner shall notify Contractor when the duties, responsibilities or limitation of authority of the Architect have been modified</u>

4.1.3 Except as expressly provided herein, the Contractor shall not be relieved of Contractor's obligation to perform the Work in strict accordance with the Construction Documents and the Contract Documents by the duties, responsibilities, or activities of the Architect.

§ 4.2 Administration of the Contract

§ 4.2.1 Certain portions of the administration of the Contract will be performed by the Architect, others by the Program Manager. Both the Architect and the Program Manager will be treated as the Owner's representatives to the extent set out in the Contract Documents. Neither the Architect nor the Program Manager shall have the authority to act on behalf of the Owner only to the extent provided in the Contract Documents. Owner unless such authority is expressly granted in the Contract Documents, nor shall such authority be implied from any act or representation of the Architect or Program Manager. The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction, until the date the Architect issues the final This period shall extend until payment is due, and, with the Owner's concurrence, from time to time during the one-year period for correction of Work described in Section 12.2.2 Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, or as they may be amended in the future.

§ 4.2.2 The Architect, as a representative of the Owner, willshall visit the site at least twice per week for more per week when deemed necessary by the Owner's Superintendent or when necessary to protect Owner's interests) and at any other intervals appropriate to the stage of construction, to inspect or as otherwise agreed with the Owner, to become generally familiar with the progress, and quantity and quality of the portion of the Work completed, to reject any observed nonconforming Work, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Construction Documents and the Contract Documents and on time. Furthermore, a minimum of two job site meetings per month from commencement of construction through Final Completion will be initiated by the Architect and attended by the Contractor. Attendees will include Owner, the Contractor's project manager and/or superintendent. Architect's project representative, and Architect. The Architect, Owner and their representatives shall at all times have access to the Work. Architect, or its structural consultant will provide on-site observation prior to and during all concrete pours that contribute to the structural integrity of the building, including all pours of concrete piers, footings, grade beams, floor slabs, and concrete superstructure components, if applicable. In addition, Architect or its structural consultant will provide on-site observation prior to covering up or closing up of portions of the construction, which if covered, would conceal problems with the structural integrity of the Project. Contractor shall not close or cover said Work until said observations have occurred. Contractor or Architect will advise Owner of the need for any third party laboratory or testing services to assist the Architect and Owner. On the basis of the on-site observations by Architect, Architect shall keep Owner and Contractor informed of the progress and the quality of the Work, through Architect's field reports, and shall guard Owner against defects and deficiencies in the Work. Architect shall promptly notify Owner and Contractor, orally, regarding any defect or nonconforming Work, which shall be followed by notice in writing of defects or nonconforming Work noted and corrective action taken or recommended. However, the Architect will not be required to make exhaustive or continuous on site inspections to check the quality or quantity of the Work. The Architect, however, willshall not have control over, charge of, or responsibility for the Contractor's construction means, methods, techniques, sequences, or procedures, or for the safety precautions and programs, but this does not relieve Architect of Architect's responsibilities under this Contract. Any services by Contractor made necessary by Contractor's construction defect or nonconforming Work, shall be performed at no additional cost to Owner-in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's

failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work. The Contractor shall reimburse the Owner for compensation paid to the Architect for additional site visits made necessary by the fault, neglect, or request of the Contractor.

§ 4.2.4 Communications

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, Tthe Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. However, Owner reserves the right to communicate directly with Contractor and Subcontractors include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 <u>As further provided in the Contract Documents</u>, <u>Bb</u>ased on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to shall reject Work that does not conform to the <u>Construction Documents and</u> the <u>Contract Documents</u>. Whenever the Architect considers it necessary or advisable, the Architect will haverecommend to <u>Owner additional</u> authority to require inspection or testing of the Work in accordance with <u>Sections 13.4.2 and 13.4.3</u>the provision of the <u>Contract Documents</u>, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect <u>or the Owner</u> to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work. Architect and/or Contractor shall promptly notify, orally and in writing, the other party and Owner of any fault or defect in the Project or nonconformance with Construction Documents or the Contract Documents they may respectively discover, and each, upon discovery of the defect or nonconformance, shall be responsible for notifying the other party and Owner of those corrective actions they respectively take; provided, however, Contractor shall have no duty to notify Owner of discoveries made or actions taken by Architect. Testing or inspection required by this subparagraph shall be conducted subject to the requirements of Chapter 2269 of the Texas Government Code.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Construction Documents and the Contract Documents. The Architect's action will be taken in accordance-with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor, or Separate Contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Construction Documents and the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component. If any submittal does not comply with the requirements of the Construction Documents or the Contract Documents, then Architect shall require Contractor to come into compliance. The Architect shall promptly report, in writing, to the Contractor, Program Manager and Owner any errors, inconsistencies, and omissions discovered by the Architect in the Shop Drawings, Product Data, and Samples.

§ 4.2.8 The Architect <u>willshall review</u>, prepare, and make recommendations to Owner regarding all Change Orders and Construction Change Directives for the Owner's approval and execution in accordance with the Construction Documents and the Contract Documents, accompanied by all supporting documentation. The Architect, and may orderauthorize minor changes in the Work not involving any adjustment in Contract Sum or Guaranteed Maximum

Price, or an extension of the Contract Time which are consistent with the intent of the Contract Documents. If necessary, the Architect shall prepare, reproduce, and distribute Drawings and Specifications to describe Work to be added, deleted, or modified, as provided in Section 7.4. The Architect shall accept requests by the Owner, and Owner shall review properly prepared, timely requests by the Contractor for change in the Work, including adjustments to the Contract Sum or Guaranteed Maximum Price, or Contract Time. A properly prepared request for a change in the Work by the Contractor shall be accompanied by sufficient supporting data and information to permit the Architect will investigate andto make a reasonable determinations without extensive investigation or preparation of additional drawings or specifications. If the Architect determines that requested changes in the Work are not materially different from the requirements of the Construction Documents or the Contract Documents, and do not change the Contract Sum or Guaranteed Maximum Price, or Contact Time, then the Architect may issue an order for a minor change in the Work, with prior written notice to the Owner or recommend to the Owner that the requested change be denied. The Architect is not authorized to approve changes involving major system such as: Heating, Ventilation and Air Conditioning ("HVAC"); roof, foundation; outward appearance, color scheme, floor plans, building materials; drainage or mechanical equipment with Owner's prior written consent-and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; <u>issue Certificates of Substantial Completion pursuant to Section 9.8; will</u> receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor <u>pursuant to Section 9.10</u>; and <u>will</u> issue a final Certificate for Payment pursuant to Section 9.10 years of the Contract Documents.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives_Architect have been -modified.

§ 4.2.11 The Architect will interpret and <u>decide mattersmake recommendations</u> concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretations required of the Architect shall be furnished in compliance with this Paragraph 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretations until 15 days after written request is made for them.

§ 4.2.12 Interpretations and decisions or recommendations of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions recommendations, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The <u>Architect's Owner's</u> decisions on matters relating to aesthetic effect wishall be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the <u>Construction Documents and</u> the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information, at no additional cost to the <u>Owner</u>.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract

Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner, and Architect and Program Manager, in writing, of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect maor <u>ysProgram Manager</u> shall notify, in writing, the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the <u>Owner or Architect to provide</u> notice within the 14 day periodpromptly shall constitute notice of no reasonable objection. All subcontractors shall be procured in accordance with Texas Education Code Chapter 44, Subchapter B, and Texas Government Code Chapter 2269, as applicable. A notice of no reasonable objection shall in no way relieve the Contractor from full responsibility for performance and completion of the Work and its obligations under the Contract Documents. The Contractor shall be fully responsible for the performance of its subcontractors, including those recommended or approved by the Owner.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner, <u>Program Manager</u> or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner, <u>Program Manager</u> or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. <u>When If</u> the <u>parties agree on a proposed substitute but rejected</u> Subcontractor was reasonably capable of performing the Work, then the Contract Sum and Contract Time <u>shmayII</u> be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not <u>change</u> a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such <u>substitute</u>.

5.2.5 Each Contractor or Subcontractor shall be required to completely familiarize itself with the plans and specifications, to visit the Work site to completely familiarize itself with existing conditions, and to conduct any other appropriate investigations, inspections, or inquiries prior to submission of a bid or proposal. No increases in Contract Sums or Guaranteed Maximum Price shall be allowed for failure to so inspect or investigate.

The Contractor shall disclose to the Owner any ownership interest or affiliation between the Contractor and any potential subcontractor prior to entering into a subcontract and the Owner shall have the right, in its sole discretion and pursuant to 5.2.3., to reject any such affiliated subcontractor. Further, Contractor shall not subcontract the work as a whole.

The approval of Subcontractors in no way relieves the Contractor from full responsibility for performance and completion of the Work and its obligations under the Contract Documents. The Contractor shall be fully responsible for the performance of its Subcontractors, including those recommended or approved by the Owner

5.2.6 The Contractor agrees to utilize Subcontractors that are historically underutilized businesses in accordance with the Minority and Women Owned Business Enterprise (M/WBE) forms and guidelines attached hereto as Exhibit "C".

No changes to the Plan may be made unless approved in writing by the Owner. The Contractor, prior to the execution of this Contract, shall report their M/WBE participation goal as a percent of the Contract Sum. During the performance of all Work under this AgreementContract, the Contractor and its agents shall comply with all M/WBE policies of the Owner. The information shall be identified per firm, discipline and participation. While this AgreementContract is in effect and until the expiration of one year after final completion, the Owner may require information from the Contractor, and may conduct audits, to assure that the Plan is being, and was, followed,. With each Contractor's application for payment, the Contractor shall report their updated M/WBE Plan and actual M/WBE participation information.

5.2.7 Contractor shall promptly notify the Owner, Architect and Program Manager of any material defaults by any subcontractor

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. The terms and conditions of the Contract Documents shall be incorporated by reference into each subcontract agreement, included as provided below. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights $\pm \frac{1}{2}$ Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors. Each subcontractor shall provide proof of insurance to Contractor consistent with the Contractor's insurance to Owner and in an amount commensurate with the Work to be performed by the Subcontractor.

5.3.2 Neither the Owner nor the Architect shall be obligated to pay or to ensure the payment of any monies to subcontractors due to any non-payment to the Contractor or non-payment of subcontractors by the Contractor.

5.3.3 The Contractor shall require any potential subcontractor to disclose to the Contractor any ownership interest or familial relationship between the Contractor, the Architect, or the Owner, and the potential subcontractor prior to entering into a subcontract. Contractor shall report to Owner all such disclosures and the Owner shall have the right, in its sole discretion, to reject any such affiliated subcontractor.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for any <u>unperformed</u> portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to <u>SectionArticle</u> 14.2 or abandonment of the Project by the Contractor; and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
- .2 assignment is subject to the prior rights <u>and obligations</u> of the surety, if any, obligated under bond relating to the Contract; and
- .3 The Subcontractor provides bonds as required by law of prime contractors and by Owner.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon sSuch assignment shall not constitute a waiver by Owner of its rights against Contractor, including, but not limited to, claims for defaults, delays or defects for which a subcontractor or material vendor may also be liable, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner shall only be assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally-responsible for compensating subcontractors for Work performed or materials furnished from and after the date on which the Owner gives written notice of its acceptance of the subcontract agreement. Owner shall not be responsible for any Work performed or materials furnished by subcontractors prior to the date of Owner's written notice of acceptance.all of the successor contractor is obligations under the subcontract.

5.4.4 Each subcontract shall specifically provide that the Owner shall only be responsible to the Subcontractor after written notice for undisputed amounts not previously paid to Contractor subsequent to the Owner's exercise of any rights under this conditional assignment.

5.4.5 Contractor shall be fully responsible for the performance of its Subcontractors, including those selected or approved by the Owner

5.5 NOTICE OF SUBCONTRACTOR DEFAULT

Contractor shall promptly notify Owner and Architect of any material defaults by any Subcontractor or Subsubcontractor. Notwithstanding any provision contained in Article 5 to the contrary, it is hereby acknowledged and agreed that Owner has in no way agreed, expressly or implicitly, nor will Owner agree, to allow any Subcontractor, Sub-subcontractor or other materialman or worker employed by Contractor the right to obtain a personal judgment or to create a mechanic's or materialman's lien against Owner for the amount due from the Owner or the Contractor.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS § 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation. The Owner reserves the right to perform other non-Project-related construction work, maintenance and repair work, and school program operations at the site and near the site during the time period of the Work. Owner shall have access to the building on the site at all times.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor <u>AgreementContract</u>.

§ 6.1.3 The Owner Contractor shall provide for coordinateion of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor to ensure that the Work remains on schedule, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement between the Owner and Contractor. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 It shall be the responsibility of the Contractor to assist, review, coordinate, and schedule work performed by any of Owner's separate contractors including the hazardous materials abatement contractor. Contractor shall not be required to contract directly with the hazardous materials abatement contractor or Owner's separate contractor's however, Contractor shall coordinate all aspects of the hazardous materials abatement contractor's and Owner's separate contractor's work, including required monitoring, testing and inspections by independent firms, with the Work under this AgreementContract. The Contractor shall be totally responsible for coordination between its Subcontractors and the hazardous materials abatement contractor and any other Owner's separate contractors. Contractor will cooperate with the Owner to allow site access and staging areas for hazardous materials abatement contractor and Owner's separate contractors and consultants. Contractor shall review Owner's contract with the hazardous materials abatement contractor and Owner's separate contractors and become familiar with the requirements and scope of services contained therein. Contractor shall continually review the work performed by the hazardous materials abatement contractor and Owner's separate contractors and immediately notify the Owner and Program Manager if at any time during the performance of Contractor's work, the hazardous materials abatement contractor or any of Owner's separate contractors fail, in any way, to provide sufficient, competent manpower or timely perform its services. In addition, the Contractor shall be responsible for coordinating and providing all construction administration necessary for the Work and the work of the hazardous materials abatement contractor and any of Owner's separate contractors Unless otherwise provided in the Contract/Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 MutualContractor's Responsibility

§ 6.2.1 It shall be the responsibility of the Contractor to assist, review, and coordinate the scheduling of work performed by any of the Owner's Separate Contractors including the hazardous materials abatement contractor.

Contractor shall not be required to contract directly with the hazardous materials abatement contractor or Owner's separate contractor's however, Contractor shall coordinate all aspects of the hazardous materials abatement contractor's and Owner's separate contractor's work, including required monitoring, testing and inspections by independent firms, with the Work under this AgreementContract. The Contractor shall be totally responsible for coordination between its Subcontractors and the hazardous materials abatement contractor and any other Owner's separate contractors. Contractor will cooperate with the Owner to allow site access and staging areas for hazardous materials abatement contractor and Owner's separate contractors and consultants. Contractor shall review Owner's contract with the hazardous materials abatement contractor and Owner's separate contractors and become familiar with the requirements and scope of services contained therein. Contractor shall continually review the work performed by the hazardous materials abatement contractor and Owner's separate contractors and immediately notify the Owner and Program Manager if at any time during the performance of Contractor's work, the hazardous materials abatement contractor or any of Owner's separate contractors fail, in any way, to provide sufficient, competent manpower or timely perform its services In addition, the Contractor shall be responsible for coordinating and providing all construction administration necessary for the Work and the work of any of Owner's Separate Contractors. The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents. Contractor shall be responsible for coordination between Contractor's subcontractors and Owner's Separate Contractors. Contractor shall review Owner's contract with Owner's Separate Contractors and become familiar with the requirements and scope of services contained therein.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify, in writing, the Architect and Owner of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work, and shall promptly report, in writing, to the Architect and Owner if Owner's Separate Contractors fail in any way to timely perform their services or negatively impact Contractor's schedule or ability to perform the Work. Failure of the Contractor to notify, in writing, the Architect and Owner of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper, and is performed in a timely manner, to receive the Contractor's Work. The Contractor shall not be responsible for <u>latent</u> discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

6.2.3.1 If the Architect or Program Manager is required to provide additional services, as provided in the Contract between the Owner or Program Manager -and the Architect, specifically relating to additional compensation for the Architect for evaluating an excessive number of claims submitted by the Contractor or others in connection with the Work in accordance with Owner's Contract with the Architect, then such services shall be paid for by the Contractor through the Owner, unless the additional services result from negligence of or an omission by the Architect and Program Manager.

6.2.3.2 If the Architect provides services in connection with a legal proceeding, except when the Architect is a party thereto, and the Owner requests the Architect, in writing, to provide such services, then the cost of such services shall be paid for by the party whose act or omission was a proximate cause of the problem that led to the requirement to provide such services. Such services shall be paid for by such party through Owner, who upon receipt of same shall reimburse the Architect.

6.2.3.3 All construction costs resulting from the Contractor's negligence, lack of oversight, inattention to details, failure to investigate, or failure to follow the Construction Documents or Contract Documents, will be borne by the Contractor.

§ 6.2.4 The Contractor shall promptly remedy damage <u>wrongfully caused by</u>that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the <u>OwnerArchitect</u> will allocate the cost among those responsible.

6.3.1 Job site cleanup will be performed on a daily basis. The Owner and/or Program Manager will periodically check the site to see that all construction areas, nearby roads, walkways and/or grounds are maintained in a clean and safe manner. The cost to clean up the site will be assessed to the Contractor each time the Owner is required to clean the area due to failure of the Contractor or his designee to satisfactorily perform or enforce this site clean-up requirements. The Owner will assess the cost. Before assessing the cost, the Contractor shall be given notice of the failure to clean the site and one business day after the date of the notice to clean up the site. If the Contractor fails to clean up the site, after notice, the Owner may assess the cost for cleanup.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive, <u>Contingency Authorization</u> or order for a minor change in the Work, <u>A properly prepared written request for a change in the Work by Contractor shall be accompanied by sufficient supporting data and information to permit the Architect to make a recommendation to <u>Owner</u>. The <u>Contract Sum and/or Contract Time may be increased for changes in the Work if the provisions of Article 7 have been met.</u></u>

Architect shall review properly prepared, timely requests by Contractor for a proposed change in the Work, including but not limited to adjustments to the Contract Sum or Contract Time. A properly prepared request for a proposed change shall be accompanied by sufficient supporting data and information to permit Architect to make a reasonable determination without extensive investigation or preparation of additional drawings or specifications

§ 7.1.1.1 No changes in the Contract Sum and/or Contract Time will be allowed for a change in the Work unless prior to performing the changed Work the Contractor has provided the Owner in writing with a proposal for any change in price and/or change in Contract Time caused by the change in Work, and a Change Order is subsequently executed. A field directive or field order shall not be recognized as having any impact upon the Contract Sum or the Contract Time, and Contractor shall have no Claim therefore, unless it shall, prior to complying with the directive and in any event within ten (10) days of receiving the directive, submit a change proposal to the Owner, and a Change Order is subsequently executed, or Contractor satisfies the requirements of Paragraph 15

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone. <u>A change in the work that does not require a change in Contract Sum or Contract Time may be paid from the Contingency Allowance. A Contingency Allowance Expenditure Authorization (CAEA) is a written order prepared by the Architect and signed by the Owner, Contractor and Program Manager directing a change in the Work. A CAEA shall not be used for minor changes in the Work. Note: If the Construction Manager Percentage Fee was not previously included in the approved GMP, the approved additions or deductions for authorized amounts for Contingency Expenditures will also include an appropriate adjustment for the Construction Manager Fee at the percentage approved in Article 5.1.1 and 5.1.2 of the modified AIA Document A133.</u>

7.1.2.1 Contractor shall make no change in the materials used or in the specified manner of constructing and/or installing the Work or supply additional labor, services, or materials beyond that actually required by the terms of the Contract Documents, unless made pursuant to a written order from Owner authorizing Contractor to proceed with the change. No claim for an adjustment of the contract price will be valid unless so ordered.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the <u>Construction Documents or the</u> Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work. <u>Except as permitted in</u>

Paragraph 7.3 or 15, a change in the Contract Sum or the Contract Time shall be accomplished only by Change Order. -Contractor shall not make any claim for an adjustment to time, Contract Sum, or Guaranteed Maximum Price due to: a change in the materials used; a change in the specified manner of constructing and/or installing the Work; or additional labor, services, or materials beyond that actually required by the terms of the Construction Documents or the Contract Documents, unless made pursuant to a written order or directive from Owner authorizing Contractor to proceed with a change in the Work. No claim for an adjustment to time, Contract Sum, or Guaranteed Maximum Price shall be valid unless so ordered or directed.

7.1.4 The total Contractor mark-up for overhead, profit, or fee for work performed by the Contractor's own forces shall not exceed 10% of the cost of the change in the Work. The total Contractor mark-up for overhead, profit, or fee for supervision of work performed by subcontractors' forces shall not exceed 4% of the cost of the change in the Work. The total subcontractor mark-up for overhead, profit, or fee for work performed by the subcontractor's forces shall not exceed 10% of the cost of the change in the Work. The total subcontractor mark-up for overhead, profit, or fee for work performed by the subcontractor's forces shall not exceed 10% of the cost of the change in the Work. In no event shall total mark-up for overhead, profit, or fee in any work which involves a subcontractor or one or more sub-subcontractors, regardless of who performs the Work, exceed 14% of the total cost of the change in the Work.

7.1.5 The Contractor, upon receipt of written notification by the Architect of a proposed item of change in the Work, shall prepare as soon as possible a Change Proposal in such form or forms as directed by the Architect.

<u>.1</u> Each separate Change Proposal shall be numbered consecutively and shall include materials, costs, labor costs, fees, overhead and profit. The Proposal shall specify all cost related to the proposed Change in the Work, including any disruption or impact on performance;

.2 The Subcontractor's itemized accounting shall be included with the Change Proposal;

.3 If a Change Proposal is returned to the Contractor for additional information or if the scope of the proposed change in the Work is modified by additions, deletions or other revisions, the Contractor shall revise the Change Proposal accordingly and resubmit the revised Change Proposal to the Architect and Program Manager;

<u>.4</u> A revised Change Proposal shall bear the original Change Proposal number suffixed by the letter "R" to designate a revision in the original Change Proposal. If additional revisions to a revised Change Proposal are necessary, each subsequent revision shall be identified by an appropriate numeral suffix immediately following the "R" suffix:

.5 Upon written approval of a Change Proposal by the Owner, the Architect and the Program Manager; the Architect will prepare a Change Order authorizing such change in the Work; and

.6 The Contractor shall request extensions of Contract Time due to changes in the Work only at the time of submitting its Change Proposal. Contractor's failure to do so shall represent a waiver of any right to request a time extension

7.1.5.1 The combined overhead and profit included in the total cost to the Owner of a change in the Work shall be based on the following schedule:

.1 For approved additions or deductions to the Cost of the Work (not including preconstruction or general condition costs), the Construction Manager's Fee will be increased or decreased at the same percentage approved in Section 5.1.1 and 5.1.2 in the approved A133 contract document.

.2 For approved additions or deductions to any of the Construction Manager's subcontracts for selfperformed work paid in accordance with the Section 2.3.2.2 of the A133 contract document, the self-performed work fee will be the same as approved in Section 2.3.2.2 of the A133 contract document.

.3 For approved additions or deductions to approved Subcontracts, the maximum markup on changed Work performed by the Subcontractor's own forces will be ten (10%) percent of the approved allowable Change Order costs.

.4 For approved additions or deductions to approved Subcontracts, the maximum markup on changes for Work performed by the Subcontractor's Sub-subcontractors will be four (4%) percent of the amount due the Sub-subcontractor.

.5 Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.7

7.1.6 5 Allowance balances may be used to fund changes in the Work. The Contractor will not be allowed an

overhead, profit, or fee mark-up when changes in the Work are funded by one of the Allowances. The combined overhead and profit included in the total cost to the Owner of a change in the Work shall be based on the following schedule:

.1 For the Contractor, for Work performed by the Contractor's own forces, ten (10%) percent of the cost.

.2 For the Contractor, for Work performed by the Contractor's Subcontractor's, four (4%) percent of the amount due the subcontractors.

<u>.3</u> For each Subcontractor involved, for Work performed by that Subcontractor's own forces, ten (10%) percent of the cost.

<u>.4</u> For each Subcontractor involved, for Work performed by the Subcontractor's Sub-subcontractors, four (4%) percent of the amount due the Sub-subcontractor.

.5 Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.76.

<u>.6</u> In order to facilitate checking of quotations for extras or credits, all proposals except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also

7.1.7 6 If the Contract Sum is \$1,000,000.00 or more, or if the Contract Sum is less than \$1,000,000.00, and any Change Order, Construction Change Directives, or other Changes in the Work would increase the Contract Sum to \$1,000,000.00 or more, the total of all Change Orders, Construction Change Directives, or other Changes in the Work, may not increase the Contract Sum by more than 25% of the original Contract Sum. Any Change Order, Construction Change Directive, or other Change in the Work that would exceed that limit is void and of no effect. Texas Education Code § 44.0411.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum or Guaranteed Maximum Price; and
- .3 The extent of the adjustment, if any, in the Contract Time.

7.2.2 Methods used in determining adjustments to the Contract Sum or Guaranteed Maximum Price may include those listed in Section 7.3.3.

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation. Sufficient substantiating data shall include a proposal itemized for the various components of work added or deleted, segregated by labor, material and equipment. Details to be submitted will include detailed line item estimates showing detailed material quality takeoffs, material prices by item, and of related labor hour pricing information and extension by line item by drawings as applicable);

.2 Unit prices stated in the Contract Documents or subsequently agreed upon and supported by sufficient substantiating data to permit evaluation;

<u>.3</u> Cost to be determined in a manner agreed upon by the parties and a mutually-acceptable fixed or percentage fee or the percentage fee established at 7.1.5; or;

.4 As provided in Subparagraph 7.3.7.

7.2.3 Contractor stipulates that acceptance of a Change Order by the Contractor constitutes full accord and satisfaction for any and all Claims, whether direct or indirect, arising from the subject matter of the Change Order.

7.2.4 In no event shall a single change, or the aggregate of all changes, result in the total costs, reimbursements, and fees exceeding the Contract Sum or the Guaranteed Maximum Price, unless agreed to in writing by Owner prior to the commencement of such modified or changed Work.

7.2.5 Agreement on any Change Order shall constitute a final settlement of all claims by the Contractor directly or indirectly arising out of or relating to the change in the Work which is the subject of the Change Order, including, but not limited to, all direct and indirect costs and impact costs associated with such change and any and all adjustments to the Contract Sum and the Contract Time

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§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum<u>or</u> <u>Guaranteed Maximum Price</u>, or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum<u>or Guaranteed Maximum Price</u>, and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 The Construction Change Directive shall include a unilateral change in the Contract Sum and/or Contract Time reflecting the Owner's reasonable view of the appropriate change in the Contract Sum and/or Contract Time for the change in the work covered by the Construction Change Directive. Until agreement is reached by the Owner and Contractor on these issues, the change in Contract Sum and Contract Time set out in the Construction Change Directive shall be used for schedule of values, payment, and scheduling purposes.

If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation; Sufficient substantiating data shall include a proposal itemized for the various components of work added or deleted, segregated by labor, material and equipment. Details to be submitted will include detailed line item estimates showing detailed material quality takeoffs, material prices by item and of related labor hour pricing information and extension (by line item by drawings as applicable.
- **.2** Unit prices stated in the Contract Documents or subsequently agreed upon; and supported by sufficient substantiating data to permit evaluation.
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- A As provided in Section 7.3.4.

§ 7.3.4 [Not used] If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following: .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;

.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;

-3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and

.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or <u>Guaranteed Maximum Price</u>, or Contract Time.

§ 7.3.7 In the absence of agreement between Owner and Contractor on the proper change to the Contract Sum or Contract Time because of a change in the Work, Contractor may treat the matter as a Claim under Paragraph 15. In

such event, the Contractor shall be entitled to recover only the amount by which its direct costs have been reasonably increased over the direct cost of performing the Work without the change in the work, plus three percent (3%) on Subcontractor's Work) of direct cost to cover home office overhead, profit, and all other costs. Direct costs shall be limited to the following:

A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

.1 Reasonable Cost of Labor, including Social Security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;

.2 Materials, supplies and equipment, equipment including cost of transportation, whether incorporated or consumed;

.4 Premiums for all bonds and insurance permit fees and sales, use or similar taxes related to the Work; and

.5 Cost of Subcontractor for performing the change in the Work. The amount allowable for Subcontractors shall be calculated using the same standards set out herein for direct Work by the Contractor. .6 Additional cost of supervision and field office personnel directly attributable to the change.

Contractor and each Subcontractor involved shall furnish evidence of costs such as copies of briginal invoices for materials, payroll vouchers for labor, etc., upon request by the Architect, Owner, or Program Manager. Any increase in Contract Time shall be limited to the amount of time by which activities critical to overall completion of the Project are delayed by the change in the Work. If it is reasonably possible to perform the change in the Work concurrently with Work that is critical to overall completion, no time extension shall be granted by reason of a change in the Work.

§ 7.3.8 [Not Used] The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that which results in a net decrease in the Contract Sum shall be actual net cost of the work deleted, including all profit and overhead, plus the Contractor's allocated percentage of three (3%) percent on Subcontractor's work of direct cost to cover supervision, field office and home office overhead, profit and all other costs cost When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 [Not Used] Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

With prior written notice to the Owner's representative, ^Tthe Architect may order minor changes in the Work that are consistent with the intent of the Construction Documents or the Contract Documents and do not involve an adjustment in the Contract Sum or Guaranteed Maximum Price, or an extension of the Contract Time, nor requiring any payment from the Contingency Allowance. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Guaranteed Maximum Price, or Contract Time, or requiring a payment from the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect

the Contract Sum <u>or Guaranteed Maximum Price</u>, or Contract Time, <u>or the Contingency Allowance</u>, the Contractor waives any adjustment to the Contract Sum <u>or Guaranteed Maximum Price</u>, or extension of the Contract Time<u>or the</u> <u>Contingency Allowance</u>. The Contractor shall carry out such written orders promptly. Minor changes in the Work shall not include changes that involve the outward appearance of the structure, color schemes, floor plans, building materials, landscaping, or mechanical equipment

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for <u>SubstantFin</u>al Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement first business day after Contractor's receipt of the written Notice to Proceed. The Notice to Proceed shall not be issued by Architect until the Contract (or Amendment, if Contractor is a Construction Manager at Risk) has been signed by the Contractor, approved by Owner's Board of Trustees, signed by the Owner's authorized representative, and Owner and Architect have received, and approved as to form, all required payment and performance bonds and insurance, in compliance with Article 11. Issuance of the Notice to Proceed shall not relieve the Contractor of its responsibility to comply with Article 11.

8.1.2.1 If the Notice to Proceed is delayed due to delays in issuance of the building permit by municipal authorities or other unanticipated delays, *and* if building materials are expected to increase in price due to that delay, Contractor may, if Owner expressly agrees in writing, purchase such materials before receiving the Notice to Proceed from Owner. Contractor shall store and insure such building materials until use. In the event the project is cancelled, Contractor's contract is terminated, or the materials are not used (in whole or in part) on the Project, Contractor shall sell the unused materials to Owner at Contractor's actual cost, or reduce its billing to Owner in that amount, if Contractor retains the material.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8. <u>The</u> date of Final Completion is the date certified by the Architect in accordance with Paragraph 9.10. Unless otherwise agreed in writing by Owner, Contractor agrees that Final Completion shall occur not more than 30 days after the date of Substantial Completion.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the <u>AgreementContract</u>, the Contractor <u>confirmstipulates</u> that the Contract Time is a reasonable period for performing the Work.

If Contractor fails to achieve Substantial Completion of the Work on or before the date(s) specified for Substantial Completion in this Contract and the other Contract Documents, Contractor shall pay to the Owner, as liquidated damages, the sum set out in the Contract between Owner and Contractor for each calendar day that Substantial Completion is delayed after the date(s) specified for Substantial Completion. The total liquidated damage claim is determined by multiplying daily-liquidated damage amounts stated in the Contract by the number of days late. A fraction of a day shall be counted as a full day. It is hereby agreed that the actual damages which Owner will suffer by reason of late completion would be difficult to ascertain, and the liquidated damages to which Owner is entitled hereunder are a reasonable forecast of just compensation for the harm that would be caused by Contractor's failure to achieve Substantial Completion of the Work on or before the date(s) specified for Substantial Completion, and not a penalty. Liquidated damages shall be paid as they accrue and may be adjusted from any progress payment due.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by the Contract Documents or a Notice to Proceed given by the Owner, the Contractor shall notify the Owner in writing not less than five (5) days or other agreed period.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial <u>and Final</u> Completion within the Contract Time.

8.2.4 The Contractor is subject to liquidated damages, as specified in the Contract, if the Work is not completed by the date of Substantial Completion or the date of Final Completion.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress in performing work that is critical to overall completion of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of or Program Manager, or a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, governmental actions unusual delay in deliveries, unavoidable casualties, or adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized, in writing, by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Owner and Architect determines, may justify delay, then the Contract Time semayll be extended for such reasonable time as the Owner, and Architect or Program Manager and delay is not caused or could not have reasonably been anticipated by the Contractor, and could not be limited or avoided by the Contractor's timely notice to the Owner of the delay, and only if Contractor satisfies the conditions of this Paragraph 8.3. Contractor has the burden to prove that any of the foregoing alleged causes of delay significantly impacted construction progress on the critical path, as a condition precedent to any extension of the Contract Time.

The Contractor shall anticipate and include in the construction schedule lost time due to adverse weather conditions in accordance with the number of Lost Time Workdays per month in the Dallas area in accordance with the following schedule:

<u>January – 5</u>
February – 4
March – 5
April – 6
<u>May – 6</u>
June – 4
<u>July – 4</u>
<u>August – 4</u>
September – 5
October – 4
November – 4
December – 4

A request for a time extension based on unusually adverse weather conditions will not be permitted unless the cumulative actual days of Lost Time Workdays for the period when the critical path of the project is subject to impact from Lost Time Workdays exceeds the cumulative number of expected Lost Time Workdays for the same period. The final calculation of entitlement to a time extension cannot be made until at least sixty (60) days prior to the agreed date for Substantial Completion of the Project is completed and the time extensions for unusually adverse weather may not be made until that time. However, Contractor will submit claimed Lost Time Workdays in accordance with the submission times provided in 8.3.2. No day on which substantial Contractor forces are able to perform the work on the Project for more than fifty percent (50%) of the usual workday will be counted as a Lost Time Workday. Lost Time Workdays will not be calculated for any period when the critical path of the project is not subject to impact from adverse weather conditions.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15. On or before the fifteenth (15th) day of each month of the Work, Contractor shall submit in writing a request for all time extensions to which it believes itself to be entitled for the preceding month, other than time extensions for changes in the Work, which are to be submitted in accordance with the requirements of Article 7. If Contractor's request for time extension for Changes in the Work is denied and Contractor wishes to pursue the matter, Contractor shall submit in writing a request for that extension by the fifteenth (15th) day of the month following the denial. Any claim for time extension not submitted under the terms of this Subparagraph shall be waived.

8.3.2.1 Owner, after consultation with the Architect and Program Manager, shall grant time extensions to the extent it believes them to be proper. Time extensions granted by the Owner may be incorporated into schedules for completion of the Work. In the event that Contractor believes that it is entitled to additional time extensions beyond those granted by the Owner, it may make a claim for them provided it can meet the requirements of Paragraph 15.1.

§ 8.3.3 This <u>Contract Section 8.3</u> does not <u>permitreclude the recovery of damages, including, without limitation, extended home office overhead expenses, general conditions, or other consequential damages, by the <u>Contractor</u> for delay <u>or disruption or for extensions of time due to bad weather or acts of God. Contractor agrees that the only possible compensation for any delay is an extension of time by either party under other provisions of the <u>Contractor</u> Documents.</u></u>

ARTICLE 9 PAYMENTS AND COMPLETION § 9.1 Contract Sum



§ 9.1.1 The Contract Sum is stated in the <u>AgreementContract</u> and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents. In the event that the Project is a Construction Management at Risk Project, the Contract Sum shall not exceed the <u>Guaranteed Maximum Price</u>.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shmay!! be equitably adjusted by prior written agreement.

§ 9.2 Schedule of Values

9.2.1 Before the first Application for Payment, ⁷ the Contractor shall submit a schedule of values to the Architect and Program Manager before the first Application for Payment, allocating the entire Contract Sum or, in the case of a Guaranteed Maximum Price, within 15 days after establishing the Guaranteed Maximum Price, to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect or Program Manager may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment. The schedule of values shall be prepared in such a manner that each major item of work, whether done by Contractor's own forces or subcontracted, is shown as a single line item on AIA Document G702 and G703, Application and Certificate for Payment and Continuation Sheet. If the Contractor is a Construction Manager at Risk, then the Contractor's fee and general conditions shall be specifically shown, and AIA Documents G702CMa and G703 shall be used.

9.2.2 He Project is a Construction Manager at Risk project, in order to facilitate the review of Applicants for Payment, the Schedule of Values shall be submitted on AIA Documents G702 and G703, and shall include the following:

.1 Contractor's cost for Contractor's fee (if applicable) bonds and insurance, mobilization, or general conditions, etc. shall be listed as individual line item.

.2 Contractor's costs for various construction items shall be detailed. For example, concrete work shall be subdivide into footings, grade beams, floor slabs, or paving, etc.

.3 On major subcontracts, such as mechanical, electrical, and plumbing, the schedule shall indicate line items and amounts in detail (for example: underground, major equipment, fixtures, installation fixtures, or startup, etc.)

.4 Costs for subcontract work shall be listed without any additional mark-up of Contractor's costs for overhead, profit, or supervision.

.5 If payment for stored materials is requested prior to installation, then material and labor shall be listed as separate line items.

.6 Contractor shall provide a report of actual versus projected reimbursable expenses (general conditions), updated monthly.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the time specified in the Contract, the Contractor shall submit to the Architect and Program Manager an itemized Application for Payment for operations completed prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.8, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, but not yet included in Change Orders. Contractor agrees that, for purposes of Texas Government Code Sections 2251 and 2251.042, receipt of the Application for Payment by the Architect shall not be construed as receipt of an invoice by the Owner. Contractor further agrees that Owner's receipt of the Certificate for Payment shall be construed as receipt of an invoice by the Owner, for purposes of Texas Government Code Sections 251.042, sprovided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor doehas not intend been invoiced byto pay a Subcontractor or supplier, unless suchContractor has self-performed the Work has been performed by others whom the Contractor intends to pay.

9.3.1.3 Until Final Completion of the Work, the Owner shall withhold retainage as provided in the Contract Documents, except that Owner shall not pay amounts for which the Architect refuses to certify payment, or the Owner refuses to pay, as provided herein Section 9.4 or 9.5 as amended. The remaining retainage shall be paid with the Final Payment, unless there is a bona fide dispute between Owner and Contractor and the reason for the dispute is that labor, services, or materials provided by Contractor, or a person under Contractor's direction or control, failed to comply with the express terms of the Contract, or if the surety on any surety bond does not agree to the release of retainage. Written notice of the basis for withholding retainage under Texas Government Code Sections 2252.031 – 2252.032 must be provided to Contractor. If there is no bona fide dispute and neither party is in default, Contractor may cure any noncompliant labor, services, or materials that cannot promptly be cured. Owner is not required to accept such offer.

§ 9.3.2 Unless otherwise provided in the Contract Documents, pPayments shawill be made on the basis of invoices for specific account of materials andor equipment delivered and suitably stored at the site for subsequent incorporatedion in the Work, and . If approved in advance by the Owner, payment may similarly be made for specific materials andor equipment (1) suitably stored the site or (2) suitably stored at some off-the site at a location, provided the following conditions are met for agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the <u>Owner's</u> interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off_the site storage:

.1 The location must be agreed to, in writing, by Owner and Surety.
.2 The location must be a bonded warehouse.

.3 The Contractor's Surety must agree, in writing, to the amounts included in each Application for Payment.

.4 The Contractor must bear the cost of the Owner's and Architect's expenses related to visiting the off-site storage area and reviewing the stored contents. Contractor acknowledges that Architect's time may be an Additional Service and shall compensate Architect directly for same upon request.

- .5 Payment shall not include any charges for overhead or profit on stored materials.
- .6 Payments for materials or equipment stored on or off the site shall be conditioned upon submission by the Contractor of bills of sale or such other documentation satisfactory to the Owner to establish the

Owner's title to such materials or equipment or otherwise protect the Owner's interest, including applicable insurance (naming the Owner as insured and naming the specific materials or equipment stored and their location) and proof of delivery to the site for those materials and equipment stored off the site. Under no circumstances will the Owner reimburse the Contractor for down payment, deposits, or other advance payment for materials or equipment until the materials or equipment are delivered to Owner's site or the agreed-upon off-site storage. Failure to follow these procedures shall result in nonpayment for storage of or insurance on stored materials and equipment. Failure to follow these procedures shall also result in nonpayment of materials and equipment until said materials and equipment are incorporated into the Work.

CONTRACTOR AGREES TO INDEMNIFY OWNER FROM ANY LOSS RESULTING FROM A **BREACH OF THIS SECTION.** Any off-site storage shall be in a bonded warehouse, suitably marked for the individual project, in addition to the requirements above

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work. Neither Contractor nor any of its materialmen, laborers, or Subcontractors shall have any lien rights against the Owner's lands, building funds, materials or other property. No materialmen, laborers or Subcontractor of the Contractor shall have any enforceable rights against the Owner of this Contract. Materialmen, laborers and Subcontractors of the Contractor may have rights under any Payment Bond provided by the Contractor, but cannot look to the Owner for any help in enforcement of those rights. CONTRACTOR SHALL WAIVE, RELEASE, INDEMNIFY, AND HOLD OWNER HARMLESS FROM ANY LIENS, CLAIMS, SECURITY INTERESTS OR ENCUMBRANCES FILED BY THE CONTRACTOR, SUBCONTRACTORS, OR ANYONE CLAIMING BY, THROUGH, OR UNDER THE CONTRACTOR OR SUBCONTRACTOR FOR ITEMS COVERED BY PAYMENTS MADE BY THE OWNER TO CONTRACTOR.

9.3.4 Contractor shall submit Applications for Payment, in quadruplicate, using AIA Documents G702 and G703 Application and Certificate of Payment (or G702CMa, if applicable) and Continuation Sheet or electronically, if acceptable to Owner. All blanks in the form must be completed and signatures of Contractor and Notary Public must be original on each form. Incomplete or inaccurate Applications for Payment shall be returned to the Contractor by the Architect for completion and/or correction. Owner shall have no responsibility for payment of same if the Application for Payment is incomplete or inaccurate.

9.3.5 By signing each Application for Payment, the Contractor stipulates and certifies to the following: that the information presented is true, correct, accurate, and complete; that the Contractor has made the necessary detailed examinations, audits, and arithmetic verifications; that the submitted Work has been completed to the extent represented in the Applications for Payment; that the materials and supplies identified in the Applications for Payment have been purchased, paid for, and received; that the subcontractors have been paid as identified in the Applications for Payment or that Contractor has been invoiced for same; that Contactor has made the necessary onsite inspections to confirm the accuracy of the Applications for Payment; that there are no known mechanics' or materialmens' liens outstanding at the date of the Applications for Payment; that all due and payable bills with respect to the Work have been paid to date or are included in the amount requested in the current Payment Application; that, except for such bills not paid but so included, there is no known basis for the filing of any mechanics' or materialmens' liens on the Work; that the Payment Application includes only Work self-performed by Contractor or for which Contractor has been invoiced; and that releases from all Subcontractors and materialmen have been obtained in such form as to constitute an effective release of lien under the laws of the State of Texas, covering all Work performed and for which payment has been made by the Owner to the Contractor. Contractor understands that documents submitted to Owner become government documents under the laws of the State of Texas. Contractor further understands that falsification of Contractor's Applications for Payment may constitute a violation of the penal laws of the State of Texas, including, but not limited to, Texas Penal Code Sections 32.46; 37.09, and 37.10, and may justify termination of Contractor's Contract with Owner. Contractor further understands and agrees that falsification of documents may entitle Owner to restitution as permitted by Texas law and these Contract Documents.

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§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, <u>carefully</u> evaluate and review the Applications for Payment and, when appropriate, return the Applications for Payment to the Contractor as provided in Section 9.3.4. If the Applications for Payment are complete, then the Architect shall sign and either (1) certify and issue to the Owner a Certificate for Payment in the full amount of the Applications for Payment, with a copy to the Contractor; or (2) certify and issue to the Owner a Certificate for Payment for such amount as the Architect and Program Manager determines is properly due, and notify the Contractor and Owner in writing of the Architect's or Program Manager reasons for withholding certification and disputing in part certification as provided in Section 9.5.1; or (3) withhold certification of the Architect's reason for withholding certification in whole in accordance with Texas Government Code Section 2251.042(a), and as provided in Section 9.5.1. Architect's written reason for withholding certification shall be submitted in accordance with, and construed as the notice required by Texas Government Code Section 2251.042 *et. seq.* Owner may not withhold from payments more than 110% of the disputed amount.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect or Program Manager to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that the Architect has observed the progress of the Work and determined that, in the Architect's professional opinion, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, and the quality of the Work is in accordance with the Contract Documents. Further, the issuance of the Certificate for Payment will constitute a representation by the Architect or Program Manager to the Owner that the Architect or Program Manager has carefully evaluated and certified that the amounts requested in the Applications for Payment are valid and correct and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect or Program Manager in writing to the Owner. However, the issuance of a Certificate for Payment will not be a representation that the Architect and Program Manager has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data unless requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum. Examinations, audits, and verifications, if required by the Owner, will be performed by the Owner's accountants or other representatives of the Owner acting in the sole interest of the Owner.

9.4.3 The issuance of a Certificate for Payment shall constitute a recommendation to the Owner regarding the amount to be paid. This recommendation is not binding on the Owner if Owner knows of other reasons under the Contract Documents why payment should be withheld.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect or Program Manager may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's or Program Manager's opinion the representations to the Owner-required by Section 9.4.2 cannot be made. If the Architect or Program Manager is unable to certify payment in the amount of the Application, the Architect or Program Manager will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect or Program Manager cannot agree on a revised amount, the Architect or Program Manager will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect <u>+ or Program Manager</u> may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's or Program Manager's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;

- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- .7 repeated failure to carry out the Work in accordance with the Contract Documents: or
- .8 failure to submit a written plan indicating action by the Contractor to regain the time schedule for completion of Work within the Contract time.

§ 9.5.2 When <u>either partythe Contractor</u> disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, <u>that partythe Contractor</u> may submit a Claim in accordance with Article 15.

§ 9.5.3 <u>Architect's written reason for withholding certification shall be construed as the notice required by Texas</u> <u>Government Code Section 2251.042 *et seq*. When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.</u>

§ 9.5.4 Notwithstanding any provision contained within this Article, if the Work has not attained Substantial Completion or Final Completion by the required dates, subject to extensions of time allowed under the Contract Documents, If then Architect or Program Manager may withholds any further eCertificateion for pPayment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the from Contractor to the extent necessary to preserve sufficient funds to complete construction of the Project and to cover liquidated damages. failed to make payment for Work properly performed or material or equipment suitably delivered. If tThe Owner shall not be deemed in default by reason of withholding makes payments as provided in Sections 9.3.4, 9.4.3, 9.5.1, or this Section by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment for undisputed <u>amounts</u> in the manner and within the time provided in the Contract Documents, and shall so notify the Architect. <u>Owner shall notify Contractor within 21 days if Owner disputes the Architect's Certificate of Payment pursuant to Texas Government Code Section 2251.042 *et seq.* listing the specific reason for nonpayment. Payments to the <u>Contractor shall not be construed as releasing the Contractor or his Surety from any obligations under the Contract Documents.</u></u>

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than <u>seven-ten</u> days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner. In compliance with Texas Government Code Section 2251.022, the Contractor shall, within ten (10) days following receipt of payment from the Owner, pay all bills for labor and materials performed and furnished by others in connection with the Work, and shall, if requested, provide the Owner with evidence of such payment. Contractor shall include a provision in each of its subcontractor has failed to make payment obligations on its Subcontractors as are applicable to the Contractor hereunder, and if the Owner so requests, shall provide to the Contractor's Subcontractors or for materials or labor used in the Work for which the Owner has made payment to the Contractor, then the Owner shall be entitled to withhold payment to the Contractor, in part or in whole, to the extent necessary to protect the Owner. This Section is subject to the provisions of Texas Business and Commerce Code Chapter 56.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner, <u>Program Manager</u> nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, <u>except as may</u> otherwise be required by law. Any action taken by Owner to require the Contractor to pay a Subcontractor shall not impose any liability on Owner to the Subcontractor or supplier.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7-Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furrished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision. Payments received by the Contractor from the Owner for Work properly performed by Subcontractors, or materials properly provided by suppliers, shall be held in trust by the Contractor for the benefit of those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for suppliers.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, tTHE CONTRACTOR SHALL DEFEND AND INDEMNIFY THE OWNER FROM ALL LOSS, LIABILITY, DAMAGE OR EXPENSE, INCLUDING REASONABLE ATTORNEY'S FEES AND LITIGATION EXPENSES, ARISING OUT OF ANY LIEN CLAIM OR OTHER CLAIM FOR PAYMENT BY ANY SUBCONTRACTOR OR SUPPLIER OF ANY TIER. UPON RECEIPT OF NOTICE OF A LIEN CLAIM OR OTHER CLAIM FOR PAYMENT, THE OWNER SHALL NOTIFY THE CONTRACTOR. IF APPROVED BY THE APPLICABLE COURT, WHEN REQUIRED, THE CONTRACTOR MAY SUBSTITUTE A SURETY BOND FOR THE PROPERTY AGAINST WHICH THE LIEN OR OTHER CLAIM FOR PAYMENT HAS BEEN ASSERTED.

9.6.9 Contractor shall not withhold as retainage a greater percentage from Subcontractors or materialmen than the percentage that Owner withheld as retainage from payments to Contractor.

§ 9.7 Failure of Payment

9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or Pursuant to Texas Government Code Section 2251.051, if the Owner does not pay the Contractor any payment certified by the Architect and Program Manager, which is undisputed, due and owing within seven days after the date the payment is due under the Contract Documents established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon stenven (10) additional days' written notice to the Owner, Program Manager and Architect, that payment has not been made and the Contractor intends to suspend performance for nonpayment, may stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents If the Owner provides written notice to the Contractor that: 1) payment has been made; or 2) a bona fide dispute for payment exists, listing the specific reasons for nonpayment, then Contractor shall be liable for damages resulting from suspension of the Work. If a reason specified is that labor, services, or materials provided by the Contractor are not provided in compliance with the Contract Documents, then the Contractor shall be provided a reasonable opportunity to cure the noncompliance or to compensate Owner for any failure to cure the noncompliance. No amount shall be added to the Contract Sum as a result of a dispute between Owner and Contractor unless and until such dispute is resolved in Contractor's favor.

9.7.2 If the Architect does not issue a Certificate for Payment within seven (7) days after receipt of the Contractor's Application for Payment, through no fault of the Contractor, then the Contractor shall provide written notice to the Owner, and the Owner shall have fourteen (14) business days after receipt of such notice to provide or obtain a Certificate for Payment. If Owner fails to provide or obtain the Certificate for Payment, then the Contractor may, upon fourteen (14) additional business days' written notice to the Owner and Architect, stop the Work until payment of the undisputed amount owing has been received.[Intentionally deleted]

9.7.3 If the Owner is entitled to reimbursement or payment from the Contractor under or pursuant to the Contract Documents, then such payment shall be made promptly upon demand by the Owner. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor fails to promptly make any payment due to Owner, pursuant to the Contractor, or if the Owner incurs any costs and expenses to cure any default of the Contractor or to correct defective Work, then the Owner shall have an absolute right to offset such amount against the Contract Sum and, in the Owner's sole discretion and without waiving any other remedies, may elect either to:

<u>due to Contractor form the Owner, or</u> <u>.2</u> issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use; all Project systems included in the Work or designated portion thereof have been successfully tested and are fully operational; all required governmental inspections and certifications required by the Work have been made, approved, and posted; designated initial instruction of Owner's personnel in the operation of Project systems has been completed; and all the required finishes set out in the Construction Documents are in place. The only remaining Work shall be minor in nature so that the Owner can occupy the Work or the applicable portion of the Work for all of its intended purposes on that date; and the completion of the Work by the Contractor will not materially interfere with or hamper Owner's, or Owners' tenant normal school operations, or other intended use. As a further condition of a determination of Substantial Completion, the Contract Documents for Final Completion. As provided in the Contract Documents, Owner may occupy a portion of the facility prior to Substantial Completion-

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, <u>the Architect and Program Manager shall prepare shall prepare</u> and a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect and Program Manager will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, then the Architect shall so notify the Contractor, Program Manager and Owner in writing, and the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion. Except with the consent of the Owner, the Architect shall perform no more than five (5) inspections to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Architect for any additional inspections.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will timely prepare, sign and issue Owner's a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Final Completion of the Work or designated portion-thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

9.8.6 The Contractor shall keep all required insurance in full force, and utilities on, until the Certificate of Substantial Completion is issued, and accepted by the Owner in writing, regardless of the stated date of Substantial Completion, subject to 11.2.2. Acceptance shall not be unreasonably withheld.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement withagreed to by the Owner and the Contractor in writing, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the ProjectWork. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided that the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work resulting from such occupancy, use or installation, and property and liability insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect. Contractor agrees that the Owner may place and install as much equipment and furnishings as is possible before completion or partial completion of portions of the Work.

§ 9.9.2 Immediately prior to such partial occupancy, or use, or installation, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless <u>otherwise expressly</u> agreed upon <u>in writing</u>, partial occupancy or use of a portion or portions of the Work <u>or installation of furnishings and equipment shall</u> not constitute acceptance of Work not complying with the requirements of the Contract Documents, <u>nor shall it constitute evidence of Substantial Completion or Final</u> <u>Completion</u>.

9.9.4 In the event that Owner takes partial occupancy or installs furnishings and equipment prior to Substantial Completion of the Project. Contractor shall obtain an endorsement to Contractor's Builder's Risk Policy to provide extended coverage for partial occupancy if Contractor's Builder's Risk Coverage required by Article 11 would not otherwise provide such coverage.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect and the Program Manager finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect and the Program Manager will promptly prepare, sign, and issue Owner's Certificate of Final Completion and a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, certifying to the Owner that, and on the basis of the Architect's and the Program Manager's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance, including all retainages, found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's and the Program Manager final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. Final payment shall be made by the Owner in accordance with Owner's regular schedule for payments. Architect is not required to perform more than two inspections to determine whether a designated portion of the Work has attained Final Completion in accordance with the Contract Documents. One inspection may require multiple visits and more than one day to complete The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Architect for any additional inspections cause by act or commission of Contractor.

9.10.1.1 Final Completion means actual completion of the Work, including any extras or Change Orders reasonably required or contemplated under the Contract Documents other than warranty work as further defined in the Form of Contractor's Final Completion Notice attached hereto and incorporated herein as Exhibit "D

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) <u>using AIA Document G706</u>, an affidavit that payrolls, bills for materials and equipment, and

other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidenceing satisfactory to Owner that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) using AIA Document G707, consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, except for amounts previously withheld by the Owner, other data establishing payment or satisfaction of obligations, such as AIA Document G706A, notarized subcontractor's lien releases, receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees. In addition, the following items must be completed and received by the Owner before Final Payment will be due:

- .1 Written certifications required by Sections 10.5, 10.6, and 10.7;
- .2 Final list of subcontractors (AIA Document G705);

.3 Contractor's certification in Texas Education Agency's Certification of Project Compliance, located at www.tea.state.tx.us/school.finance/facilities/cert_2004.pdf;

- .4 Contractor's warranties, organized as required elsewhere in the Contract Documents;
- .5 Maintenance and Instruction Manuals;

.6 Owner's Final Completion Certificate; and

.7 "As-constructed record drawings." At the completion of the Project, the Contractor shall submit one (1) complete set of "as-constructed" record drawings, with all changes made during construction, including concealed mechanical, electrical, and plumbing items. The Contractor shall submit these as electronic, sepia, or other acceptable medium, in the discretion of the Owner. The "as-constructed" record drawings shall delete the seal of the Architect and/or the Engineer and any reference to those firms providing professional services to the Owner, except for historical or reference purposes.

Documents identified as affidavits must be notarized. All manuals will contain an index listing the information submitted. The Index section will be divided and identified by tabbing each section as listed in the index. Upon request, the Architect will furnish the Contractor with blank copies of the forms listed above. Final payment shall be paid by the Owner to the Contractor within thirty (30) days after Owner's Board of Trustees has voted to accept the Work and approve Final Payment.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of such payment. Such payment shall be made under terms and conditions governing final payment, except that and it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall <u>not</u> constitute a waiver of <u>any</u> Claims by the Owner<u>.</u> except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously <u>asserted pursuant to Article 15made in writing</u> and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY § 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract and shall conform to all provisions of the "Manual of Accident Prevention in Construction," published by the Associated General Contractors of America, Inc., latest edition, and the Contractor further agrees to fully comply with all safety standards required by the Occupational Safety and Health Administration ("OSHA") 29 U.S.C. Section 651 *et seq.*, and all amendments thereto. However, the Contractor's duties herein shall not relieve any Subcontractor or any other person or entity, including any person or entity required to comply with all applicable federal, state, and local laws, rules, regulations, and ordinances from the obligation to provide for the safety of their employees, persons, and property and their requirements to maintain a work environment free of recognized hazards. Contractor shall provide reasonable fall protection safety equipment for use by all exposed Contractor employees.

10.1.2 Contractor's employees, agents, Subcontractors, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, shall not perform any service for Owner while under the influence of any amount of alcohol or any illegal controlled substance; or use, possess, distribute, or sell alcoholic beverages while on Owner's premises. No person shall: use, possess, distribute, or sell illegal or nonprescribed controlled drugs or drug paraphernalia; misuse legitimate prescription or over-the-counter drugs; or act in contravention of warnings on medications while performing the Work or while on Owner's premises. Contractor's employees, agents, Subcontractors, or anyone directly or indirectly employed by any of them, shall not distribute or sell alcohol or drugs of any kind to Owner's students or staff, regardless of the location of the distribution or sale.

10.1.3 Contractor will comply with all applicable federal, state, and local drug and alcohol-related laws and regulations (e.g., Department of Transportation regulations, Drug-Free Workplace Act). Contractor has adopted or will adopt its own policy to assure a drug-free and alcohol-free workplace while on Owner's premises or performing the Work. Contractor will remove any of its employees, agents, subcontractors, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, from performing the Work any time there is suspicion of alcohol and/or drug use, possession, or impairment involving such person, and at any time an incident occurs where drug or alcohol use could have been a contributing factor. Owner has the right to require Contractor to remove any person from performing the Work any time cause exists to suspect alcohol or drug use. In such cases, the person so removed may only be considered for return to work after the Contractor certifies, as a result of a for-cause test, conducted immediately following removal, that said person was in compliance with this Contract. Contractor will not use any person to perform the Work who fails or refuses to take, or tests positive on, any for-cause alcohol or drug test.

10.1.4 Owner has also banned the presence of all weapons on the Project site, whether or not the owner thereof has a permit for a weapon, and Contractor agrees that Contractor's representatives, employees, agents, and subcontractors will abide by same. Weapons may only be permitted in Owner's parking lots if weapons are locked/in/personal vehicles in Owner's parking lot.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work, school personnel, students, and other persons on Owner's premises, and other persons who may be affected thereby, including the installation of fencing between the Work site and any connecting or adjacent property of Owner, when required by Texas Education Code Section 22.08341;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as <u>other buildings</u>, and their <u>contents</u>, fencing, trees, shrubs, lawns, walks, <u>athletic fields</u>, <u>facilities and tracks</u>, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including <u>installing fencing</u>, posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards. The Contractor shall also be responsible, at the Contractor's sole cost and expense, for all measures necessary to protect any personal or real property adjacent to the project and improvements therein. Any damage to such property or improvements shall be promptly repaired by the Contractor.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel and shall only conduct such activities after giving reasonable advance written notice of the presence or use of such materials, equipment, or methods to Owner and Architect. The storage of explosives on Owner's property is prohibited. The use of explosive materials on Owner's property is prohibited unless expressly approved in advance by authorities having jurisdiction, in writing, by Owner and Architect. When use or storage of hazardous materials or equipment or unusual construction methods are necessary, the Contractor shall give the Owner, Program Manager and the Architect reasonable advance notice of the presence or use of such materials, equipment or methods.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3.4.5. except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The Contractor. The foregoing obligations of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect. <u>Additionally, Contractor shall submit a Safety</u> <u>Plan for the Owner's approval prior to commencing the Work.</u>

Unless otherwise specified in the Contract Documents, Contractor shall be responsible for initiating, maintaining, supervising, and enforcing all safety precautions and programs in connection with the Work. It shall be the duty and responsibility of the Contractor and all of its Subcontractors to be familiar and comply with all requirements of Public Law 91-596, 29 U.S.C. §§ 651 *et. Sseq.*, the Occupational Safety and Health Act of 1970, (OSHA) and all amendments thereto, and to enforce and comply with all of the provisions of the Act. Contractor shall comply with all applicable laws and regulations of any public body having jurisdiction for safety of persons or property to protect them from damage, injury or loss and shall erect and maintain all necessary safeguards for such safety and protection. However, the Contractor's duties shall not relieve any subcontractor(s) or any other person or entity (e.g., a supplier) including any person or entity with liability relative to compliance with all applicable federal, state and local laws, rules, regulations, and ordinances which shall include the obligation to provide for the safety of their employees, persons, and property and their requirements to maintain a work environment free of recognized hazards.

§ 10.2.7 The Contractor shall not <u>load or permit any part of the construction or site to be loaded so as to cause</u> damage or create an unsafe condition.

10.2.8 The Contractor shall do all things reasonably necessary to protect the Owner's premises and all persons from damage and injury when all or a portion of the Work is suspended for any reason.

10.2.9 The Contractor shall promptly report, in writing, to the Owner, Program Manager and Architect all accidents arising out of or in connection with the Work which causes death, bodily injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious bodily injuries, or serious property damages are caused, then the accident shall be reported immediately by any means necessary to give actual notice to the Owner's representative, Program Manager and the Architect.

10.2.10 Contractor's obligations under Section 10.2 as to each portion of the Project shall continue until Owner takes possession of and occupies that portion of the Project.

§ 10.2.118 Injury or Damage to Person or Property

If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, <u>written</u> notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The <u>written</u> notice shall provide sufficient detail to enable the other party to investigate the matter. <u>Contractor understands and acknowledges that</u>, <u>under Texas law</u>, <u>Owner has sovereign and/or governmental immunity as to all torts except as to the Owner's permitted use or operation of Owner's motor vehicles</u>, subject to any defenses under law.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify, in writing, the Owner and Architect of the condition. In the event the Contractor encounters polychlorinated biphenyl (PCB), and the specifications require the PCB's removal, the Contractor shall remove the PCB and store it in marked containers at the jobsite provided by the Owner. If PCBs are found which are leaking, then Contractor shall stop work on the affected fixture and shall contact Owner for removal and disposal of the leaking PCBs.

10.3.1.1 In the event Contractor encounters on the Project site any Hazardous Substance, or what Contractor may reasonably believe to be a Hazardous Substance, and which is being introduced to the Work, or exists on the Project site, in a manner in violation of any applicable Environmental Laws, Contractor shall immediately stop work in the area affected and report the condition to Owner, Program Manager and Architect in writing

§ 10.3.2 The Work in the affected area shall not thereafter be resumed except by written authorization of Owner if in fact a Hazardous Substance has been encountered and has not been rendered harmless. Contractor shall be responsible for the consequences of any failure to stop work under this Subparagraph 10.3. Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entitles who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract, Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start up The Contractor may be entitled to an equitable adjustment regarding the Date of Substantial Completion and/or Final Completion.

§ 10.3.3 IF THE CONTRACTOR IMPORTS HAZARDOUS MATERIALS ONTO THE PROJECT SITE, THEN CONTRACTOR HEREBY TO THE FULLEST EXTENT PERMITTED BY LAW, THE OWNER SHALL INDEMNIFIESY AND HOLD HARMLESS THE OWNER, ITS CONTRACTOR, SUBCONTRACTORS, ARCHITECT, ARCHITECT'S CONSULTANTS, TRUSTEES, OFFICERS, AND PROGRAM MANAGER, AGENTS AND EMPLOYEES OF ANY OF THEM FROM AND AGAINST ANY CLAIMS, DAMAGES, LOSSES, AND EXPENSES, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES, ARISING OUT OF OR RELATING TO RESULTING FROMSUCH IMPORTATION, INCLUDING BUT NOT LIMITED TO PERFORMANCE OF THE WORK IN THE AFFECTED AREA IF IN FACT THE MATERIAL OR SUBSTANCE PRESENTS THE RISK OF BODILY INJURY OR DEATH AS DESCRIBED IN SECTION 10.3.1 AND HAS NOT BEEN RENDERED HARMLESS, PROVIDED THAT SUCH CLAIM, DAMAGE, LOSS, OR EXPENSE IS

ATTRIBUTABLE TO BODILY INJURY, SICKNESS, DISEASE OR DEATH, OR TO INJURY TO OR DESTRUCTION OF TANGIBLE PROPERTY (OTHER THAN THE WORK ITSELF), EXCEPT TO THE EXTENT THAT SUCH DAMAGE, LOSS, OR EXPENSE IS DUE TO THE FAULT OR NEGLIGENCE OF THE PARTY SEEKING INDEMNITYCOSTS AND EXPENSES THE OWNER INCURS FOR REMEDIATION OF A MATERIAL OR SUBSTANCE THE CONTRACTOR BRINGS TO THE SITE, AS PROVIDED FOR IN SUBPARAGRAPH 3.18.

For purposes of this Agreement, the term "Hazardous Substance" shall mean and include any element, constituent, chemical, substance, compound, or mixture, which are defined as a hazardous substance by any applicable local, state or federal law, rule, ordinance, by law, or regulation pertaining to environmental regulation, contamination, elean-up or disclosure, including, without limitation, The Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), The Resource Conservation and Recovery Act ("RCRA"), The Toxic Substance Control Act ("TSCA"), The Clean Water Act ("CWA"), The Clean Air Act ("CAA"), and the Marine Protection Research and Sanctuaries Act ("MPRSA"). The Occupational Safety and Health Act ("OSHA"), The Superfund Amendments and Reauthorization Act of 1986 ("SARA"), or other state superlien or environmental elean up or disclosure statutes including all state and local counterparts of such laws (all such laws, rules and regulations being referred to collectively as "Environmental Laws"). It is the Contractor's responsibility to comply with this Paragraph 10.3 based on the law in effect at the time its services are rendered and to comply with any amendments to those laws for all services rendered after the effective date of any such amendments.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 For purposes of this AgreementContract, the term "Hazardous Substance" shall mean and include any element, constituent, chemical, substance, compound, or mixture, which are defined as a hazardous substance by any applicable local, state or federal law, rule, ordinance, by-law, or regulation pertaining to environmental regulation, contamination, clean-up or disclosure, including, without limitation, The Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), The Resource Conservation and Recovery Act ("RCRA"), The Toxic Substance Control Act ("TSCA"), The Clean Water Act ("CWA"), The Clean Air Act ("CAA"), and the Marine Protection Research and Sanctuaries Act ("MPRSA"). The Occupational Safety and Health Act ("OSHA"), The Superfund Amendments and Reauthorization Act of 1986 ("SARA"), or other state superlien or environmental clean-up or disclosure statutes including all state and local counterparts of such laws (all such laws, rules and regulations being referred to collectively as "Environmental Laws"). It is the Contractor's responsibility to comply with this Paragraph 10.3 based on the law in effect at the time its services are rendered and to comply with any amendments to those laws for all services rendered after the effective date of any such amendments. The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 In those instances in which the presence of a Hazardous Substance was set forth in the AHERA documents or In which the Contractor has other written notice of such through information given to Contractor by Owner or its representative prior to execution of the AgreementContract, Contractor shall not be entitled to a Claim for any delays, disruption or interference it encounters. In those instances of Work stoppage due to the existence of such Hazardous Substances which were not set forth in the AHERA plans and of which the Contractor has no other prior notice. Contractor may be entitled to a Claim for delay or Work stoppage if the requirements of Article 15 are not met. If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

<u>10.4.1</u> In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. <u>Additional compensation or extension of time claimed by</u> the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7. <u>Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.</u>

10.4.2 The performance of the foregoing services by the Contractor shall not relieve the subcontractors of their responsibility for the safety of persons and property and or compliance with all federal, state, and local statutes, rules, regulations, and orders of any governmental authority applicable to the conduct of the Work.

10.5 ASBESTOS OR ASBESTOS-CONTAINING MATERIALS

10.5.1 Contractor shall submit to the Architect a written certification addressed to the Owner that all materials used in the construction of this Project contain less than 0.10% by weight of asbestos and for which it can be demonstrated that, under reasonably foreseeable job site conditions, will not release asbestos fibers in excess of 0.1 fibers per cubic centimeter. The written certification shall further state that, should asbestos fibers be found at this Project in concentrations greater than 0.1 fibers per cubic centimeter, then Contractor shall be responsible for determining which materials contain asbestos fibers and shall take all necessary corrective action to remove those materials from the Project, at no additional cost to the Owner. The written certification shall be dated, shall reference this specific Project, and shall be signed by not less than two (2) officers of the Contractors.

10.5.2 Final Payment shall not be made until this written certification has been received.

10.6 LEAD-FREE MATERIAL IN POTABLE WATER SYSTEM

10.6.1 Prior to payment of retainage and final payment, the Contractor and each subcontractor involved with the potable water system, shall furnish a written certification that the potable water system is "lead-free."

10.6.2 The written certification shall further state that should lead be found in the potable water system built under this Project, then Contractor shall be responsible for determining which materials contain lead and shall take all necessary corrective action to remove lead from the Project, at no additional cost to the Owner. The written certification shall be dated, shall reference this specific Project, and shall be signed by not less than two (2) officers of the Contractor.

10.7 HAZARDOUS MATERIALS CERTIFICATION

The Contractor shall provide written certification that no materials used in the Work contain lead or asbestos materials in them in excess of amounts allowed by federal, state, or local standards, laws, codes, rules and regulations; the Federal Environmental Protection Agency (EPA) standards; and/or the Federal Occupational Safety and Health Administration (OSHA) standards, whichever is most restrictive. The Contractor shall provide this written certification as part of submittals under the Section in the Project Manual related to Contract Closeout.

ARTICLE 11 INSURANCE AND BONDS

11.0.1 No Work will be commenced, and no equipment or materials can be shipped, until all requirements of this Article have been satisfied, satisfactory evidence of insurance has been provided, and all insurance is in full force and effect. Contractor shall notify Owner, Program Manager and Architect, in writing, of any proposed nonconformity with these requirements, and shall notify Owner, Program Manager and Architect. In writing, of any insurance changes which occur during the terms required under the Contract Documents. Any deviation from these requirements can only be approved by Owner's Board of Trustees. Any nonconformity may be grounds for termination or modification of the Contract. To the extent that Contractor is unable to procure the insurance designated herein because the insurance is not reasonably available or is cost-prohibitive, then Contractor shall provide written notice to Owner's Board of Trustees. Said lack of insurance may then be grounds for termination or modification of this Contract.

11.0.2 Satisfactory evidence of insurance required by this Article shall be provided to Owner, Program Manager and Architect not later than five (5) business days after execution of the Contract by Contractor. Satisfactory evidence shall include copies of all required insurance policies, declarations, and endorsements themselves. In addition, Contractor shall also provide a duly-executed ACORD Form 25 Certificate of Liability Insurance naming Owner as a certificate holder and additional insured (except as noted in Section 11.0.4) and attaching all endorsements required herein. The Contractor shall furnish Owner all insurance amendments, renewals, notices, cancellations, and additional endorsements, as they are provided to Contractor.

11.0.3 All insurance required herein shall be obtained from a company licensed to do business with the State of Texas by the Texas Department of Insurance, and shall be underwritten by a company rated no less than "A-" X in A.M. Best's Key Rating Guide, Property-Casualty, according to the latest posted ratings available on A.M. Best's website, www.ambest.com, and that permits waivers of subrogation.
11.0.4 <u>All insurance required herein shall name the Owner, its officers, employees, representatives, or agents, as an additional insured, except Contractor's Worker's Compensation insurance All liability insurance required herein shall name Dallas ISD, it's officers, employees, volunteers, elected officials, Program Managers, Architects and their officers, employees, representatives, risk management consultants, or agents, as additional insureds, except Contractor's Worker's Compensation insurance and Professional Liability insurance.</u>

11.0.5 All insurance required herein shall, by endorsement, be primary and non-contributory insurance with respect to the Owner, its officers, employees, representatives, or agents. All insurance shall be written on an occurrence basis, if available, and shall contain a waiver of subrogation in favor of Owner as provided for in Section 11.3. All insurance required herein shall be primary insurance as respects the additional insured required by 11.0.4. Any insurance maintained by an additional insured shall be in excess of such insurance and shall not contribute with such primary insurance. All insurance shall be written on an occurrence basis where reasonably available, with the exception of professional liability policies, and shall contain a waiver of subrogation in favor of- the Owner, Program Manager, and Architect on all claims arising out of the Project. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, or did not pay the insurance premium directly or indirectly; and whether or not the person or entity had an insurable interest in the property damaged.

11.0.6 Any failure of Contractor to comply with the reporting provision of the policies shall not affect the coverage provided to the Owner, its officers, employees, representatives, or agents.

11.0.7 All workers on the Project must be covered by the required insurance policies of the Contractor or a Subcontractor. Contractor shall be responsible for all policy deductibles and self-insured retentions.

11.0.8 Nothing contained in this Article shall limit or waive Contractor's legal or contractual responsibilities to Owner or others. Contractor will cooperate with Owner or its designated representative to expeditiously resolve claims involving injuries to third parties, damage to the Work, or project delays. This cooperation will include providing Owner with monthly insurance carrier summary reports of builder's risk, general hability, professional liability and pollution liability claims pertaining to the Owner's projects. Contractor will provide Owner with Contractor and insurance carrier contact names and phone numbers. Contractor will be responsible for timely reporting of all claims and regulatory requirements, including MMSEA Section 111.

11.0.9. Maximum Allowable Charges for CMAR CCIP Programs

In the event that the Contractor elects to utilize a Contractor Controlled Insurance Program (CCIP) the maximum to be considered reimbursable costs under this Contract will be 2% of the final Cost of the Work (including general conditions costs) but not including Contractor Fee or CCIP charges and not including the costs of any subcontracts that included the cost of insurance covered by CCIP.

This 2% cost factor will cover all insurance required to be carried by the prime contractor and all applicable subcontractors covered by this Contract (specifically 1% for worker's compensation insurance, and 1% total for general liability insurance, excess liability insurance, and umbrella liability insurance combined).

Any contractor costs incurred in connection with the Contractor's elected CCIP program that exceeds the amount reimbursed by the Owner under the formula in this section, will be considered to be covered by the Contractor's Fee. Note: Contractor will not be reimbursed for any deductible stated in the CCIP policy. The deductible is considered covered by the CCIP percent and/or the Contractor Fee.

11.0.10 Maximum Allowable Charges for CMAR Liability Insurance Required by Contract

For jobs not covered by Owner Controlled Insurance Programs (OCIP) or Contractor Controlled Insurance Programs (CCIP), the amount to be reimbursed to the Contractor for all contractually required liability insurance (professional liability, general liability, umbrella liability, excess liability, and auto liability will be actual costs not to exceed a total of .65% of the net reimbursable Cost of Work (not including liability insurance and not including Contractor Fee.) If the Contractor's cost of contractually required liability insurance is greater than the amount agreed to be reimbursed per this Contract provision, the difference shall be considered to be covered by the Contractor's Fee. For

jobs covered by CCIP or OCIP, the costs of any other liability insurance will be considered to be covered by the Contractor's Fee.

11.0.11 Maximum Allowable Charges for Subcontract Default Insurance provided by CMAR in lieu of Subcontract Performance Bonds

In the event that Contractor elects to utilize a subcontractor default insurance program (sometimes referred to as SUBGUARD), the maximum amount to be considered reimbursable costs under this Contract will be .75% of the total amount of subcontracts enrolled in such an insurance program. Reimbursement for enrollment in any such program will be limited to subcontracts in excess of \$2500,000.

Any Contractor costs incurred in connection with the Contractor's elected subcontractor default insurance program that exceeds the amount reimbursed by the Owner under the formula in this section, will be considered to be covered by the Contractor's Fee. In the event that Contractor elects to bond selected subcontractors rather than enroll them in the subcontractor default insurance program, the net cost to purchase any such bonds will be reimbursed in lieu of the .75%. Note: Contractor will not be reimbursed for any deductible stated in the Subguard policy. The deductible is considered covered by the .75% and/or the Contractor Fee.

In the event that the Contractor elects to provide Subguard or a similar program of subcontractor default insurance, then the program and the coverage provided by the Contractor shall extend to any additional costs incurred by the Contractor to replace or supplement the forces of a subcontractor to provide the Work, and such circumstances shall include, but not be limited to, any partial or full termination of the contract of a subcontractor for convenience or otherwise, unless the Owner specifically directs the Contractor, in writing, to terminate the contract of a subcontractor for convenience.

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor and the Contractor's Subcontractors shall purchase and maintain, in a company or companies with a "Best Rating" of "A minus" or better, and licensed to do business in the State of Texas, -such insurance as will protect, the Contractor, -them and the Owner, Program Manager and Architectthe Owner, -from claims that may arise out of, or result from, the Contractor's operations under the Contract, whether such operations be by Contractor or by any Subcontractor, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, at a minimum of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in this Section 11.1, in the AgreementContract or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required Such insurance shall include the following: from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

.1 Claims under workers' compensation, disability benefit, and other similar employee benefit acts that are applicable to the Work to be performed, including private entities performing work at the site, and exempt from the coverage on account of number of employees or occupation, which entities shall maintain voluntary compensation coverage at the same limit specified for mandatory coverage for the duration of the Project (see Exhibit A).

.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 Claims for damages insured by usual personal injury liability coverage;

.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 Claims for damages because of bodily injury, death of a person, or property damages arising out of ownership, maintenance, or use of a motor vehicle;

.7 Claims for bodily injury or property damage arising out of completed operations;

.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under the Contract Documents, including under Section 3.18;

.9 Claims for Products, Premises and Operations; and

.10 Claims for damages to the Work itself, through builder's risk insurance, pursuant to AIA A101-2017, Exhibit A, or AIA A133-2019, Exhibit BA.

§ 11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment, and with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents. The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

8. Contractor's Professional Liability, if applicable

If the Work performed by the Contractor or its subcontractors will include some responsibility for design, the Contractor will purchase or cause to be purchased and maintained a professional liability policy. The limits of coverage will not be less than:

\$1,000,000 each claim and annual aggregate

Coverage will include:

<u>A waiver of subrogation in favor of Owner, Program Manager and Architect</u> <u>A retroactive date that is the earlier of the start of design or the Work</u> <u>Coverage for negligent acts, errors or omissions arising out of design or engineering services</u> <u>An extended reporting period of 5 years after final completion</u>

9. All Risk Builder's Risk Insurance, if applicable

If Contractor is a Construction Manager-at-Risk, then, as specified in Amendment Number One. In a total amount equal to the Guaranteed Maximum Price; otherwise, in the total amount of the Contract Sum. See Section 11.4 for Builder's Risk Insurance requirements.

11.1.2.1 The Contractor shall furnish separate payment and performance bonds covering faithful performance of the Contract and payment of obligations arising thereunder, each bond to be in a total amount equal to 100% of the Contract Sum or Guaranteed Maximum Price, if the Project is a Construction Manager at Risk project, whichever is applicable. Provided, however, no limitation herein shall limit Contractor's liability under the Contract Documents. Except as provided below, such bond shall be furnished to Owner before any work begins and not later than five (5) business days after execution of the Contract by Owner. (If the Guaranteed Maximum Price is not known at the time that a Construction Manager at Risk contracts is awarded, then the sum of the payment and performance bonds must each be in an amount equal to the Project budget. The Construction Manager at Risk shall deliver the bonds not later than the tenth (10th) day after the date of the Construction Manager at Risk executes the Contract, unless the Construction Manager at Risk furnished a bid bond or other financial security acceptable to the Owner to the District to ensure that the Construction Manager will furnish the required payment and performance bonds when the Guaranteed Maximum Price is established.) All bond shall be issued by a surety company licensed, listed and authorized to issue bonds in the State of Texas by the Texas Department of Insurance, and shall fully comply with Texas Insurance Code Section 3503.001 et seq. and Texas Government Code Chapter 2253, or their successors. The surety company shall have a rating of not less than "A-"X according to the latest posted ratings on the A.M. Best website, www.ambest.com. The surety company shall provide, if requested, information on bonding capacity and other projects under coverage and shall provide proof to establish adequate financial capacity for this Project. Should the bond amount be in excess of ten (10%) percent of the surety company's capital and surplus, then the surety company issuing the bond shall certify that the surety company has acquired reinsurance, in a form and amount acceptable to the Owner, to reinsure the portion of the risk that exceeds ten (10%) percent of the surety company's capital and surplus with one or more insurers who are duly authorized and admitted to do business in Texas and that amount reinsured by a reinsurer does not exceed ten (10%) percent of the reinsurer's capitals and surplus. Contractor shall immediately notify the Owner and Architect in writing if there is any change in: the rating; insolvency or receivership in any State; bankruptcy; right to do business in the State; or status of Contractor's sureties at any time until Final Completion.

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If the Contract amount is \$100,000 or more, the Contractor shall furnish a Performance Bond equal to one hundred percent (100%) of the Contract Sum. If the Contract amount is \$25,000 or more, the Contractor shall furnish a Payment Bond equal to one hundred percent (100%) of the Contract Sum. There shall be separate bonds, the terms of which and the sureties of which are satisfactory to the Owner and which comply with Chapter 2253, Texas Government Code, Title 10 (Vernon Supp. 1999), and all other applicable law. Contractor shall furnish a copy of the Payment Bond to each of its Subcontractors upon request. Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be furnished.

11.1.2.2 Certificates of insurance acceptable to the Owner, Program Manager and Architect shall be filed with the Owner and Architect prior to commencement of the Work. These certificates and the insurance policies required by this Paragraph 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least thirty (30) days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10.2. Information concerning a fifty percent or greater reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both shall be furnished by the Contractor to the Owner, Program Manager and Architect in writing within five (5) business days of Contractor's information and belief.

Contractor's insurance shall apply separately to each insured against whose claim is made or suit is brought, except with respect to the limits of the insurer's liability

11.1.2.3 2 The Contractor shall deliver copies of the required bonds to the Owner and Architect not later than five (5) business days after execution of the Contract by Owner. All bonds will be reviewed by the Architect for compliance with the Contract Documents. In the event that the Architect has any questions concerning the sufficiency of the bonds, the bonds will be referred to the Owner or the Owner's representative with Architect's recommendation.

11.1.2.3 4 All bonds shall be originals. The Contractor shall require the attorney-in-fact who executes the required Bonds on behalf of the Surety to affix thereto a certified and current copy of the power-of-attorney. The name, address, and telephone number of a contact person for the bonding company shall be provided.

11.1.2.5 <u>4</u> Bonds shall guarantee the faithful performance of all of the covenants, stipulations, and agreements of the Contract. Bonds shall be signed by an agent, resident in the State of Texas. If at any time during the continuance of the Contract, the Owner determines that the Contractor is unable to complete the Work in accordance with the Contract Documents, any of the Contractor's bonds become insufficient, the surety becomes insolvent, or the surety's rating drops below the required level, then the Owner shall have the right to require from the Contractor additional and sufficient sureties or other security acceptable to the Owner, which the Contractor shall furnish to the satisfaction of the Owner within ten (10) days after notice to do so. These contractual remedies are in addition to all remedies available by law. In default thereof, all payment or money due to the Contactor may be withheld until the Contractor provides additional surety or security.

11.1.2. -5 TEXAS WORKERS' COMPENSATION INSURANCE

<u>A copy of a Certificate of insurance, a certificate of authority to self-insure issued by the commission</u>, or a coverage agreement (TWCC-81, TWCC-83, or TWCC-84), showing statutory worker's compensation insurance coverage for the person's or entity's employees providing services on a project is required for the duration of the Project.

Duration of the Project includes the time from the beginning of the Work on the Project until the Contractor's/person's work on the Project is required for the duration of the Project, including any Warranty Period.

Persons providing services on the Project ("subcontractor") in Texas Labor Code 406.096: includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the Project, regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity that furnished persons to provide services on the Project.

Services include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. Services do not include activities unrelated to the Project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

The contractor shall provide coverage, based on proper reporting of classification codes and payroll amount and filing of any coverage agreements, which meets the statutory requirements of Texas Code 401.011 (44) for all employees of the contractor providing services on the project for the duration of the Project.

The Contractor must provide a certificate of coverage to the governmental entity prior to being awarded the contract.

If the coverage period shown on the contactor's current certificate of coverage ends during the duration of the project, the contractor must, prior to the end of the coverage period, file a new certificate of coverage with the governmental entity showing that coverage has been extended. The contractor shall obtain from each person providing services on a project, and provide to the governmental entity:

<u>1.</u> A certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and

2. No later than seven (7) days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

The Contractor shall retain all required certificates of coverage for the duration of the project and for one (1) year thereafter.

The Contractor shall notify the governmental entity in writing by certified mail or personal delivery, within ten (10) days after the contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project.

<u>The Contractor shall post on each project site a notice, in the text, form, and manner prescribed by the Texas</u> <u>Workers' Compensation Commission, informing all persons providing services on the project that they are required</u> to be covered, and stating how a person may verify coverage and report lack of coverage.

The Contractor shall contractually require each person with whom it contracts to provide services on a project, to:

<u>1.</u> Provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code 401.011 (44) for all its employees providing services on the project for the duration of the project.

2. Provide to the contractor, prior to that person beginning work on the project, a certificate of coverage

showing that coverage is being provided for all employees of the person providing services on the project for the duration of the project;

3. Provide the contractor, prior to the end of the coverage period, a new certificate of coverage showing

extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project:

4. Obtain from each other person with whom it contracts, and provide to the contractor

a. A certificate of coverage, prior to the other person beginning work on the project; and

b. A new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project:

5. Retain all required certificates of coverage on file for the duration of the project and for one year

thereafter;

Notify the governmental entity in writing by certified mail or personal delivery, within ten (10)

days

after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project; and

Contractually require each person with whom it contracts to perform as required by items 1-6. with the

Certificates of coverage to be provided to the person for whom they are providing services.

By signing this contract or providing or causing to be provided a certificate of coverage, the contractor is representing to the governmental entity that all employees of the contractor who will provide services on the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions. The contractor's failure to comply with any of these provisions is a breach of contract by the contractor that entitles the governmental entity to declare the contract void if the contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the governmental entity.

The coverage requirement recited above does not apply to sole proprietors, partners, and corporate officers who are excluded from coverage in an insurance policy or certificate of authority to self-insure that is delivered, issued for delivery, or renewed on or after January 1, 1996.

28 T.A.C. Section 110.110(i).

11.1.2.6 BUILDER'S RISK INSURANCE

Contractor shall obtain, at its expense, a builder's risk "all-risk" or equivalent insurance policy, including boiler and machinery insurance if applicable. In the amount of the initial Contract Sum, or if applicable, Guaranteed Maximum Price, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire Work at the site on a replacement cost basis. Policy shall contain no coinsurance clause. Coverage shall insure against the perils of fire, lightning, wind storm, hurricane, hall, explosion, riot, civil commotion, smoke, aircraft, land vehicles, vandalism, malicious mischief, flood, earthquake, cold testing, collapse, subsidence, sinkhole, damage resulting from faulty workmanship or faulty materials, terrorism for certified and non-certified acts, law and ordinance coverage for renovations, and all other perils, and shall include materials stored on-site, off-site, and in transit. Owner shall be a named insured under the policy, and the insurance shall also include the interests of the Contractor, subcontractors, and sub-contractors. Contractor shall be responsible for maintaining said builder's risk insurance until the date of Substantial Completion

§ 11.1.2.7 -3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.2.8 .4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes awareknows or should know of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide written notice to the Owner of such impending or actual cancellation-or expiration. Upon receipt of written notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of written notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage. At least 30 calendar days prior to the date of expiration of any policy required by Section 111, Contractor shall provide Owner written notice of the impending expiration.

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§ 11.2 Owner's and Architect's InsuranceOwner's Insurance

§ 11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance. The Owner shall be responsible for purchasinge and maintaining property and casualty insurance no later than the date of Substantial Completion and such dates of Owner responsibility shall be documented in the Certificate of Substantial Completion. of the types and limits of liability, containing the endorsements, and subject to the terms and eonditions, as described in the Agreement or elsewhere in the Contract Documents. TheIf Owner occupies or uses any completed or partially-completed potion of the Work at any stage, then such occupancy or use must be consented to by the insurer and authorized by public authorities having jurisdiction over the Work. To the extent of overlap between Owner's property insurance and Contractor's builder's risk insurance, if any. Contractor's builder's risk shall be primary and non-contributory.shall purchase and maintain the required insurance from an insurance ecompanies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors, and Sub-subcontractors, and Sub-subcontractors, and Sub-subcontractors, and Sub-subcontractor, Subcontractors, and Sub-subcontractors, and Sub-subcontractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto. <u>Partial occupancy or use shall not commence until the insurance company providing this insurance has consented, in writing, by endorsement or otherwise. Owner and Contractor shall take reasonable steps to obtain such consent and shall take no action without written mutual consent that would cause cancellation, lapse, or reduction of this insurance.</u>

§ 11.2.3 <u>Architect shall be responsible for purchasing and maintaining the Architect's liability insurance, worker's compensation insurance, and errors and omissions insurance as provided in the Owner-Architect AgreementContract Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub subcontractors to the extent any loss to the Owner would have been coverage, the cost of the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.</u>

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, subsubcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property. All insurance required herein shall contain a waiver of subrogation in favor of Owner, Program Manager

and Architect on all claims arising out of the Project. The policies shall provide such waivers of subrogation by endorsement or otherwise.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance. The Owner, as fiduciary, shall have power to adjust and settle any loss arising out of the Work, with insurers regardless of the purchaser of the insurance policy. The Contractor upon receipt of proceeds shall, as a fiduciary, pay all subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements shall require subcontractors to make payment to their sub-subcontractors in similar manner. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor with the insurance proceeds upon issuance of a Notice to Proceed from the Owner.

11.3.3 Partial occupancy or use shall not commence until the insurance company providing this insurance has consented in writing, by endorsement or otherwise. Owner and Contractor shall take reasonable steps to obtain such consent and shall take no action without written mutual consent that would cause cancellation, lapse, or reduction of this insurance.

§ 11.4 Loss of Use, and Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

11.4.3 WAIVERS OF SUBROGATION

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, subsubcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors, if any, and any of their subcontractors, sub-subcontractors, agents and employees, and (3) Program Manager for damages caused by fire or other perils to the extent covered by property insurance obtained pursuant to this Section 11.4, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The foregoing waiver afforded the Architect, his agents, and employees, shall not extend the liability imposed by Section 3.18.3. The Owner or Contractors, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated in this Section 11.4.3. The Owner or Contractors, sub-subcontractors, agents, and employees of any of them by appropriate agreements, similar waivers each in favor of the other parties enumerated herein.

<u>11.4.4 The Contractor shall pay all subcontractors their just shares of insurance proceeds received by the Contractor,</u> and by appropriate agreements shall require subcontractors to make payment to their sub-subcontractors in similar manner.

<u>11.4.5 Contractor's builder's risk insurance shall be endorsed to allow partial occupancy (permission to occupy) by</u> <u>Owner.</u> Contractor shall ensure that such partial occupancy will not cause cancellation, lapse, or reduction of this insurance.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the <u>AgreementContract</u> shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of <u>any applicable mortgagee clause and of</u> Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor <u>and Architect</u> of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor <u>and the Architect</u> shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor <u>and/or the Architect</u> does not object, the Owner shall settle the loss and the Contractor <u>and Architect</u> shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor <u>and/or Architect</u> timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's <u>or Owner's</u> request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect<u>or Owner</u>, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect <u>or Owner</u> may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor <u>shmay</u> be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such <u>Work is not in</u> accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 CORRECTION OF WORK

12.2.1 Before Or After Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, <u>the cost of uncovering and replacement</u>, and compensation for the Architect's and Program Manager's services and expenses made necessary thereby, shall be at the Contractor's expense.

12.2.1.1 The Owner may make emergency repairs to the Work or take such other measures necessary under the circumstances, if the Contractor does not promptly respond to a Notice of Defect or nonconforming Work. Contractor shall be responsible to Owner for this cost if the reason for the repairs is attributable to the Contractor. If payments then or thereafter due to the Contractor are not sufficient to cover such costs, then the Contractor shall pay the difference to the Owner on demand

§ 12.2.2 After Substantial Completion

§ 12.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof <u>or after the date for commencement of warranties</u> <u>established under Section 9.9.1.</u> or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of <u>written</u> notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such <u>written</u> notice promptly after discovery of the condition. <u>During the one year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of <u>written</u> notice from the Owner or Architect, the Owner may correct the Work as provided in 12.2.2.1.1. Nothing contained in this Section 12.2 is intended to limit or modify any obligations under the law or under the Contract Documents, including any warranty obligations, expressed or impliedit in accordance with Section 2.5.</u>

12.2.2.1.1 If the Contractor fails to perform the corrective Work, then Owner may perform corrective Work, at Contractor's cost. If Owner performs corrective Work, then Owner may also remove nonconforming Work and store

the salvageable materials or equipment at Contractor's expense. If the Contractor does not pay all costs incurred by Owner within ten (10) days after written notice, then Owner may, upon ten (10) additional days' written notice, sell the removed materials and equipment in accordance with Owner's policies, and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Architect's services and expenses made necessary thereby. If such proceeds of sale do not cover costs which the Contactor should have borne, then the Contractor shall pay the difference to the Owner.

§ 12.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work.

§ 12.2.3 The one-year period for correction of Work shall be extended by corrective Work performed by the Contractor pursuant to this Section 12.2, but only as to the corrected Work. <u>Any corrective work performed or to be performed under or pursuant to Paragraph 12.2 shall be warranted to the same extent as the Work is warranted hereunder for the greater of the remainder of the applicable warranty (corrective) period or ninety (90) days from the date such corrective work has been completed.</u>

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction by the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

12.2.4.1 Where nonconforming Work is found, the entire area of Work involved shall be corrected unless the Contractor can completely define the limits to the Architect's satisfaction. Additional testing, sampling, or inspecting needed to define nonconforming work shall be at the Contractor's expense, and performed by the Owner's testing laboratory if such services are reasonably required by the Architect. All corrected work shall be retested at the Contractor's expense. Reasonable Architectural or Program Manager Services required to analyze nonconforming Work shall be paid for by the Contractor.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work. Nothing contained in this Paragraph 12.2 is intended to limit or modify any obligations under the law or under the Contract Documents, including any warranty obligations, expressed or implied.

12.2.6 Contractor shall replace, repair, or restore any parts of the Project or furniture, fixtures, equipment, or other items placed therein (whether by Owner or another party) that are destroyed or damaged by any such parts of the Work that do not conform to the requirements of the Contract Documents or by defects in the Work.

12.2.7 The provisions of this Section 12.2 apply to Work done by Subcontractors of the Contractor as well as Work done directly by employees of the Contractor. The provision for this Section 12.2.7 shall not apply to corrective work attributable solely to the acts or omissions of any separate contractor of Owner (unless Contractor is acting in such capacities). The cost to Contractor for performing any of its obligations under this Section 12.2.7 to the extent not covered by insurance shall be borne by Contractor.

12.2.8 If, however, Owner and Contractor deem it inexpedient to require the correction of Work damaged or not done in accordance with the Contract Documents, then an equitable deduction from the Contract Sum shall be made by written agreement between Contractor and Owner. Until such settlement, Owner may withhold such sums as Owner deems just and reasonable from moneys, if any, due Contractor. The settlement shall not be unreasonably delayed by the Owner and the amount of money withheld shall be based on estimated actual cost of the correction to Owner.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

13.1.1 The Contract shall be governed by the laws of the State of Texas, and any litigation shall be conducted in state district court. Mandatory and exclusive venue for any disputes shall be in Dallas , county in place whichere the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4. The Contract and any disputes related to the Work shall be governed by the laws of the State of Texas. The Contract is deemed performable entirely in Dallas, Dallas County, Texas. Any litigation to enforce or interpret any terms of the Contract, or any other litigation arising out of or as a result of the Contract or the Work, shall be brought in the State District courts of Dallas County, Texas. In the event of litigation, the substantially prevailing party shall be entitled to its reasonable and necessary attorney's fees that are equitable and just.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, Nneither party to the Contract shall assign the Contract, as ain whole or in part, without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract. The Contractor shall not assign the Contract as a whole, or in part, without written consent of the Owner.

§ 13.2.2 The invalidity of any part or provision of the Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents shall not impair or affect in any manner whatsoever the validity, enforceability, or effect of the remainder of the Contract Documents. The Owner may, without consent of the Contract or, assign the Contract in whole or in part. In such event, the assignee shall assume the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignments. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Written notice shall be deemed to have been duly served only if the writing is delivered in person to the office of the party set out Oon the first page of the Standard Form of AgreementContract Between Owner and Contractor, or to such other address as has been previously clearly identified in writing by the addressee, or sent by registered or certified mail to that address. Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner<u>, or</u> Architect<u>, or Contractor</u> shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing. The application of a time-is-of-the-essence clause as to any action or duty required of Contractor by the Contract Documents shall not be waived by course of performance or course of dealing by Contractor.

13.3.3 4 Neither Contractor nor any of its materialmen, laborers or Subcontractors shall have any lien rights against the Owner's lands, building funds, materials or other property. No materialmen, laborers or Subcontractors of the Contractor shall have any enforceable rights against the Owner on this Contract. Materialmen, laborers and Subcontractors of the Contractor may have rights under any Payment Bond provided by the Contractor, but cannot look to the Owner for any help in enforcement of those rights.

13.3.4 The invalidity of any part or provision of the Contract Documents shall not impair or affect in any manner whatsoever the validity, enforceability or effect of the remainder of the Contract Documents.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made <u>at appropriate times</u> as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities <u>having jurisdiction</u>. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity <u>employed by the Owner for this purpose-acceptable to the Owner</u>, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals <u>which shall be included in the Cost of the Work</u>. Provided, however, per Texas Government Code Chapter 2269, Owner shall bear all costs of construction materials, engineering, testing, and inspection services, and the verification testing services necessary for acceptance of the facility by the Owner. Owner shall bear the normal costs of these services, but not any excess costs attributable to Contractor caused scheduling problems, other Contractor error or retesting. The Contractor shall give the Architeet timely notice of when and where tests and inspections are to be made so that the Architect may <u>observe be present for</u> such procedures. <u>The Owner shall bear costs of tests</u>, inspections, or approvals that do not become requirements until <u>after bids are received or negotiations concluded</u>. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, <u>the Owner shall provide or contract the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements</u> for such additional testing, inspection, or approval, <u>by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures.</u> Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense. <u>Architect, Owner, and Contractor shall cooperate for the timely scheduling of such tests and inspections</u>.

§ 13.4.3 If such procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including, <u>but not limited to</u>, those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect, with a copy to the Owner.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

<u>Undisputed Ppayments_due and unpaid under the Contract Documents shall bear interest from the date payment is overdue at the rate_provided by Texas Government Code Section 2251.025the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located. Any such payment shall be deemed overdue on the thirty-first (31st) day after Owner received Architect's invoice or Contractor's completed Application for Payment shall be deemed overdue on the forty-sixth (46th) day after Owner receives Architect's invoice or Contractor's Contr</u>

13.6 EQUAL OPPORTUNITY IN EMPLOYMENT

13.6.1 The Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, age, disability, sex, national origin, or any class otherwise protected by District policy or law. The Contractor agrees to post in conspicuous places, available to employees and applicants, notices setting forth the Contractor's nondiscrimination policies.

13.6.2 The Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment

without regard to race, religion, age, disability, sex, national origin, or any class otherwise protected by District policy or law.

13.7 RECORDS

13.7.1 Contractor shall at all times through the date of Final Completion, maintain Job Records, including, but not limited to, invoices, Construction Documents, payment records, payroll records, daily reports, diaries, logs, instructions, drawings, receipts, subcontracts, purchase orders, vouchers, memoranda, other financial data and job meeting minutes applicable to the Project, in a manner which maintains the integrity of the documents. Job Records must be retained by Contractor for a least twelve (12) years, after the date of Final Completion of the Project. Within five (5) days of Owner's request, Contractor shall make such Job Records available for inspection, copying, and auditing by the Owner, Architect, or other respective representatives, at Owner's central office.

13.7.2 If Contractor is a Construction Manager at Risk, then Contractor shall also maintain, in accordance with the provisions of Section 13.7.1, the following: subcontract files, including proposals of successful and unsuccessful bidders, bid recaps, and subcontractor payments; original estimates; estimating work sheets; general ledger entries detailing cash and trade discounts received; insurance rebates and dividends; and any other supporting evidence deemed necessary by the Owner to substantiate charges related to the Contract.

13.7.3 Contractor shall keep a full and detailed financial accounting system and shall exercise such controls as may be necessary for property financial management under this Contract; the accounting and control systems shall be satisfactory to the Owner and shall be subject to the provisions of Section 13.7.1.

13.7.4 Contractor shall keep all Contract Documents related to the Project, subject to the provisions of Section 13.7.1, provided, however, Contractor shall not destroy said documents until Contractor has confirmed with Owner in writing, that Owner has obtained a copy of all as-built drawings.

13.7.5 In the event that an audit by the Owner reveals any errors/overpayments by the Owner, then the Contractor shall refund to the Owner the full amount of such overpayments within thirty (30) days of such audit findings, or the Owner, at its option, reserves the right to deduct such amounts owed to the Owner from any payments due to the Contractor.

13.7.6 Commencement of Statutory Limitation Period, As between the Owner and Contractor, after Final Certificate for Payment.

13.7.7 At any time during the term of this AgreementContract and for a period of ten four (410) years thereafter, the Owner or a duly authorized audit representative of the Owner, or the State of Texas, at its expense and at reasonable times, reserves the right to audit the Contractor's records and books relevant to all services provided under this AgreementContract. In the event such an audit by the Owner reveals any errors/overpayments by the Owner, the Contractor shall refund the Owner the full amount of such overpayments within thirty (30) day of such audit findings, or the Owner, at its option, reserves the right to deduct such amounts owing the Owner from any payments due the Contractor.

13.8 NONDISCRIMINATORY EMPLOYMENT

13.8.1 In connection with the execution of this Contract, the Contractor shall fully comply with the District nondiscrimination requirement cited below.

"The Dallas Independent School District, as an equal opportunity educational provider and employer, does not discriminate on the basis of race, color, religion, sex, national origin, disability, sexual orientation and/or age in educational programs or activities that it operates or in employment decisions. The District is required by Title VI and Title VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act, and the Age Discrimination Act of 1975, as amended, as well as board policy not to discriminate in such a manner. (Not all prohibited bases apply to all programs.)"

During the performance of this Contract, the Contractor further agrees as follows:

.1 The Contractor will not discriminate against any employee or applicant for employment because of race, color, sex, religion, national origin or age;

The Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, sex, religion, national origin or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the requirements of these non-discrimination provisions.

Submittal to Owner of reasonable evidence of discrimination will be grounds for termination of the <u>AgreementContract.</u>

This policy does not require the employment of unqualified persons.

13.9 CERTIFICATION OF NONSEGREGATED FACILITY

13.9.1 This Subparagraph is applicable to Contracts and Subcontracts exceeding \$10,000.00 which are not exempt from the provisions of the Equal Opportunity Clause.

13.9.2 By the signing of this Contract, the Contractor signifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. It certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The undersigned agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this proposed Contract. As used in this certification, the term 'segregated facilities' means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. It further agrees that (except where it obtained identical certifications from proposed consultants for specific time period), it will obtain identical certification from proposed Subcontractors prior to the award of a Contract exceeding \$10,000.00 which are not exempt from the provisions of the Equal Opportunity Clause; that it will retain such certifications in its files; and that it will forward the following notice to such proposed Subcontractors (except where the proposed Subcontractors have submitted identical certifications for specific time periods): Notice to Prospective Subcontractors of requirement for certification of nonsegregated facilities, as required by the May 19, 1967 Order (32 FR.7439, May 19, 1967) on elimination of segregated facilities, by the Secretary of Labor, must be submitted prior to the award of a Contract exceeding \$10,000.00 which is not exempt from the provisions of the Equal Opportunity Clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

Note: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.11.

13.10 PREVAILING WAGE RATES

13.10.1 In compliance with laws of the State of Texas relating to labor Texas Government Code Section 2258.001 *et seq.* the building construction wage rates listed in the Contract Documents have been ascertained and determined by the Owner as the general prevailing rates in the locality of Dallas Independent School District for the classifications listed. The Contractor and each Subcontractor shall pay to all laborers, workers and mechanics employed by them in the execution of this Contract not less than such rates for each craft or type of worker or mechanic needed to execute the Contract. If it becomes necessary to employ any person in a trade or occupation not herein listed, such person shall be paid not less than an hourly rate fairly comparable to the rates shown hereinafter.

13.10.2 This determination of prevailing wages shall not be construed to prohibit the payment of more than the rates named.

13.10.3 In compliance with the above cited law the Contractor shall forfeit, as a penalty to the Owner, Sixty Dollars (\$60.00) for each laborer, worker or mechanic employed, for each calendar day, or portion thereof, such laborer, worker or mechanic is paid less than the rates stipulated hereinafter for any work done under this Contract by him or any Subcontractor under him.

13.10.4 Owner reserves the right to receive and review payroll records, payment records, and earning statements of employees of Contractor, and of Contractor's Subcontractors and Sub-subcontractors.

13.10.5 In executing the Work under the Contract Documents, Contractor shall comply with all applicable state and federal laws, including but not limited to, laws concerned with labor, equal employment opportunity, safety and minimum wages.

13.11 CERTIFICATION OF ASBESTOS-FREE PROJECT

13.11.1 Contractor shall submit to the Architect a letter addressed to the Owner certifying that all materials used in the construction shall be asbestos free. The General Contractor shall provide certification for himself, all subcontractors, vendors, suppliers, and other entities, stating that materials and/or equipment used in the construction of the project do not contain asbestos in any form or concentration. Certification letters shall be dated, shall reference this specific Project, and shall be signed by not less than two officers of the construction company.

13.11.2 Final Payment shall not be made until this letter of certification has been received.

13.12 CERTIFICATION OF LEAD-FREE POTABLE WATER SYSTEM

13.12.1 Contractor shall submit to the Architect a letter, addressed to the Owner, stating that any components of the potable water system installed by the Contractor are lead-free as defined by the Safe Drinking Water Act Amendment of 1986 and the Lead Contamination Control Act of 1988.

13.13 Responsibility For Contractor's Forces. The Contractor shall be responsible for the actions of Contractor's forces, and Subcontractor's forces to enforce the Owner's drug-free, alcohol-free, and tobacco-free zone. Contractor agrees to abide by Owner's policies prohibiting the use of tobacco, alcohol or illegal drugs in any form on any property owned, operated, or maintained by the Owner. Contractor agrees to require all subcontractors and sub-subcontractors to abide by these policies,. Violation of this provision shall constitute a material breach of this agreement.

13.14 FAMILY CODE CHILD SUPPORT CERTIFICATION

By signing this AgreementContract, the Contractor certifies as follows: "Under Section 321,006, Texas Family Code, the vendor or applicant certifies that the individual or business entity named in this contract, bid, or application is not ineligible to receive the specified grant, loan, or payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate.

13.15 NON-COMPENSATION REQUIREMENT

The Owner may not accept a bid or award a contract that includes proposed financial participation by a person who received compensation from the Owner to participate in preparing the specifications or request for proposals on which the bid or contract is based. The Contractor is described as vendor in the statutory quote below:

"Under Section 2155.004, Government Code, the vendor certifies that the individual or business entity named in this bid or contract is not ineligible to receive the specified contract and acknowledges that this contract may be terminated and payment withheld if this certification is inaccurate."

13.16 8 PROPRIETARY INTERESTS AND CONFIDENTIAL INFORMATION

13.16.1 8 Neither Architect nor Contractor shall use the image or likeness of Owner's Project or Owner's official logo or emblem and any other trademark, service mark, or copyrighted or otherwise protected information of Owner, without Owner's prior written consent. Contractor and Architect shall not have any authority to advertise or claim that Owner endorses Architect or Contractor's services, without Owner's prior written consent.

13.16.2 Neither Architect nor Contractor shall disclose any confidential information of Owner which comes into the possession of Architect or Contractor at any time during the Project, including but not limited to: pending real estate purchases, exchange, lease, or value; information related to litigation; the location and employment of security devices, security access codes; student likenesses; student record information; employee information; or any other information deemed confidential by law.

13.16.3 The parties acknowledge that, as a public entity in the State of Texas, Owner is subject to, and must comply with, the provisions of the Texas Public Information Act, Texas Government Code Section 552.001, *et seq.*, and the Texas Open Meetings Act, Texas Government Code, Section 551.001. *et seq.*

13.16.4 All information owned, possessed, or used by Owner which is communicated to, learned, developed or otherwise acquired by Contractor in the performance of services for Owner, which is not generally known to the public, shall be confidential and Contractor shall not, beginning on the date of first association or communication between Owner and Contractor and continuing through the term of this AgreementContract and at any time thereafter, disclose, communicate or divulge, or permit disclosure, communication or divulgence, to another or use for Contractor's own benefit or the benefit of another, any such confidential information, unless required by law. Except when defined as part of the Project, Contractor shall not make any press releases, publie statements, or advertisement referring to the Project or the engagement of Contractor as an independent contractor of Owner in connection with the Project, or release any information relative to the Project for publications, advertisement or any other purpose without prior written approval of Owner. Contractor shall obtain assurances similar to those contained in this Subparagraph from persons, agents, and subcontractors retained by Contractor. Contractor acknowledges and agrees that a breach by Contractor of the provisions hereof will cause Owner irreparable injury and damage. Contractor, therefore, expressly agrees that Owner shall be entitled to injunctive and/or other equitable relief to prevent or otherwise restrain a breach of this AgreementContract.

.2 Contractor agrees that the Owner must, therefore, have the right to examine and approve or disapprove such use in writing in advance of use, the contents, appearance and presentation of any and all advertising, promotional or other similar materials proposed by the Contractor to be used in connection with any advertising or promotion utilizing Owner's Protected Materials.

13.17 8 The Contractor shall have bear full responsibility for utilizing means and methods that may result in an overstress of any structure or any part or member of it during construction. The Contractor shall fully check the effect of his

operations in this regard, and shall provide all temporary support and connections required.

13.18.9 The Contractor shall protect and be responsible for any damage to or loss of its (his/her) work, tools, equipment, or material, from the date of the Contract until the acceptance of the Work and shall make good without cost to the Owner, any damage or loss that may occur during this period. All material affected by weather shall be covered and protected to keep it from damage while being transported to the site, as well as when it is stored on the site. The Contractor at its (his/her) own expense and option shall employ watchmen or erect fencing at such time as necessary to protect his work, tools, equipment or material by the Contractor and the fact that the Owner has a watchman, if any, shall not mean that the Owner has undertaken, nor does the Owner undertake, to protect work, tools, equipment and materials from theft or mysterious disappearance.

13.19 The Contractor should only take direction on any issues regarding the Project when provided by the Owner's Office of Construction Services or the Program Manager or Architect.

13.20 The Contractor and subcontractor shall ensure that on-site fraternization shall not occur between personnel under the Contractor's or subcontractor's direct or indirect supervision and students, school employees and the general public.

13.21 PARTNERING

Contractor will participate in a partnering process if requested by Owner.

13.22 AS-BUILT DRAWINGS

Prior to issuance of the Certificate of Final Completion by Architect and Program Manager, the Contractor shall submit to Architect a complete set of as-built drawings, with all changes made during construction, including

concealed mechanical, electrical and plumbing items clearly shown. The Contractor shall submit these drawings in a medium acceptable to the Architect. Based upon the as-built drawings received from Contractor, Architect shall, within thirty days after receipt of the as-built drawings from Contractor, complete Record Drawings.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT § 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of <u>ninety 390</u> consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, under direct or indirect contract with the Contractor, for any of the following reasons, which are the sole grounds for termination under this Subparagraph 14.1.1.::

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped; or
- .3 Because the Architeet has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment of undisputed sums due on an approved Certificate for Payment within the time stated in the Contract Documents. ; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, <u>under direct or indirect contract with the Contractor</u>, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, then, after the applicable time period, the <u>Contractor may, upon sevten (10) days' written notice to the Owner and Architect, terminate the Contract and</u> <u>recover from the Owner payment for Work executed, and for proven unrecoverable loss with respect to materials,</u> <u>equipment, tools, and construction equipment and machinery incurred to the date of termination as well as</u> <u>reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination</u>. If the Work is stopped for <u>ninety (90)</u> consecutive days for any reason described in Subparagraphs 14.1.1 or 14.1.2, the <u>Contractor may, upon fourteen (14) days written notice to the Owner and Architect</u>, terminate the Contract and recover from the Owner payment for Work executed, and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead, profit and damages to date of termination.

14.1.4 If the Work is stopped for a period of <u>ninety (690)</u> consecutive days through no act or fault of the Contractor, or a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has <u>repeatedly</u> persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon twenty <u>fourteen (2014)</u> additional days' <u>written</u> notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

14.1.5 Notwithstanding anything to the contrary contained herein or in the other Contract Documents, neither the Owner or any other party shall be responsible for damages for loss of anticipated profits on Work not performed on account of any termination described in Subparagraphs 14.1.1, 14.1.2 and 14.1.3.

14.2 Termination by the Owner for Cause

14.2.1 The Owner may terminate the Contract if the Contractor

- .1 <u>persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper</u> materials;
- .2 fails to make payment to Subcontractors or <u>sSuppliers</u> in accordance with the respective agreements between the Contractor and the Subcontractors or <u>sSuppliers</u>;
- <u>.3</u> repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or

- .4 otherwise is guilty of <u>substantial breach of a provision of a material</u> breach of provision of the Contract Documents;
- .5 fails to furnish the Owner, upon written request, with assurances satisfactory to the Owner, evidencing the Contractor's ability to complete the Work in compliance with all the requirements of the Contract Documents; or
- .6 engages in serious or repeated worker misconduct in violation of Article 3.3.2;
- .7 engages in conduct that would constitute a violation of state or federal criminal law, including but not limited to, the laws prohibiting certain gifts to public servants, or engages in conduct that would constitute a violation of the Owner's ethics or conflict of interest policies; or
- .8 fails to proceed continuously and diligently with the construction and completion of the Work, except as permitted under the Contact Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, <u>subject to any prior rights of the surety</u>, <u>and upon</u> <u>certification by the Architect that sufficient cause exists to justify such action</u>, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 <u>Exclude the Contractor from the site and tTake possession of the site and of all materials</u>, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon <u>written</u> request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished. <u>Any further payment shall be limited to amounts earned to the date of Contractor's removal.</u>

§ 14.2.4 If the <u>unpaid balance of the Contract Sum exceeds</u> costs of finishing the Work, including compensation for the Architect's and Program Manager's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, <u>exceed the unpaid balance of the Contract Sum or Guaranteed Maximum</u> Price (if the Project is a Construction Manager at Risk project), such excess shall be paid to then the Contractor and/or its Surety shall pay the difference to the Owner. If such costs and damages exceed the unpaid balance, the <u>Contractor shall pay the difference to the Owner</u>. The amount to be paid to the <u>Contractor or</u> Owner, as the case may be, shall be certified by the <u>Architect the Initial Decision Maker</u>, upon application, and this obligation for payment shall survive termination of the Contract.

14.2.5 The parties hereby agree that: 1) if an order for relief is entered on behalf of the Contractor, pursuant to Chapter 11 of the U.S. Bankruptcy Code; 2) if any other similar order is entered under any debtor relief laws; 3) if Contractor makes assignments for the benefit of one or more of its creditors; 4) if a receiver is appointed for the benefit of its creditors; or 5) if a receiver is appointed on account of its insolvency, any such event could impair or frustrate Contractor's performance of the Contract Documents. Accordingly, it is agreed that upon occurrence of any such event, Owner shall be entitled to request of Contractor or its successor in interest, adequate assurance of future performance in accordance with the terms and conditions of the Contract Documents. Failure to comply with such request within ten (10) days of delivery of the request shall entitle Owner to terminate the Contract and to the accompanying rights set forth in Subparagraphs 14.2.1 through 14.2.6. In all events, pending receipt of adequate assurance of performance and actual performance in accordance with the Contract Documents, Owner shall be entitled to proceed with the Work with Owner's own forces or with other Contractors on a time and material or other appropriate basis, the cost of which will be charged against the Contract Sum.

If a Performance Bond has been furnished and the Contractor is declared by the Owner to be in default under the Contract, the Surety shall promptly remedy the default by completing the Contract in accordance with its terms and conditions, or by obtaining a bid or bids in accordance with its terms and conditions. At Owner's election, upon determination by the Owner and the Surety of the lowest responsible bidder, the Surety will complete the Work or will arrange for a Contract between such bidder and the Owner, and make available as Work progresses sufficient funds to pay the cost of completion less the balance of the Contract Sum, but not exceeding the Penal Sum of the bond and other costs and damages for which the Surety may be liable under the bond. The phrase 'balance of the Contract Sum' as used herein shall mean the total amount payable by the Owner to the Contractor under the Contract and amendments thereto less the amount previously paid by the Owner to the Contractor.

14.2.6 As required by Texas Government Code Chapter 2253, if a Performance Bond has been furnished and the Contractor is declared by the Owner to be in default under the Contract, then the Surety shall promptly perform the Work, in full accordance with the plans, specifications, and Contract Documents. Unless otherwise agreed in writing between the Surety and the Owner, the Surety shall complete the Work by the Surety entering into a Contract acceptable to Owners, and shall obtain new Payment and Performance Bonds as required by law.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum, Guaranteed Maximum Price, and Contract Time shmayll be adjusted, by mutual written agreement, for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. An adjustment shall be made to the Contract Sum calculated under Article 7. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. Furthermore, if this Contract is a multi-year contract funded through Owner's current general funds that are not bond funds, then the Owner's Board of Trustees has the right to not appropriate adequate monies for the next fiscal year and to terminate this Contract at the end of each fiscal year during the term of the Contract, without the Owner incurring any further liability to Contractor as a result of such termination.

§ 14.4.2 Upon receipt of <u>written</u> notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; and for proven unrecoverable loss with respect to materials, equipment, tools, and construction equipment and machinery incurred to the date costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement. Such payment shall not cause the Contract Sum, or Guaranteed Maximum Price, if the Project is a Construction Manager at Risk Project, to be exceeded. Such payment shall not include overhead and profit for Work not executed.

14.4.4 Upon determination by a Court of competent jurisdiction that termination of the Contractor pursuant to Section 14.2 was wrongful, such termination will be deemed converted to a termination for convenience pursuant to Section 14.4, and Contractor's remedy for wrongful termination shall be limited to the recovery of the payments permitted for termination for convenience as set forth in Section 14.4.

ARTICLE 15 CLAIMS AND DISPUTES § 15.1 Claims

§ 15.1.1 Definition

A Claim is <u>any demand or assertion by one of the Contractor parties seeking, as a matter of right, payment of</u> additional compensation under the Contract Documentsmoney, interpretation of the Contract Document terms, a change in the Contract Time;, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the <u>Contract. The responsibility to substantiate Claims shall rest with the partyContractor making the Claim. This</u> <u>Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with</u> <u>the Contract Documents, any</u> demand or assertion by the <u>Contractor that it should be paid more money than the</u>

Contract Sum or granted more contract time by the Owner because of action or inaction on the part of Owner, any Owner representative, Architect, or any party for whom Owner is responsible, or any party with whom Owner has separately contracted for other portions of the Project, including, but not limited to, any demand or assertion that Contractor's performance has been delayed, interrupted or interfered with, that Contractor's performance has been accelerated, constructively accelerated, or suspended, that Contractor's performance has been wrongfully terminated, that there has been a failure of payment, that Contractor has encountered concealed or unknown conditions, that Contractor has encountered hazardous materials, that actions or omissions of the Owner have been wrongful related in any way to the Work, that a time extension grant was inadequate, that there has been a breach of contract, or that Contractor is entitled to any other relief, on any legal or equitable theory, related to the Work or the Contract. This definition of Claim is not intended to create any right of action where the right of action does not otherwise exist under applicable law or other provisions of this Contract.

§ 15.1.2 Notice Requirement Time Limits on LitigationClaims

The Owner and Contractor shall commence all Claimslitigation and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in anythe case of the Owner, not more than 120 years after the date of FinalSubstantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2. Within fourteen (14) calendar days of the first occurrence of an event that Contractor has any reason to believe might result in a Claim, or within fourteen (14) calendar days of Contractor's discovery of the first occurrence of an event that Contractor has any reason to believe might result in a Claim, or within fourteen shall file a written document clearly captioned "Notice of Claim" with Owner, Program Manager and the Architect. The Notice shall clearly set out the specific matter of complaint, and the impact or damages, which may occur or have occurred as a result thereof, to the extent the impact or damages can be assessed at the time of the Notice. If the impact or damages cannot be assessed as of the date of the Notice, the Notice shall be amended at the earliest date that is reasonably possible. It is imperative that Owner have timely, specific Notice of a potential problem in order that the problem can be mitigated promptly.

15.1.2.1 In addition to the Notice required by Subparagraph 15.1.2, the Contractor shall also file a document captioned "Claim" with the Owner, Program Manager and Architect within ninety-one (91), days of occurrence of any event resulting in a Claim for damages, giving notice of the Claim. Contractor agrees that this is a reasonable Notice requirement. Any Claim or portion of a Claim that has not been made the specific subject of a Notice strictly in accordance with the requirements of this section is waived.

§ 15.1.3 Notice of Claims Continuing Contract Performance

After receipt of a Notice of Claim, the Architect shall have fourteen (14) calendar days to render a decision, which shall be stated in writing and delivered to the Contractor, the Owner and the Program Manager via facsimile, regular mail or hand delivery. If the Architect fails to render a decision in writing with the fourteen (14) days, the Claim shall be deemed accepted. Within five (5) calendar days of receipt of the Architect's written decision, Contractor may file a written appeal of the decision to the Program Manager. The Program Manager shall have ten (10) calendar days to render a decision, which shall be stated in writing and delivered to the Contractor, Architect and the Owner via facsimile, regular mail or hand delivery. If the Program Manager fails to render a decision in writing within the ten (10) days, the claim shall be deemed accepted. Within five (5) calendar days of receipt of the Program Manager's written decision, Contractor may file a written appeal of the decision with the Deputy Superintendent of Business Services. Within fourteen (14) calendar days of the receipt of an appeal, an Appeals Board consisting of the Deputy Superintendent of Business Services, Chief Operations Officer, and a representative of the offices of Legal Services shall render a written decision. Any Claim determination requiring a Change Order must be approved by the Board of Trustees. The filing, or rejection of a Claim does not entitle Contractor to stop performance of the Work. The Contractor shall proceed diligently with performance of the Contract during the pendency of any Claim, excepting termination or under Owner's direction to stop the Work. Any Claim that would require expenditure in excess of \$10,000.00, or that would require a Change Order, must be reviewed by the Program Manager and the Appeals Board using the appeals process described in this section.

15.1.3.1 Claims by <u>either</u> the <u>Owner or</u> Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by <u>written</u> notice to the <u>other partyOwner</u> and to the <u>Initial Decision Maker with a copy sent to the</u> Architect, if the Architect is <u>not serving as the Initial Decision Maker</u>. Claims by <u>Contractoreither party</u> under this Section 15.1.3.1 <u>shallmust</u> be

initiated within 21 <u>calendar</u> days after occurrence of the event giving rise to such Claim or within 21 <u>calendar</u> days after the <u>eContractorlaimant</u> first <u>knew or should have knownrecognizes</u> the condition giving rise to the Claim, whichever is <u>latearlier</u>. Claims must be initiated by written notice titled: "Notice of Claim" ("Notice") and sent to the Architect and Owner's designated representatives. The Notice shall clearly set out the specific matter of complaint, and the impact which may occur or have occurred as result thereof, to the extent that the impact can be assessed at the time of the Notice. If the impact cannot be assessed as of the date of the Notice, then the Notice shall be amended at the earliest date that is reasonably possible. It is imperative that Owner receive timely specific Notice of any potential problem identified by Contractor in order that the problem can be mitigated or resolved promptly. Claims not filed as required by this Section shall be waived.

§ 15.1.3.2 Claims by <u>either</u> the <u>Owner or</u> Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by <u>written</u> notice to the other party. In such event, no decision by the Initial Decision Maker is required.

15.1.3.3 When Owner has an applicable claim for construction defects. Owner shall comply with the provisions of Texas Government Code Chapter 2272 related to the provision of notice of defects and the Contractor's or Architect's opportunity to cure.

§ 15.1.4 Continuing Contract Performance Claims Handling Following Construction

The acceptance of final payment shall constitute a waiver of Claims by the Contractor, which have not previously been identified in a Notice of Claim under 15.1.2 and a Claim under 15.1.2.1 and specifically reserved in the final Application for Payment.

§ 15.1.4.1 Time Limits on Litigation. The Owner and Contractor shall commence all <u>litigation</u> whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the dispute resolution method selected in the Contract and within the period specified by applicable law, but in the case <u>of the Owner</u>, not more than <u>eight</u> (8) years after the date of <u>Final Substantial</u> Completion of the Work, <u>unless extended in accordance with Texas Civil</u> <u>Practice and Remedies Code Section 16.009</u>. The Owner and Contractor waive all <u>Claims and causes of action not</u> commenced in accordance with this Section 15.1.2.

15.1.4.2 Pre-Litigation Mediation

.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7, as amended, and Article 14, as amended, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make undisputed payments for Work performed in accordance with the Contract Documents. Except as to claims for injunctive relief, neither party may commence litigation relating to any Claim arising under this AgreementContract without first submitting the Claim to Mediation. The parties shall share the mediator's fee and any filing fees equally, and the mediation shall be held in Dallas, Texas. AgreementContracts reached in mediation must be approved by the Board of Trustees and shall thereafter be enforceable as settlement agreements in any court having jurisdiction thereof. Mediation shall be conducted by a mediator selected jointly by the Owner and Contractor.

15.1.4.3 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5_Claims For Concealed Or Unknown Conditions. Only if conditions are encountered at the site which are (a) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents, (b) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents or (c) in the case of renovation Work, any condition of the pre-existing construction to be renovated, that is materially different from any of the conditions that could reasonably have been expected to be present in preexisting construction of the age and type encountered on the Project, then Contractor shall be entitled to make a Claim if it can satisfy all of the requirements of Paragraph 15.1.

15.1.5.1 No adjustment in the Contract Time or Contract Sum shall be permitted, however, in connection with a concealed or unknown condition which does not differ materially from those conditions disclosed or which reasonably should have been disclosed by Contractor's (1) prior inspections, tests, reviews and preconstruction services for the Project, or (2) inspections, tests, review and preconstruction services which were given to Contractor

by Owner, Architect or Owner's representative or which Contractor had the opportunity to make or should have performed in connection with the Project.

15.1.6 Calculating Claim Amount

In calculating the amount of any Claim, the following standards will apply:

- .1 No indirect or consequential damages will be allowed;
 - .2 No recovery shall be based on a comparison of planned expenditures to total actual expenditures, or on; Estimated losses of labor efficiency, or on a comparison of planned man loading to actual man loading, or any other analysis that is used to show damages indirectly;
 - .3 Damages are limited to extra costs specifically shown to have been directly caused by a proven wrong;
 - .4 The maximum daily limit on any recovery for delay shall be the amount originally estimated by the Contractor for job overhead costs divided by the total number of calendar days of Contract Time called for in the original Contract;
 - .5 No damages will be allowed for home office overhead or other home office charges, or any Eichlay formula calculation; and
 - .6 No profit will be allowed on any Claim.

§ <u>15.1.6.1</u> If the Contractor wishes to make a Claim for an increase in the Contract Time, <u>written</u> notice as provided <u>herein</u> shall be given. The Contractor's Claim shall include an estimate of <u>cost and of</u> probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and <u>prevented the execution of major items of work on normal working days-had an adverse effect on the scheduled construction.</u>

15.1.6.3 4 Time extensions may be granted for rain days in any month when the cumulative number of rain days during that month exceeds the number scheduled, provided that the rainfall prevented the execution of major items of work on normal working days. No day will be counted as a rain day when substantial Contractor forces are able to perform Work on the Project for more than fifty percent (50%) of the usual workday or when the stage of the Work on the Project is not adversely impacted. The number of rain days shown in the above schedule for the first and last months of the Contract will be prorated in determining the total number of rain days expected during the period of the Contract. No delays or extensions shall be granted for mud conditions.

15.1.6.4 5 No extension of time shall be made to the Contractor because of hindrances or delays from any cause which is the fault of Contractor or Contractor's Subcontractors or under Contractor's control. Claims for extension of time may only be considered because of rain delays, or because of hindrances or delays which are the fault of Owner and/or under Owner's control, but only to the extent that Substantial Completion of the Project is adjusted beyond the original Substantial Completion date. Only claims for extension of time shall be considered because of hindrances or delays not the fault of either Contractor or Owner, but only to the extent that Substantial Completion of the Project exceeds the Substantial Completion date established for the Work. Board approval shall be required for any extension of time. No damages shall be paid for delays. Contractor shall only be entitled to time extensions per the terms of the Contract Documents.

15.1.6.5 6 Requests for time extension shall be submitted on a monthly basis and shall specify the time delay, the cause of the delay, and the responsible party for the delay, whether Contractor, Owner, rain day, or other. No claims for damages for delay shall be made by Contractor. Any claim not submitted under the terms of this Section shall be waived.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waives all Claims against Ownereach other for consequential damages arising out of or relating to this Contract, including, but not limited to, any amount owed as compensation for the increased cost to perform the Work as a direct result of Owner caused delays or acceleration. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- 2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

15.1.8 Injury Or Damage To Person Or Property

If either party to the <u>Contract</u> suffers injury or damage to persons or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, <u>written</u> notice of such injury or damage, whether or not insured, shall be given to the other party as provided herein. The <u>Notice</u> shall provide sufficient detail to enable the other party to investigate the matter.

§ 15.2 Initial Decision Resolution of Claims and Disputes

§ 15.2.1 Claims by the Contractor against the Owner, includingexcluding those alleging an error or omission by the Architect, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision, to The Architect for written recommendationwill serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation or litigation of all Claims by the Contractor arising prior to the date final payment is due, unless decision has not been rendered within 30 days have passed after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2_The Architect shall<u>Initial Decision Maker will</u> review Claims and within ten (10) days of the receipt of a Claim take one<u>or more</u> of the following actions: (1) request additional supporting data from the Contractor<u>claimant</u> or a response with supporting data from the other party, or (2) make a written recommendation to the Owner, with a copy to the Contractor. reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3<u>In evaluating Claims, the ArchitectInitial Decision Maker may, but shall not be obligated to, consult with or</u> seek information from either party or from persons with special knowledge or expertise who may assist the Architect<u>Initial Decision Maker in making a written recommendationrendering a decision. The Initial Decision</u> Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 <u>Owner, Architect, or their respective agents, within five (5) working days of request by Owner, Architect, or their respective agents. Job records must be retained by Contractor and all subcontractors for a least twelve (12) years after the date of Final Completion of the Project. If the ArchitectInitial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the ArchitectInitial Decision Maker 1 when the response or supporting data will be furnished, or (3) advise the ArchitectInitial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.</u>

§ 15.2.5 <u>The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating</u> that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision

<u>Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding</u> on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution Following receipt of the Architect's written recommendation regarding a Claim, the Owner and Contractor shall attempt to reach agreement as to any adjustments to the Contract Sum or Guaranteed Maximum Price and/or Contract Time. If no agreement can be reached, then either party may request mediation of the dispute pursuant to Section 15.3.</u>

§ 15.2.6 Upon receipt of a Claim against the Contractor or at any time thereafter, the Architect or the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Architect or the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 <u>Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the</u> other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 MediationAlternative Dispute Resolution

§ 15.3.1 <u>Claims_arising out of or related to the Contract, except those waived shall, be subject to mediation Owner</u> and Contractor expressly agree that mediation shall be a condition precedent to the initiation of any litigation out of such Claims. Claims for injunctive relief shall not be subject to this Section.

§ 15.3.2 <u>The parties shall endeavor to resolve their Claims by mediation Requests for mediation shall be filed in</u> writing, with the other party to the Contract Mediation shall be subject to and in accordance with Chapter 154 of the Texas Civil Practice & Remedies Code. Mediation shall be conducted by a mutually-agreed-upon mediator. In the event that the parties are unable to agree on a mediator, then the parties shall jointly request the appointment of a neutral mediator by a District Judge in the county in which the Project is located

§ 15.3.3 <u>The parties shall share the mediator's fee equally and, if any filing fee is required, shall share said fee</u> equally. Mediation shall be held within the county where the Owner's main administrative office is located, unless another location is mutually agreed upon by the parties. Agreements reached in mediation shall be reduced to writing, considered for approval by the Owner's Board of Trustees, signed by the parties, if approved by the Board of Trustees, and if signed, shall thereafter be enforceable as provided by the laws of the State of Texas.

§ 15.3 .4 Any claim not resolved in mediation shall be subject to litigation pursuant to Section 13.1.

§ 15.4 No Arbitration

§ 15.4.1 Notwithstanding anything to the contrary in the Contract Documents or in any document forming a part hereof, there shall be no mandatory arbitration for any dispute arising hereunder.

§ 15.4.1.1 <u>A demand for arbitration shall be made no earlier than concurrently with the filing of a request for</u> mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 <u>The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in</u> accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 <u>The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity</u> <u>duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court</u> <u>having jurisdiction thereof.</u>

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 <u>Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).</u>

§ 15.4.4.2 <u>Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either</u> party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

15.5 Contractor stipulates that Owner is a political subdivision of the State of Texas, and, as such, enjoys immunities from suit and liability provided by the Constitution and laws of the State of Texas. By entering into this Contract, Owner does not waive any of its immunities from suit and/or liability, except as otherwise specifically provided herein and as specifically authorized by law.

15.6 In any adjudication under this Contract, reasonable and necessary attorneys' fees may be awarded to the prevailing party.

ARTICLE 16 CONTRACTOR ACCOUNTS, RECORDS, AND INSPECTION

16.1 Contractor, and all subcontractors, shall at all times maintain job records, including, but not limited to, invoices, payment records, payroll records, daily reports, logs, diaries, and job meeting minutes, applicable to the project. Contractor, and all subcontractors, shall make sure reports and records available to inspection by the Owner, Architect, or their respective agents, within five (5) working days of request by Owner, Architect, or their respective agents. Job Records must be retained by Contractor and all subcontractors for at least twelve (12) years after the date of Final Completion of the Project.

16.2 Contractor's and all subcontractors' records, which shall include but not be limited to accounting records (hard copy, as well as computer readable data if it can be made available), written policies and procedures; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc.); original estimates; estimating work sheets; correspondence; back charge logs and supporting documentation; general ledger entries detailing cash and trade discounts earned; bond and insurance rebates and dividends; and any other supporting evidence deemed necessary by the Owner to substantiate charges related to any matters related to the Contract (including interviews with Contractor's personnel and Subcontractor's personnel) shall be open to inspection and subject to audit and/or reproduction by Owner's agent or its authorized representative to the extent necessary to adequately permit evaluation and verification of (a) Contractor compliance with Contract requirements, (b) compliance with Owner's business ethics policies, and (c) compliance with provisions for pricing or claims submitted by the Contractors's records pursuant to the provisions of this Article throughout the term of this Contract and for a period of twelve (12) years after final payment or longer if required by law.

ARTICLE 17 BUSINESS ETHICS

17.1 During the course of pursuing contracts, and the course of Contract performance, Contractor and its Subcontractors and vendors will maintain business ethics standards aimed at avoiding real or apparent impropriety or conflicts of interest. No substantial gifts, entertainment, payments, loans or other considerations beyond that which would be collectively categorized as incidental shall be made to any personnel of the Owner, its Program Managers, or its Architects, or to family members of any of them. At any time Contractor believes there may have

been a violation of this obligation, Contractor shall notify Owner of the possible violation. Owner is entitled to request a representation letter from Contractor, its Subcontractors or vendors at any time to disclose all things of value passing from Contractor, its Subcontractors or vendors to Owner's personnel, its Program Managers and its Architects

17.2 The Owner may, by written notice to the Contractor, cancel the Contract for Construction without liability to the Contractor if it is determined by the Owner that gratuities, in the form of entertainment, gifts, or anything of monetary value, were offered or given by the Contractor, or any agent, or representative of the Contractor, to any officer or employee of the Dallas Independent School District with a view toward securing a contract or securing favorable treatment with respect to the awarding, amending, or making of any determinations with the respect to the performing of such a contract. In the event the Construction AgreementContract is cancelled by the Owner pursuant to this provision, Owner shall be entitled, in addition to any other rights and remedies, to recover or withhold the amount of the cost incurred by the Contractor in providing such gratuities.



Executed this day of , .	
OWNER:	CONTRACTOR:
	By:
Fitle:	Title:
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DALLAS INDEPENDENT SCHOOL DISTRICT	GENERAL CONTRACTOR NAME
OWNER (Signature)	CONTRACTOR (Signature)
Dwayne Thompson, Chief Business Officer (Printed name and title) Date	<u>GC Signer's Printed Name, Title</u> (Printed name and title) Date
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Approved As To Form.	1
CHOOL ATTORNEY (Signature) Date	
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TEXAS STATUTORY PERFORMANCE BOND (PUBLIC WORKS)

THE STATE OF TEXAS) COUNTY OF DALLAS)

KNOW ALL BY THESE PRESENTS

That,

(Legal Name of Contractor)

(hereinafter called the Principal), as Principal, and

(Legal Name of Surety)

a corporation organized and existing under the laws of the State of ______, with its principal office in the city of ______, licensed to do business in the State of Texas and admitted to write bonds, as surety, (hereinafter called the Surety), are held and firmly bound unto the Dallas Independent School District, (hereinafter called the Obligee), in the amount of

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for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the

______ of ______, 20____, generally described as:

(List Project Description From Agreement)

to do and perform certain construction work as provided in said contract and the related plans, specifications, general conditions and other contract documents, all of which are by reference made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, the conditions of this Obligation is such that if the Principal shall faithfully perform all of the work in accordance with the plans, specifications, general conditions and contract documents, and shall faithfully perform each, every and all other obligations incumbent upon him under the terms of said written contract referred to, and shall fully indemnify and save harmless the Obligee from all costs, expense and damage which it may suffer or incur because of Principal's default, or failure so to do, then this obligation shall be void, otherwise it shall remain in full force and effect. In the event Principal shall default in the faithful performance of the work called for by said written contract, plans, specifications and contract documents, the Surety shall within 15 days of the determination of default (determined as provided in said contract, general conditions and contract documents) take over and assume completion of said contract, or within such 15 day period make other arrangements satisfactory with the Obligee for completion of the contract, and said Surety shall become entitled thereupon to the payment or benefit of the balance of the contract price as the same matures according to its terms.

The Surety, for the protection of the Obligee herein, waives notice of, and hereby consents to any subsequent modification or alteration both in the work to be performed by the Principal, and the consequent price or sums to be paid by the Obligee, as well as any other change, or amendment, addition or deletion in the contract documents during the progress of the work, including but not limited to all extensions of time or other indulgences permitted the Principal.

Notwithstanding any other provision; the liability of the Surety on this bond shall never exceed the penal sum stated in first paragraph.

This Performance Bond is given in compliance with the terms and provisions of Chapter 2253 of the Texas Government Code as amended by the Acts of Legislature, and all liabilities on this bond shall be determined in accordance with the provisions of said Chapter, to the same extent as if it were copied at length herein. This bond and all of the provisions herein contained shall be solely for the protection of the named Obligee which has awarded the contract referred to.

The undersigned, corporate Surety, does by the execution of this Bond solemnly warrant and represent that it is duly authorized to do business in Texas.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of ______, 20_____.

CONTRACTOR AS PRINCIPAL:

Seal: (*if any*)

Name of Company (Please print or type)

Signature of Authorized Company Representative

Name & Title of Authorized Company Representative (Please print or type)

Witness

Attest

SURETY:

Name of Company (Please print or type)

Signature of Attorney-In-Fact

Name & Title (Please print or type)

APRIL 2006 SUPERSEDES JULY 2000 REVISED APRIL 2011 (Performance Bond Continued from Page 2)

NOTE:

- 1) This Performance Bond applies to all contracts in excess of \$100,000.00 involving a contract for construction, alteration or repair of any public building or the completion or prosecution of any public work.
- 2) This bond must be payable to the awarding authority, Dallas Independent School District, as the named Obligee, and it must be approved as to form by such awarding authority.
- 3) This bond must be furnished before any work is commenced.
- 4) Surety must be a corporate surety duly authorized to do business in Texas.
- 5) This PERFORMANCE BOND must be in the full amount of the contract which it secures.
- 6) Power of Attorney from Corporate Surety must be attached to this Performance Bond.

TEXAS STATUTORY PAYMENT BOND (PUBLIC WORKS)

THE STATE OF TEXAS) COUNTY OF DALLAS)

KNOW ALL BY THESE PRESENTS

That,

(Legal Name of Contractor)

(hereinafter called the Principal), as Principal, and

(Legal Name of Surety)

a corporation organized and existing under the laws of the State of ______, with its principal office in the city of ______, licensed to do business in the State of Texas and admitted to write bonds, as surety, (hereinafter called the Surety), are held and firmly bound unto the Dallas Independent School District, (hereinafter called the Obligee), in the amount of

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	(Numeric)
()
	(Words)

for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the

______ of ______, 20____, generally described as:

(List Project Description From Agreement)

to do and perform certain construction work as provided in said contract and the related plans, specifications, general conditions and other contract documents, all of which are by reference made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, the conditions of this Obligation is such that if the Principal shall promptly make payment to all claimants supplying labor and material (as hereafter defined) in the prosecution of the work provided in said contract, the related plans, specifications, general conditions and contract documents, then this obligation shall be void, otherwise it shall remain in full force and effect.

This Payment Bond is given in compliance with the terms and provisions of Chapter 2253 of the Texas Government Code as amended by the Acts of Legislature, and all liabilities on this bond shall be determined in accordance with the provisions of said Chapter, to the same extent as if it were copied at length herein. The claimants referred to in this bond are those defined by such Chapter 2253, and this bond shall be solely for the protection of all such claimants supplying labor and material as defined in such Chapter, in the prosecution of the work provided for in said contract, and shall be for the use of such claimant and none other.

The undersigned, corporate Surety, does by the execution of this Bond solemnly warrant and represent that it is duly authorized to do business in Texas.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 20____.

CONTRACTOR AS PRINCIPAL:

Seal: (*if any*)

Name of Company (Please print or type)

Signature of Authorized Company Representative

Name & Title of Authorized Company Representative (Please print or type)

Witness

Attest

SURETY:

Name of Company (Please print or type)

Signature of Attorney-In-Fact

Name & Title (Please print or type)

(Payment Bond Continued from Page 2)

NOTE:

- This Payment Bond applies to all contracts in excess of \$25,000.00 involving a contract for construction, alteration or repair of any public building or the completion or prosecution of any public work.
- 2) This bond must be payable to the awarding authority, Dallas Independent School District, as the named Obligee, and it must be approved as to form by such awarding authority.
- 3) This bond must be furnished before any work is commenced.
- 4) Surety must be a corporate surety duly authorized to do business in Texas.
- 5) This PAYMENT BOND must be in the FULL amount of the contract which it secures.
- 6) Power of Attorney from Corporate Surety must be attached to this Payment Bond.

DALLAS INDEPENDENT SCHOOL DISTRICT CONSTRUCTION MINIMUM SAFETY PROGRAM GUIDELINES MANUAL





Construction Services Minimum Safety Program Guidelines

2023 Revision

1. Table of Contents

1. 2. 3. 4.	Table of Contents FOREWORD POLICY STATEMENT PROGRAM OBJECTIVES	1 6 6 7
4.1	Active Participation of All Contractors	. 7
5.	LOSS CONTROL RESPONSABILITIES	. 8
5.1	Local Laws and Requirements	. 8
5.2	Dallas ISD Safety Orientation and Badging	. 9
5.3	Campus Readiness	10
5.4	Protecting the General Public	10
5.5	Work Performed Near Existing District Right-of-Way	11
5.6	General Contractors	11
5.7	Site-Specific Safety Plan	13
5.8	Work Areas	13
5.9	Site-Specific Safety Orientation	13
5.10	Jobsite Trailer Postings	13
5.11	General Contractor Project Manager	14
5.12	General Contractor Safety Representative	14
5.13	General Contractor Site-Superintendent	15
5.14	Subcontractor Competent Person	16
5.15	Safety Committee	17
5.16	Bond Safety Committee Meeting	17
5.17	Weekly Site-Safety "Toolbox Talk" Meetings	18
5.18	First Aid and Medical Treatment	18
5.19	Incident Investigations	19
5.20	Substance Abuse	19
5.21	Site Visitors and Group Tours	20
6.	MINIMUM CONSTRUCTION SAFETY GUIDELINES	22
6.1	Safe Plan of Action (SPA) Guidelines	22
6.2	Repeating Scopes of Work	23
6.3	Job Hazard Analysis	23
6.4	Personal Protective Equipment	24
6.5	Hazard Communication	25
6.6	Respiratory Protection	26
6.7	Fire Prevention	26
6.8	Housekeeping	27
6.9	Silica Control	28
------	---	----
6.10	Sanitation	28
6.11	Demolition and Site Clearance	28
6.12	Demolition Safe Plan of Action (SPA)	29
6.13	Confined Space Entry	29
6.14	Confined Space Safe Plan of Action (SPA)	29
6.15	Trenching and Excavations	30
6.16	Trenching and Excavation Safe Plan of Action (SPA)	31
6.17	Pier Drilling	32
6.18	Pier Drilling Safe Plan of Action (SPA)	33
6.19	Locating Utilities	33
6.20	Utility and Electrical Shutdowns	34
6.21	Utility and Electric Shutdown Safe Plan of Action (SPA)	34
6.22	Electrical Work	35
6.23	Lockout/Tagout (LOTO)	35
6.24	Electrical Power Lines	36
6.25	Fall Prevention and Protection	36
6.26	Elevated Work Safe Plan of Action (SPA)	37
6.27	Roofing	38
6.28	Melting Kettles	38
6.29	Scaffolding	39
6.30	Floor and Wall Openings	40
6.31	Stairways and Ladders	41
6.32	Crane Operations	42
6.33	Crane Operations Safe Plan of Action (SPA)	43
6.34	Steel Erection	44
6.35	Steel Erection Safe Plan of Action (SPA)	47
6.36	Aerial Crane Operations	47
6.37	Aerial Crane Operations Safe Plan of Action (SPA)	48
6.38	Hot Work	50
6.39	Welding and Cutting	50
6.40	Compressed Gas Cylinders	51
6.41	Earth Moving Equipment and Powered Industrial Trucks	51
6.42	Haul Routes	52
6.43	Traffic Control	52
6.44	Environmental and Hygiene	53

6.45	Spill Prevention and Response	53	
6.46	Portable Relocation	. 53	
7.	INCIDENT NOTIFICATION GUIDELINES	. 54	
7.1	DISD Incident/Crisis Notification Flowchart	56	
7.2	Incident Investigations	57	
7.3	Incident Follow-up Guidelines	. 57	
7.4	Contributing Factors to Consider	. 58	
8.	CONSTRUCTION SAFETY FOR STUDENTS	. 58	
8.1	Introduction	58	
8.2	Separation of Construction Activities	. 58	
9.	CRISIS COMMUNICATION	. 60	
9.1	Suggested Steps for Crisis Situations	60	
9.2	EMERGENCY TELEPHONE NUMBERS	60	
9.3	Emergency Planning	61	
10.	CONTRACTOR SAFETY AUDITS	61	
10.1	Purpose	61	
10.2	Jobsite Safety Inspections	61	
10.3	Inspections by Regulatory Agencies	. 62	
11.	GREENFIELD PROJECTS	. 62	
11.1	Greenfield Shutdown Guidelines	63	
11.2	Greenfield Badging	63	
12.	UNMANNED AIRCRAFT SYSTEM (DRONE) POLICY	64	
12.1	Operating Requirements	64	
12.2	Pre-Operation Procedure	64	
EXH	IBITS	65	
EXH	IBIT A – Campus Readiness Form	66	
EXH	IBIT B – Job Hazard Analysis (JHA)	67	
EXH	IBIT C – Demolition SPA Cover Letter	71	
EXH	IBIT D – Confined Space SPA Cover Letter	.72	
EXH	IBIT E – Trenching and Excavation SPA Cover Letter	73	
EXH	IBIT F – Pier Drilling SPA Cover Letter	. 74	
EXH	IBIT G – Utility Shutdown SPA Cover Letter	. 75	
EXHIBIT H – Electrical Shutdown SPA Cover Letter			
EXHIBIT I – Shutdown Authorization Form			
EXH	EXHIBIT J – Elevated Work SPA Cover Letter		
EXH	EXHIBIT K – Crane Operation SPA Cover Letter		
EXH	EXHIBIT L – Steel Erection SPA Cover Letter		

EXHIBIT M – Aerial Crane Operation SPA Cover Letter
EXHIBIT N – Hot Work Permit
EXHIBIT O – Incident Investigation Report
EXHIBIT P – Safety Inspection Checklist
EXHIBIT Q – Contractor Acknowledgement Statement
ATTACHMENTS
Dallas ISD Orientation Location and Schedule
Site-Specific Safety Plan Guidelines
Crisis Communications Poster
Visitor's Release and Hold Harmless Agreement
Shutdown Notification Guidelines
Water Shut-off Guidelines
Gas Shut-off Guidelines
Sanitary Sewer Guidelines
Electrical Shutdown Guidelines
SWPPP Oversight Flowchart
Greenfield Shutdown Authorization Request Guidelines
Intruder Detection
Campus Security Reminders
Safety Meeting Sign-in Sheet
Geotechnical Soil Sampling Safety Guidelines
Inclement Weather Plan of Action

DALLAS ISD DISCLAIMER

The purpose of the Construction Minimum Safety Program Guidelines Manual, developed for the Dallas Independent School District, is to assist in the development and implementation of appropriate safety standards. This manual is prepared for use as a minimum guideline for safety during the construction, renovation, and expansion activities to be completed by independent contractors. The program is based on applicable government regulations; insurance related safety/risk management requirements, accepted safety practices within the construction industry and common sense.

The maintenance of safe premises, operations and equipment, protection of the faculty, students, and community, and the avoidance of unsafe conditions and practices (during all construction phases) are the responsibility of the General Contractors and Subcontractors performing the construction work. The Program Manager will provide safety oversight of the Contractor's Safety Program. While mandatory, compliance with the provisions of this Construction Minimum Safety Program Guidelines Manual will not guarantee or ensure compliance with the requirements of the Department of Labor, Occupational Safety and Health Act (29 CFR 1926 and 29 CFR 1910). This manual is intended to provide a working, uniform minimal level of program guidelines to assist or provide direction to the Contractors. This manual is not intended to replace the need for each Contractor to establish and maintain a proper Illness and Injury Prevention Program as required by the Department of Labor, Occupational Safety and Health Act (29 CFR 1926 and 29 CFR 1910) and the State of Texas.

The Dallas Independent School District, and its Agents, Consultants, etc., assume no liability for the manual's contents or for any safety related service(s) that may be provided during the course of the project.

This Manual is intended to provide a working, uniform minimal level of program guidelines to assist or provide direction to Contractors. This Manual is not intended to replace the need for each Contractor to establish and maintain a proper Illness and Injury Prevention Program as required by the Department of Labor, Occupational Safety and Health Act (29 CFR 1926 and 29 CFR 1910) and the State of Texas.

References to "Bond Program" must refer to the Dallas Independent School District 2020 and 2015 Bond Programs and other projects managed by the Dallas Independent School District's Construction Services Department as appropriate for the project for which work is to be performed.

<u>Note:</u> If a situation arises that is not covered by the Contractor's Safety Manual or the Construction Minimum Safety Guidelines Manual, please discuss it with your project manager and/or call the Owner's Representative. For additional information regarding the guidelines set forth within this manual, please contact:

Dallas ISD Bond Program Safety Manager, Alvaro Meza Direct (972) 925-7219 | Mobile (214) 435-2204 | Email <u>almeza@dallasisd.org</u>

2. FOREWORD

This Manual has been compiled to present Loss Control activities and guidelines. Contractors are expected to meet or exceed these minimum guidelines.

The information and suggestions summarized in this Manual were compiled from sources believed to be reliable. It cannot be assumed that this material includes every loss potential, code violation or exception to good practice and, therefore, we cannot guarantee its completeness.

It is solely the Contractor's responsibility to conform to the provisions of this Manual and standards set forth under the William-Steiger Occupational Safety and Health Act of 1970 and, as amended, other Federal Regulations, Environmental Nuisances Considered Hazardous as they apply to state, and local regulations. The General Contractor must ensure that each of its Subcontractors comply with the requirements of this Manual.

We should also emphasize that, as with all other aspects of the work, the Contractor's selection of means and methods is his own, and that any and all suggestions contained in this Manual are only representative of the types of techniques and practices which the Contractor may choose to employ on this project.

3. POLICY STATEMENT

The principles of safety and loss control reflect a determination by Dallas Independent School District to prevent injuries to the general public and workers, as well as to prevent damage to property and equipment.

The District considers no phase of construction or administration of greater importance than accident prevention and asserts that accidents which result in personal injury and damage to property and equipment represent needless waste and loss. It must be the policy of the District for Contractors to conduct all operations safely and thereby prevent injuries to persons and damage to property.

Planning for safety must start with the design and continue through purchasing, fabrication, and construction in all phases of the Bond Program. All practical steps must be taken to maintain a safe place to work. The Contractor must accept the responsibility for safety and loss prevention and must be responsible for thorough safety and loss control training and instruction of its employees.

The objective of this policy is to establish throughout the entire Dallas Independent School District Bond Program Construction Projects the concept that the prevention of accidents and protection of property is most important and, therefore, must receive top priority, support, and participation.

4. PROGRAM OBJECTIVES

The Dallas Independent School District Construction Minimum Safety Program Guidelines Manual has been created to supplement the General Contractor's own program to eliminate or reduce hazards and risks associated with the construction projects, prevent accidents, reduce employee injury, prevent damage to property, promote maximum efficiency and effective savings by the reduction of unplanned business interruption.

4.1 Active Participation of All Contractors

Supervisory staff and employees must make the program not only effective, but also successful by coordinating the participants' efforts in performing the following tasks:

- a) Provide a safe environment for employees to perform high quality work.
- b) Use safety planning as a tool to reduce bodily injury and property damage.
- c) Provide inspections to locate and abate unsafe conditions and practices.
- d) Protect the public and property immediately adjacent to all construction sites.
- e) Educate and train employees through:
 - (1) New hire orientation
 - (2) Safety meetings
 - (3) Safety training, i.e., hazard communication, trenching safety, confined space, etc.
 - (4) Mandatory personal protective equipment programs
 - (5) Injury reporting and record keeping up to date
 - (6) Incident tracking and trends analysis
 - (7) Using accident investigation information to abate deficiencies and eliminate any additional losses
- f) Contractors of any tier must comply with all Federal, State, and local laws, ordinances, regulations, and the National Fire Protection Association (NFPA) Standards including the Life Safety Code.

NOTE: The Construction Minimum Safety Program Guidelines Manual is to work in conjunction with the Contractor's individual Safety Program. All Contractors are required to implement their own written Safety Program and/or the Construction Minimum Safety Program Guidelines Manual prior to construction activities.

5. LOSS CONTROL RESPONSABILITIES

The effectiveness of this program depends upon the active participation and cooperation of all Engineers, Project Managers, Inspectors, Supervisors, General Contractors, their employees, and Subcontractors. The primary goals of this program are to increase safety awareness, raise safety standards in the work environment, and increase management involvement in the safety process.

5.1 Local Laws and Requirements

Each contractor and each Subcontractor of any tier must comply with the most stringent OSHA, City, County, or Federal regulations governing where the project site resides.

NO FELONY CONVICTION REPRESENTATION

All contractors of any tier must comply with the following:

Sec 44.034, Subsection (a) of the Texas Education Code subparagraph (a) requires that a person or business entity that enters a contract with a school district must give advance notice to the district if the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony.

A school district may terminate a contract with a person or business entity if the district determines that the person or business entity failed to give notice as required by Subsection (a) or misrepresented the conduct resulting in the conviction. The district must compensate the person or business entity for services performed before the termination of the contract. This section does not apply to a publicly held corporation.

All contracts must comply with the requirements for criminal background checks. All vendors must give advance notice to the District if the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony. The district may terminate any resulting agreement if the District determines that the person or business entity failed to provide notice as required by this paragraph or misrepresented the conduct resulting in the conviction. This paragraph requiring advance notice does not apply to a publicly held corporation. This paragraph is required by state law, and exceptions permitted in this advance notice do not limit the following requirements.

All vendors will obtain criminal background history record of information that relates to an employee, applicant for employment, or agent of the contractor or consultant if the employee, applicant, or agent has or will have continuing duties related to the contracted services: and the duties are or will be performed on school property or at another location where students are regularly present. The General Contractor or consultant must certify to the District before beginning work and at no less than an annual basis thereafter that criminal history record information has been obtained. General Contractors or consultants must assume all expenses associated with the background checks and must immediately remove any employee or agent who was convicted of a felony, or misdemeanor involving moral turpitude, as defined by Texas law, from District property or other location where students are regularly present.

The District must be the final decider of what constitutes a "location where students are regularly present." General Contractors' or consultants' violation of this section must constitute a substantial failure under any resulting agreement and be grounds for termination.

Unless waived in writing by the Superintendent of Schools or designee, all District vendors must be identified by a photographic identification badge, issued by a District-approved third-party company at the vendor's expense. The third-party company, as detailed in the Purchasing and Financial Activities Manual, must verify the criminal record history information, and may be used to verify compliance with the federal Drug Free Workplace Act of 1988 or its successor, and the federal Education Department General Administrative Regulations, current edition, in its testing and review process.

Employee or agent includes as example, but not by way limitation, persons providing services on the project including all persons or entities performing all or part of the services the General Contractor has undertaken to perform on the project regardless of whether that person has employees. This includes, without limitation, independent contractors, Subcontractors, owner-operators, employees of any such entity, or employees of any entity that furnishes persons to provide services on the project.

Services include, without limitation, providing the hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. Services do not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets. The District must have sole discretion to determine what constitutes a "location where students are regularly present." General Contractor's violation of this section must constitute a default under the General Terms and Conditions of the contract.

5.2 Dallas ISD Safety Orientation and Badging

Prior to working on any Dallas ISD property/project, all General Contractors and Subcontractor employees of any tier must obtain a Dallas ISD Bond Program Photographic Identification badge issued by a District approved third-party company at the General Contractor's or Subcontractor's expense. Any replacement for a lost badge should be obtained by the issuing third-party company.

A Dallas ISD Bond Program Safety Orientation Sticker (to be placed on the I.D. badge) required prior to working on any Dallas ISD property/project. The Safety Orientation sticker is obtained after completion of the required Dallas ISD Bond Program's Safety Orientation provided by the Bond Program's Safety Department. Replacement of the safety orientation sticker must be requested through the Dallas ISD Bond Safety Director or designee. Please see <u>Attachment I</u> for the Dallas ISD Orientation location and schedule.

5.3 Campus Readiness

Campus Readiness is a checkpoint/documented safety inspection that must be completed prior to the start and/or return of campus staff and students to ensure the sustainability of proper separation of all areas and conditions affected by construction activities.

The effectiveness of this checkpoint depends heavily upon the active participation and cooperation of all General Contractors, their employees, engineers, project managers, inspectors, supervisors, and Subcontractors of any tier.

The General Contractor must submit a completed copy of the Campus Readiness Form as <u>EXHIBIT A</u> to the Owner's Representative one (1) working day prior to the return or arrival of campus staff and students, as made part of the Construction Minimum Safety Program Guidelines. Campus Readiness Forms must include photographs as confirmation of existing siteconditions. Guidelines for ensuring a consistent approach to this checkpoint are as follows:

- (1) Ensure all areas affected by construction are properly separated from staff, students, and the general public.
- (2) A completed copy of the Campus Readiness Form, along with photographs of each affected area must be provided to the Owner's Representative one (1) working day prior to the return of staff and students.
- (3) Communicate the significance of adequate separation of construction activities to all contractors of any tier.
- (4) A follow-up inspection must be conducted to ensure proper separation of construction activities remain constant.

5.4 Protecting the General Public

Every precaution must be taken to prevent injury to pedestrians or damage to the property of others. The public must be considered as any person not employed by the General Contractor or Subcontractor of any tier.

Among the precautions to be taken are the following:

- a) Work must be performed in a public area only when specified by the Contract or the District in writing
- b) Every step necessary must be taken to protect and maintain work areas that interface with public sidewalks, building entrances (lobbies, corridors, aisles, etc.), stairways, and roadways.
- c) This protection must include but not be limited to installing and maintaining the appropriate barricades, fences, guardrails, overhead protection, partitions, signs, shields, which must be adequately visible. Protection against any additional harmful exposure must also be provided.
- d) All travel ways, access, emergency exits, and egress points must always be maintained clear of obstructions.
- e) Warning signs are to be conspicuously positioned and a flag person must be assigned when moving equipment that may encounter pedestrians or private vehicles.

- f) Overhead protection must be in accordance with the laws of the jurisdiction where the project resides.
- g) Each project work area must be protected by a fence constructed of wood or metal and stand at least six (6) feet high to prevent incidental public entry.
- h) Fences from construction areas should separate all playgrounds.
- i) All fencing must be inspected daily, and repairs made where necessary to prevent unauthorized access.
- j) Guardrails must be made of rigid materials and comply with OSHA regulations.
- k) Barricades for the general public and/or public roadways must always be secured against accidental displacement and in place, except when temporary removal is required. At such times, a trained flag person must be assigned to control the unprotected area.
- 1) Should a permanent sidewalk require obstruction or removal, a temporary alternative pedestrian walkway must be provided. Guardrails must be installed on both sides of any temporary walkway that has a fall exposure.
- m) When emergency exits must be re-routed, the General Contractor must provide the necessary signs, maps etc. that will show where the nearest emergency exits are located.

5.5 Work Performed Near Existing District Right-of-Way

For any construction equipment (such as cranes, concrete pump trucks, and back hoes) that could encroach on the District's operating right-of-way, the General Contractor must submit and obtain approval from the District for a plan describing the use of such equipment, and the necessary precautions to be taken to preclude any accidental encroachment on the right-of-way.

5.6 General Contractors

The Contractor is responsible for accident prevention and job-site safety. The extent to which these program objectives are met depends upon active management promotion and support of the Construction Minimum Safety Program Guidelines and the complete cooperation of Subcontractors, job site supervisors, and construction personnel in carrying out the following basic procedures:

- a) All work must be pre-planned to minimize personal injury, property damage, and loss of production time.
- b) General Contractors must maintain a system of prompt detection and correction of unsafe practices and conditions.
- c) All Contractor and Subcontractor employees of any tier must successfully complete a site-specific orientation and indoctrination program as described in <u>Section 5.9</u> of this manual.

- d) Site records must be maintained to assure compliance with all OSHA, Federal, and State Regulations and the Construction Minimum Safety Program Guidelines. Site records must include, but not be limited to, the following:
 - (1) <u>Weekly Toolbox Talk Meeting</u> <u>Agenda/Sign-in Sheets</u>
 - (2) <u>Incident Investigations</u>
 - (3) <u>Corrective Action Plan</u>
 - (4) Worker Training Documentation
 - (5) Hazard Communication Program
 - (6) <u>Fire Prevention Plan</u>(7) Silica Control Plan

- (8) <u>Campus Readiness</u>
- (9) <u>OSHA 300 Logs</u>
- (10) Safety Inspection Reports
- (11) <u>Substance abuse program</u>
- (12) <u>Site-Specific Orientation</u>
- (13) <u>Daily Job hazard analysis (JHA)</u>
- (14) <u>Daily Sign-in Sheets</u>
- e) General Contractor and Subcontractor safety representatives of any tier must attend at minimum one (1) documented monthly safety committee meeting.
 - f) Each General Contractor must send a company representative to attend monthly safety committee meetings, or more frequently, as may be required for unusual circumstances and situations.
 - g) General Contractors must ensure all Subcontractors of any tier comply with the established policies and procedures to ensure adequate compliance with all applicable Federal and/or State Laws and Standards.
 - h) The General Contractor must maintain a paper copy of the "Construction Minimum Safety Program Guidelines Manual" at each project site.
 - i) In the event of a conflict and/or ambiguity between various statutes or safety provisions, the stricter provision must apply.
 - j) The General Contractor must provide additional training when necessary for all its employees and must assure that each Subcontractor provides additional training when necessary for all of its employees. All training must be documented.
 - k) General Contractors must maintain a Daily Sign-in Sheet for the tracking of its construction workers in and out of the project each day.

NOTE: No requested advice from the representatives of Marsh Inc., Architect, Engineer, or the District must in any way relieve, alter, change, or amend any of the General Contractor's expressed, implied, or inherent legal and/or contractual obligations. Furthermore, the authority vested in the District and its designated representatives, including Marsh Inc. to act on matters regarding safety, must not in any way reduce the General Contractor's responsibility for safety and accident prevention. The District and its representatives, including Marsh Inc. are obligated only to notify the General Contractor of observed instances in which the General Contractor failed to fulfill their own obligations.

5.7 Site-Specific Safety Plan

Within fourteen calendar (14) days after the Notice of Award, but not later than the Preconstruction Conference, the General Contractor must submit a copy of the Site-Specific Safety Plan together with a letter of Management's Statement of Policy, signed by an officer of the company in relation to its contract, to the Owner's Representative and include all applicable criteria as listed in <u>Attachment II</u> (Site-Specific Safety Plan Guidelines) of this manual.

5.8 Work Areas

The General Contractor must provide a safe work area for its employees, Subcontractors of any tier, campus occupants, and the general public. The General Contractor may seek the District's assistance to resolve complex construction safety problems.

5.9 Site-Specific Safety Orientation

Prior to the start of work, each General Contractor and Subcontractor employee of any tier must receive a Site-Specific Safety Orientation. This orientation must be conducted by the General Contractor's Safety Representative and include project-specific safety requirements, protection of school children, public safety, proper use of personal protective equipment, and safe work practices.

- a) Site-specific orientations must be no less than thirty (30) minutes.
- b) To verify that the employee has received and understands this indoctrination, the employee must sign a "sign-in sheet", which the General Contractor must keep on file.
- c) It is the responsibility of the General Contractor to ensure that non-English speaking employees receive these same instructions in a language they understand.

5.10 Jobsite Trailer Postings

On a weekly basis, the General Contractor must plan and execute its work with the utmost care and in coordination with the campus principal to not endanger the students' safety and to provide its Subcontractors with the most up to date project information available. To this end, the below items must be updated weekly and posted for Subcontractor's ready reference:

- (1) The number of weeks remaining until Substantial Completion must be posted on the door.
- (2) The Project Team's Contact List (phone numbers and email) must be posted on the door.
- (3) A complete copy of the Operations Parameters must be posted on the wall.
- (4) A colored copy of the General Contractor's GPR Report must be Posted on the wall and redlined anytime changes to utility locations are made.
- (5) A Site Map showing the location of each utility shutdown valve must be posted on the wall.
- (6) A copy of the project 's Baseline Schedule must be posted on the wall.
- (7) A copy of the Three (3) Week Lookahead Schedule must be posted on the wall.
- (8) A copy of the project's Phasing Plan must be posted on the wall.
- (9) A hard copy of the last OAC Hand Outs must be posted on the wall.

- (10) The Construction Drawings must be posted at the jobsite trailer and red lined weekly.
- (11) A copy of the DISD Crisis Communication Guidelines Poster (<u>Attachment III</u>) must be posted on the wall.

5.11 General Contractor Project Manager

Responsibilities of the Project Manager must include, but are not limited to:

- a) Plan and execute all work to comply with the stated objectives of the Construction Minimum Safety Program Guidelines Manual.
- b) Comply with all the provisions of the contract dealing with safety and accident prevention requirements.
- c) Require project and job superintendents, safety representatives, and project foremen to enforce the federal, state, and local safety codes and regulations.
- d) Cooperate with the Owner's Representative.
- e) Authorize necessary action to correct sub-standard safety conditions reported or observed.
- Review and take necessary action with respect to safety matters through directives or personal interviews with superintendents, project foreman, and/or Subcontractors' management.
- g) Share project related experiences (i.e., insight, questions, incidents, etc.) with other participants and attendees present at monthly Bond Safety Committee Meetings.

5.12 General Contractor Safety Representative

At the General Contractor's discretion, the Site-Superintendent or Project Foreman may serve in the capacity of Safety Representative if the individual selected to serve can perform the minimum criteria listed below for Safety Representative.

The designated Site Safety Representative must hold an OSHA 30hr (within five (5) years of completion) and a valid First Aid/CPR certification, and minimum of 3 years of experience managing on site safety responsibilities. The Site Safety Representative must not have any other duties than monitor all Subcontractor's compliancy with Federal, State, Local ordinances, in addition to the Minimum Construction Safety Guidelines and the Contractor's Safety Manual. Moreover, the Site-safety Representative must ensure all non-compliant conditions or unsafe behavior is immediately corrected.

<u>NOTE:</u> If the person designated is not able to successfully perform the minimum criteria listed for safety representative, an on-site full-time site safety may be required.

Responsibilities of the designated Safety Representative must include, but are not limited to:

- a) Ensure that the Construction Minimum Safety Program Guidelines are carried out.
- b) Monitor employee compliance with all jobsite rules and regulations and ensuring that the rules are improved as necessary.
- c) Make daily safety inspections of jobsites and take necessary immediate corrective action to eliminate unsafe acts and conditions.
- d) Ensure the OSHA 300 Form Accident Report is properly completed and distributed.
- e) Review and assist when necessary, accidents and incidents to ensure that injured employees follow proper reporting procedures, and that Accident Investigation Reports are completed accurately. Where appropriate, recommend immediate corrective action to the project manager or superintendent.
- f) Provide project foremen with appropriate material for use in conducting weekly "toolbox" safety meetings.
- g) Periodically attend project foreman's "toolbox" safety meetings and evaluate their effectiveness.
- h) Implement safety-training programs, for supervisors and employees as they apply to their specific responsibilities where the Safety Representative identifies a need.
- i) Encourage programs for recognition of individual employee's safety efforts and their contribution toward improved work methods.
- j) Responsible for the control and availability of the necessary safety equipment, including employee's personal protective equipment.
- k) Coordinate safety activities with those of the District's personnel, the Safety Representatives of Subcontractors, and the Owner's Representative.
- 1) Share project related experiences (i.e., insight, questions, incidents, etc.) with other participants and attendees present at monthly Bond Safety Committee Meetings.

5.13 General Contractor Site-Superintendent

It is the responsibility of superintendents to provide constant and thorough supervision of ongoing activities including safety of its employees and the employees of all Subcontractors. The Contractor's Superintendent must hold an OSHA 30hr (within five (5) years of completion) and a valid First Aid/CPR certification.

Responsibilities of the Superintendent include, but are not limited to:

- a) At minimum, one General Contractor representative who has been designated as Competent Person must be present while contractors of any tier are on-site.
- b) Planning and executing all work as to comply with stated objectives of the Minimum Safety Program Guidelines Manual, and work with the Safety Representative to assure the effectiveness of the program.
- c) Plan all work far enough in advance so that proper safety procedures and equipment can be provided before work begins.

- d) Ensure that no unsafe conditions are created, i.e., poor housekeeping, removal of guardrails, etc.
- e) Take immediate action to eliminate, correct, or resolve any unsafe conditions or unsafe acts, which are observed or discovered.
- f) Ensure that periodic inspections of safety equipment and personal protective equipment is conducted and enforce the use of such equipment.
- g) Ensure that injured employees obtain prompt medical attention.
- h) Participate in the completion of supervisory accident investigation of all accidents and suggest ways to prevent similar accidents.
- i) Periodically attend foreman's weekly "toolbox" safety meetings and evaluate their effectiveness.
- j) Share project related experiences (i.e., insight, questions, incidents, etc.) with other participants and attendees present at monthly Bond Safety Committee Meetings.

5.14 Subcontractor Competent Person

Subcontractor Foremen/Competent Person(s) are an integral part of an effective safety program and the amount of effort they put into accident prevention on their daily assignments helps determine whether or not a good accident record is maintained. The Subcontractor's designated Competent Person must hold an OSHA 10hr (within five (5) years of completion) and a valid First Aid/CPR certification.

In accordance with 29 CFR 1926.32(f), a "Competent Person" is defined as "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has **authorization** to take prompt corrective measures to eliminate them."

Responsibilities of the Subcontractor Competent Person shall include, but are not limited to:

- a) At minimum, one Subcontractor representative who has been designated as Competent Person must be present while work is being performed (work includes self-performing and/or its contractors of any tier).
- b) Instruct employees, under their supervision, on safe work practices and work methods at the time of work assignments.
- c) Competent Person(s) must be trained and certified in First Aid/CPR and possess an OSHA 10-hour certification within 5 years of the issuing date.
- d) Report immediately to the Safety Representative and superintendent of any violations of project safety that cannot be immediately corrected.
- e) Supply and enforce the use of proper protective equipment and suitable tools for the project.
- f) Verify that no unsafe practices or conditions are allowed on any part of their job.
- g) Acquaint their workers with all applicable safety requirements and enforce them.
- h) Set a good example for their workers. Lead by example.

- i) Participate in the investigation of accidents and incidents to determine facts necessary to take corrective action.
- Supply information for completion of the Accident Report and Investigation Form (directed by the General Contractor's Safety Representative and/or project Superintendent).
- k) See that prompt first aid is administered to injured employees.
- 1) Hold weekly "Toolbox Talk" safety meetings with their employees
- m) Weekly "toolbox" safety meetings must include:
 - (1) Discuss observed unsafe work practices or conditions and corrective action taken to prevent a similar incident or condition.
 - (2) Review the accident experience of their crew.
 - (3) Encourage safety suggestions from their employees and report them to the Safety Representative.
 - (4) All safety meetings are to be documented and kept in job trailer for review if requested.
- n) Share project related experiences (i.e., insight, questions, incidents, etc.) with other participants and attendees present at monthly Bond Safety Committee Meetings.

5.15 Safety Committee

Under the direction of the District, a safety committee will be appointed from the selected company safety representatives and management. This committee will meet on a monthly basis for review of any safety issues needing attention as well as for investigation of serious accidents that result in loss of life, injury to several workers or pedestrians, or a major property loss. All employees of any tier must cooperate when necessary with any safety committee investigation. The committee will submit a report to the District at the conclusion of the investigation.

5.16 Bond Safety Committee Meeting

Bond Safety Committee Meetings are held monthly at the Dallas ISD Bond Office and must consist of the General Contractor's Project Manager, Superintendent, Safety Representative, Insurance Carriers' Representative (when available), and a Safety Representative from each Program Manager and Contractor currently working on the Bond Program.

The purpose of the meetings must be to create awareness, improve communications, encourage feedback, and solve problems. The Contractor's Safety Representative must share project related experiences (i.e., insight, questions, incidents, etc.) with other participants and attendees present at such meetings.

5.17 Weekly Site-Safety "Toolbox Talk" Meetings

Toolbox talks are weekly project safety meetings used to reinforce safety basics, focus on highrisk scenarios, and to inform workers about changes to the jobsite and working conditions that may have occurred. General Contractors must discuss any near miss, accidents, or injuries that have occurred and how they could have been prevented.

- a) The General Contractor and all Subcontractors are required to hold a minimum of **one 15-minute site-safety Toolbox Talk meeting per week**.
- b) All workers on the project site, including site Project Management team members, must attend a weekly safety Toolbox Talks, which must be presented in English and all other languages that are natively spoken at the project.
- c) The General Contractor's safety representative may deliver each talk to the entire project population or each Subcontractor's safety representative may deliver individual meetings to their specific trade and/or group.
- d) The General Contractor's safety representative must periodically participate and review individual meetings to ensure effectiveness.
- e) The General Contractor must collect and maintain copies of all sign-in sheets for every meeting.
- f) Meetings must address appropriate topics for the current and future work operations and current site conditions. In addition, the General Contractor must communicate information discussed during the Monthly Bond Safety Committee Meeting, inspection results, and other project safety-related topics.

5.18 First Aid and Medical Treatment

Emergency "911" telephone number must be used for all accidents requiring the response of Emergency Medical Services, Fire Department or Police.

"First Aid" can be defined as the immediate or temporary care given to a person who is ill or who has been injured. Any person trained in first aid should be able to recognize life (or other physical) threatening conditions and take some effective action to help keep the victim alive and in the best possible condition until professional medical help arrives. CFR-1926.50

For each shift of operation, all General Contractors must have on-site supervisors who are formally trained and current on basic first aid and CPR. These supervisors will be expected to provide emergency medical first aid on their jobs for all employees but in no case will be designated as the "First Responder" for the project

- a) First aid supplies must be readily accessible on each project site. The first aid cabinet/kit must always be adequately stocked.
- b) All injuries are to be reported to the immediate supervisor, no matter how minor. Treatment will be administered, and a report made of the injury. The employee's supervisor is responsible for making arrangements to transport the employee to and from the closest medical clinic/hospital.

- c) Under no circumstances must the employee be allowed to drive him or herself to the medical clinic/hospital. All seriously injured personnel will be transported by ambulance to the nearest hospital.
- d) All employees must notify their supervisor prior to leaving the site because of illness or injury.
- e) If any employee obtains medical treatment without prior notification to the superintendent, the employee must notify the superintendent at the start of the next scheduled workday.
- f) Prior to returning to work after treatment by a physician for a work-related injury, the employee must present a return-to-work form from the treating physician.

5.19 Incident Investigations

When an accident or near miss with major potential for a loss occurs, the supervisor of the crew(s) involved must perform an accident investigation. After the root cause has been identified and recommendations for corrective action have been determined, a procedure may be implemented to prevent a similar incident from occurring again.

5.20 Substance Abuse

Dallas Independent School District (Dallas ISD) is committed to the establishment and maintenance of a safe and efficient work environment for all personnel, free from the effects of alcohol, illegal drugs, and other controlled substances.

5.20.1 Policy:

District prohibits on their property, the use, possession, concealment, transportation, promotion, or sale of any of the following:

- (1) Alcoholic beverages.
- (2) Marijuana and other illegal drugs
- (3) Look-a-likes and designer drugs
- (4) Drug paraphernalia
- (5) Controlled substances such as medications when usage is abused or when the substance is possessed without proper prescription labeling.

All person(s) directly or indirectly involved with the 2015 or 2020 Bond program, must not be under the influence of any of the above substances while on Dallas ISD property or to use, possess, conceal, transport, promote or sell any of the above substances will be grounds for disciplinary action, up to and including removal from the Bond program.

5.20.2 Other Controlled Items

Dallas ISD prohibits the use, possession, concealment, transportation, promotion, or sale of the following controlled items:

- (1) Firearms, weapons, and ammunition (except when authorized for security reasons)
- (2) Switchblades

- (3) Unauthorized explosives including fireworks
- (4) Stolen Property

5.20.3 General Contractor Requirements

General Contractors, including its Subcontractors of any tier, must employ a workforce free of the influence or possession of illegal drugs or alcohol while on District's property.

- a) As a condition of employment, employees must submit to substance abuse screening (five-panel drug screening) and breath alcohol testing for Pre-employment, Post-accident/Incident, Just-cause, Random selection, and Return to work.
- b) The Contractor must pay for all costs associated with a NIDA-approved laboratory to conduct substance abuse testing and breath alcohol testing.
- c) All General Contractors and Subcontractors are responsible for reporting to the Bond Program Safety Manager any incidents in violation of the substance abuse program and the disposition of the violation. The Owner or its designee must reserve the right, but not the obligation, to order the Contractor to send a worker home for the day, or to remove a worker from any Bond Program Project, for his/her failure to comply with anti-substance abuse policies, and the Contractor must promptly comply with all such orders.
- d) General Contractors and Subcontractors of any tier must declare one (1) or more employees to be its designated Competent Person.
- e) The designated Competent Person must be dedicated to the Project for on-site safety responsibilities and must be on the project site when any part of the applicable General Contractor's or Subcontractor's work is being performed.

5.20.4 Definitions:

Property must refer to all land owned by the District, to all property thereon; buildings, structures, facilities, platforms, fixtures, tunnels, installations, and to all project vehicles, stationary or mobile equipment, whether owned or leased. This definition may also include other work locations while in the scope and course of employment on the District's Construction Projects.

5.21 Site Visitors and Group Tours

Normally there are no tours during a construction project. However, it is particularly important that a high degree of protection be afforded to all persons on authorized tours of construction worksites.

In the event a tour is authorized, the following instructions must be complied with, as applicable, by the General Contractor and those responsible for arranging such tours:

- a) Tours must be scheduled prior to the start or after the end of the workday.
- b) In all cases, the Program Manager and the Owner's Representative must be advised of any tour in a timely manner prior to the tour taking place.
- c) Group tours must be cleared through the District, allowing maximum advance notice and in compliance with the District's policies and procedures. The District will coordinate the tour arrangements.

- d) The General Contractor will coordinate the following with the individual or organization requesting the tour:
 - (1) <u>Clothing:</u> Visitors will be required to wear pants or slacks, shirt or blouse, and leather or work shoes. Sneakers, high-heeled shoes, and open toed shoes are prohibited.
 - (2) Minors: Persons under 18 years of age are not permitted on project tours.
 - (3) <u>Protective Equipment:</u> Hard hats, eye protection, earplugs, and other protective devices will be required, as necessary.
 - (4) <u>Release and Hold Harmless Agreement:</u> Each visitor must be required to sign a release and hold harmless agreement prior to the commencement of the tour. A sample Visitor's Release and Hold Harmless Agreement is contained in this Manual as <u>Attachment IV</u>.
 - (5) All visitors must comply with Contractor safety requirements.
 - (6) All visitors must be escorted by the job-site superintendent, Bond Program Safety Director, or their designated representatives.
- e) Designated escorts must familiarize their group(s) with the hazards to be encountered on the tour prior to entering the project site.
- f) District representatives, who visit or escort technical and official visitors in hazardous work areas, must notify the General Contractor in advance and must comply with all established construction safety procedures.

6. MINIMUM CONSTRUCTION SAFETY GUIDELINES

6.1 Safe Plan of Action (SPA) Guidelines

A Safe Plan of Action (SPA) is a site-specific comprehensive safety program which outlines what methods, procedures, and equipment will be used when engaged in any of the following nine (9) critical phases of work:

(1) <u>Excavation</u>	(4) <u>Steel Erection</u>	(7) <u>Demolition</u>
(2) <u>Elevated Work</u>	(5) <u>Confined Space</u>	(8) <u>Utility Shutdown</u>
(3) Crane Operations	(6) <u>Pier Drilling</u>	(9) Electrical Shutdown

It is critical that Contractors understand the importance of developing an effectively functioning Safe Plan of Action (SPA) that is pro-active and addresses the potential hazards and exposures to their employees, campus occupants, the public, and other trades within the affected areas.

- a) SPA Documentation must be submitted to the Owner's Representative within **5-7 days** of any planned critical phases of work.
- b) The General Contractor must assemble all criteria as listed on the SPA Cover Letter checklist for all critical phases of work.
- c) The SPA Cover Letter checklist and its supporting documentation must be combined into a single PDF so that it is an exact electronic version of the physical document that must kept on-site.
- d) The General Contractor Safety Manager must review, evaluate, and approve of the SPA for adherence to all applicable federal regulations and the DISD Construction Safety Program Guidelines prior to submitting a copy to the Owner's Representative and the commencement of work.
- e) The Owner's Representative may review and respond. Any issues or deficiencies will require the General Contractor to revise and resubmit the document. If no deficiencies are noted, The General Contractor must then schedule the Pre-Work SPA Meeting.
- f) The Pre-Work SPA Meeting will be a final review of the complete Cover Letter checklist criteria before proceeding with any planned work. SPA Pre-Work Meetings must be held in-person and on-site. At a minimum, the following persons must be present:
 - (1) Sub-Contractor Competent Person
 - (2) General Contractor Safety Representative
 - (3) Owner's Representative [Optional]

6.2 Repeating Scopes of Work

For repeating types of work that have already gone through the SPA review process, a separate submittal and review will not be required **ONLY** if **ALL** the following conditions have been met:

- (1) The General Contractor Safety Manager has reviewed and approved the safety plan
- (2) The work performed will be substantially similar to the scope of work as previously approved
- (3) The Competent Person(s) listed on the documents has not changed
- (4) The Sub Contractor crew list, training records, and certifications have not changed or expired

6.3 Job Hazard Analysis

Planning for the safety of personnel and equipment being used must begin with each phase of construction and continue through project completion. Contractors must plan the safety procedures to be followed for each phase of construction.

- a) JHA's must be implemented on any task which may cause bodily injury, damage to property, or equipment e.g., crane lifts, redirecting of foot and or vehicle traffic, use of scaffolding, use of mobile aerial work platforms, and or any other task which pose a high risk.
- b) A Job Hazard Analysis (JHA) is required prior of starting any work shift, equipment, or procedure that poses a significant potential for bodily injury and/or property damage.
- c) The Job Hazard Analysis must be written by the performing Contractor and submitted to the General Contractor for approval.
- d) Contractors must use <u>EXHIBIT B</u> (Job Hazard Analysis Worksheet) or its approved equivalent.
- e) The General Contractor's Safety Representative in conjunction with the job site Supervisor is directly responsible for the development and implementation of Job Hazard Analysis (JHA).
- f) Daily JHA Meetings must include the General Contractor and/or Subcontractors, their responsible job site supervisors (including the craft supervisor and craft Safety Representative), and any other responsible party who may contribute to the safety of the operation.
- g) Employees involved with the project must be instructed of the hazards involved and methods required in eliminating those hazards, including emergency actions to be taken in the event of an accident.
- h) Employees must be made aware of the procedures to be used and requirements of the JHA.
- i) The JHA serves as an operating procedure and living documents that must be available to all personnel performing the work.
- j) The General Contractor and Subcontractor's Safety Representative must retain a copy of all JHAs.

6.4 Personal Protective Equipment

Personal Protective Equipment (PPE) must be required for all persons on any construction site. The construction site is defined as any area within the project perimeter fence and interior renovation areas, excluding offices and office trailers.

PPE includes but is not limited to:

6.4.1 Hard Hats

All persons working, walking, or transiting the construction site must always wear an ANZI-Z-89 approved hardhat. Bump caps are prohibited. Any operation that requires an employee to wear face protection does not preclude the use of head protection. The face protection must be selected so that it can be used in conjunction with the required head protection.

6.4.2 Safety Vest

High visibility vests or high visibility upper body clothing (equivalent to ANSI Class 2 or greater as applicable) must be worn in the construction area. Primary work activities such as traffic control, excavations, rigging from ground level, exterior work at ground level or sub-ground level, earth moving operations, may require ANSI Class 3.

6.4.3 Eye Protection

Employees must wear ANZI Z-87 approved eye protection must be required when construction activities present a potential eye injury from flying debris, physical, chemical, or radiation agents.

6.4.4 Face protection

Face protection must be required when construction activities present a potential face injury from flying debris, physical, chemical, or radiation agents. Any operation that requires an employee to wear face protection does not preclude the use of eye protection. The eye protection must be selected so that it can be used in conjunction with the required face protection.

Any person working near or observing operations requiring additional or specialty eye protection must be equipped with the same type of eye protection that is required for that operation.

6.4.5 Hearing Protection

All contractors of any tier must implement a hearing conservation program when noise exposure is at or above 85 decibels averaged over 8 working hours, or an 8-hour time-weighted average.

6.4.6 Footwear

All employees and vendors in active work areas must wear substantial leather work shoes or work boots. Tennis shoes, sneakers, or other athletic footwear, flipflops, heels (1" +) or any open toe shoes are not acceptable footwear.

6.4.7 Clothing

All employees must be required to wear such additional protective clothing or equipment as required by the hazards involved with the tasks being performed.

- a) All clothing should be in good repair, and not loose fitting or dragging in such a manner to pose a hazard from becoming entangled in equipment or machinery.
- b) All button shirts will be buttoned or t-shirts with at least 4" sleeves must be worn at all times while on the jobsite. Tank tops, mesh shirts, sweatpants, shorts nor clothing displaying pornographic, or profanity will be allowed.
- c) Long hair will be neatly kept under a hardhat as to prevent serious injury caused by entanglement.

6.4.8 Jewelry

No dangling jewelry must be permitted on work sites. Necklaces will be kept inside shirts to prevent possible entanglement in moving equipment and rotating machinery.

6.5 Hazard Communication

The General Contractor's Hazard Communication (Haz-Com) Program must be submitted to the Owner's Representative and made part of the General Contractor's Construction Safety Program and maintained on-site.

- a) Contractors must provide all required training, control methods, personal protective equipment, and medical surveillance for its employees as required by OSHA 1926 Subpart Z. Training programs must ensure all employees can at a minimum:
 - (1) Understand the program and can identify with hazardous chemicals.
 - (2) Understand product-warning labels.
 - (3) Know where Safety Data Sheets (SDS) are kept and can interpret them.
- b) The General Contractor must maintain copies of Safety Data Sheets (SDS) for all chemicals to be used, stored, and/or maintained on any DISD Project prior to arrival or use.
- c) All hazardous materials must be properly labeled per GHS and stored in accordance with applicable laws.
- d) Contractors are responsible for proper disposal of hazardous waste in accordance with applicable laws and Environmental Requirements.
- e) The General Contractor is responsible for ensuring work zones and potentially affected occupied areas are properly monitored for exposure to toxic and hazardous substances that workers or building occupants may be exposed to. Some examples include but are not limited to the following:

(1) Asbestos	(4) Beryllium
(2) Lead	(5) Silica
(3) Hexavalent chromium	(6) Mold

<u>NOTE</u>: It is the General Contractor's responsibility to monitor for these substances and to communicate with and protect building occupants if exposure is possible.

6.6 Respiratory Protection

When respirators are deemed necessary, the Contractor must have a respiratory program that complies with OSHA regulations. A copy of the Contractor's Respiratory Program must be submitted to the Owner's Representative and made part of the General Contractor's Construction Safety Program and maintained on-site.

- a) Contractors of any tier must take all actions necessary to ensure air quality standards are met on the project and in its work areas. The employer shall evaluate emissions caused by their work processes (e.g., welding, running vehicles, etc.) and/or by the materials used.
- b) When deemed necessary, employees must be fitted for and instructed in the proper use of respirators that will afford them the maximum protection for the environmental hazard in which they are working. Because of the extensive use of waterproofing, fireproofing, paints and welding processes, these areas may require constant monitoring

6.7 Fire Prevention

All Dallas ISD Schools Are Smoke and Tobacco Free.

The Fire Prevention and Protection Program will be determined for each project by the size and conditions at each project. The project superintendent must be responsible for the proper implementation and administration of the program giving due consideration to the availability of public Fire Departments and the type of work to be performed on the job.

The General Contractor's Site Fire Prevention and Protection Program must be submitted to the Owner's Representative made part of the General Contractor's Construction Safety Program and maintained on-site.

- a) Ignition sources are not permitted in areas where flammable or explosives are stored or may be present and must be conspicuously posted: "NO SMOKING, MATCHES OR OPEN FLAMES."
- b) Examples of ignition sources include, but are not limited to:
 - (1) Smoking
 - (2) Electrical cords that are damaged
 - (3) Welding, torch cutting, and brazing
 - (4) Vehicle engines and electric motors
 - (5) Asphalt kettles
 - (6) Hotplates
- c) Fire Extinguishers of the appropriate type (A: B: C) must be provided, be placed conspicuously and sign posted.
- d) Fire extinguishers will be maintained and inspected as required by Federal, State, and local regulations.

- e) Fires and open flame devices must not be left unattended. Open burning for personal warming or trash disposal is prohibited.
- f) All temporary heating devices must comply with all requirements of CFR 1926.154
- g) All flammable liquids, e.g., gasoline, diesel, mixed gas, etc., must be labeled, stored, and dispensed from U.L. approved safety cans. The use or storge of plastic fuel containers is strictly prohibited.
- h) Compressed gas cylinders, when not in use, will be secured in an upright position. Fuel and nonfuel cylinders must be separated by a minimum of 20 feet.
- i) Flammables or Combustible liquids must not be stored in areas used for exits, stairways, or normally used for the safe passage of people.
- j) Outdoor Flammable Storage areas must not be within 20 feet of any building. Minimum distance will also be maintained between storage areas, property lines, streets, alleys, or public ways.
- k) Outdoor Portable Tanks must not be stored within 20 feet of any building.
- 1) Each tank must be labeled: "(Contents of Tank) Flammable, No Smoking"
- m) At least one portable fire extinguisher will be located no less than 25 feet, and no further than 75 feet, from any flammable liquid storage area located outside.
- n) All areas of the project must be kept free of accumulations of wood scraps, paper, and other combustible debris.
- o) Trash dumpsters must be maintained a minimum of 50 feet away from buildings or other structures.
- p) In areas where welding, torching, or any open flame activity is being conducted, a trained fire watch will be posted, and he/she will have no other duties. The fire watch will remain in the hot work location for a minimum of 30 minutes after hot work activities are completed to ensure that no hot areas are present.

6.8 Housekeeping

Housekeeping is a basic requirement to construction safety and must be of primary concern to every superintendent, supervisor, and foreman on the project. The maintenance of a safe, clean work area contributes not only to worker safety, and the elimination of fire hazards, but also to efficient low-cost production.

- a) All General Contractor and Subcontractor employees of any tier must collect trash, construction debris, and dispose of daily.
- b) All trash and debris must be placed in proper containers, properly stacked, or removed from the jobsite daily.
- c) Walking aisles, roadways, and high foot-traffic areas must be kept clear at all times.
- d) All welding leads, electrical cords, and torch hoses must be strung a minimum of 7 feet high or positioned so as not to create a tripping hazard.
- e) Oily rags and any flammable debris must be placed in closed covered containers at the end of each shift, or otherwise properly disposed of.
- f) Tools and materials must not be left where they will create a hazard for others.

- g) Spilled liquids should be cleaned up immediately.
- h) Toilets, wash-up facilities, and drinking water dispensers are to be kept clean and sanitary.
- i) Protruding nails must be bent down or removed from boards, plywood, construction materials, etc.
- j) Surplus materials must be returned to storage areas.

6.9 Silica Control

Contractors must reduce unacceptable dust levels either through engineering controls or other means. In either case, the Contractor must provide maximum protection for those exposed to dust. Contractors of any tier are responsible for controlling dust that:

- (1) Might endanger the health of children, school staff, and employees.
- (2) Creates a nuisance to the general public

6.10 Sanitation

The General Contractor is responsible for obtaining and maintaining an adequate number of portable toilets on the project, as well as areas for hand washing.

- a) The total number and gender of all employees working on the jobsite must determine the number of portable toilets required.
- b) The General Contractor must also provide or require its Subcontractors to provide potable water.
- c) Toilets, wash-up facilities, and drinking water dispensers are to be kept clean and sanitary at all times.

6.11 Demolition and Site Clearance

The General Contractor must ensure the establishment of a written Demolition Procedure that adheres to OSHA, Federal, State, and local regulations. A copy of this procedure must be submitted to the Owner's Representative, made part of the Contractor's Construction Project Safety Manual as <u>EXHIBIT C</u>, and maintained on-site.

- a) Prior to commencement of work, a competent person must conduct an engineering survey. This written survey will be considered the basis for an operational work plan.
- b) All structures needing support must be braced.
- c) All utilities including gas, water, electricity, etc. must be shut down. All pipe work must be purged of any hazardous materials, e.g., flammable, explosive, toxic, etc.
- d) All debris chutes will be manufactured of appropriate materials and must be adequately guarded and/or protected.
- e) Removal of asbestos, lead, and PCBs must only be conducted by licensed contractors.
- f) Remediation activities must adhere to all OSHA, Federal, State, and local regulations.

6.12 Demolition Safe Plan of Action (SPA)

A Demolition Safe Plan of Action (SPA) is a site-specific comprehensive Demolition Program which outlines what methods, procedures, and equipment will be used in its program. This evaluation and program must be in writing and must be submitted to the Owner's Representative prior to any demolition activity. Review and acceptance by the General Contractor Safety Manager is required prior to submission, the start of work, or any demolition activity.

- a) General Contractor must coordinate and conduct an on-site Demolition SPA pre-work meeting one week prior to any planned demolition activity. The Cover Letter (EXHIBIT C) must be submitted along with a Safe Plan of Action (SPA). The safety plan must be evaluated and approved by the General Contractor Safety Manager prior to submission.
- b) The Demolition SPA pre-work meeting agenda must include discussion about the scope and review of any conditions that may pose a hazard to workers and/or campus occupants as it relates to the planned demolition activity.
- c) To hold a Demolition SPA pre-work meeting, at a minimum, the following parties must be present:
 - (1) Sub-Contractor Competent Person
 - (2) General Contractor Safety Representative
 - (3) Owner's Representative [Optional]

6.13 Confined Space Entry

General Contractors must ensure the establishment of a written Confined Space Entry Procedure (when applicable) that adheres to OSHA Regulations. A copy of this procedure (when applicable) must be submitted to the Owner's Representative, made part of the Contractor's Construction Project Safety Manual as <u>EXHIBIT D</u>, and maintained on-site.

- a) All personnel connected with any confined space operation must be adequately trained and confirmation of this training must be documented.
- b) Confined Space Entry Permits must be used where necessary.
- c) Air monitors, rescue tripods, full body harnesses, ventilation equipment, etc. must be available and used when deemed necessary by the General Contractor.

6.14 Confined Space Safe Plan of Action (SPA)

A Confined Space Safe Plan of Action (SPA) is a site-specific comprehensive Confined Space Entry Program which outlines what methods, procedures, and equipment will be used in its program. This evaluation and program must be in writing and must be submitted to the Owner's Representative prior to any confined space entry. Review and acceptance by the General Contractor Safety Manager is required prior to submission, the start of work, or any confined space entry.

a) The General Contractor must coordinate and conduct an on-site Confined Space SPA pre-work meeting 5-7 days prior to any planned confined space entry. The Cover Letter (EXHIBIT D) must be submitted along with a Safe Plan of Action (SPA). The safety

plan must be evaluated and approved by the General Contractor Safety Manager prior to submission.

- b) The Confined Space SPA pre-work meeting agenda must include discussion about the scope and review of any conditions that may pose a hazard to workers and/or campus occupants as it relates to the planned confined space work.
- c) To hold a Confined Space SPA pre-work meeting, at a minimum, the following parties must be present:
 - (1) Sub-Contractor Competent Person
 - (2) General Contractor Safety Representative
 - (3) Owner's Representative [Optional]

6.15 Trenching and Excavations

The General Contractor must ensure the establishment of a written Trenching and Excavation Procedure that adheres to OSHA Regulations. A copy of this procedure must be submitted to the Owner's Representative, made part of the Contractor's Construction Project Safety Manual as <u>EXHIBIT E</u>, and maintained on-site.

- a) The General Contractor must ensure trenching and/or excavation activities are not performed during regular school hours or near occupied school areas.
- b) Prior to any excavation activity, the General Contractor Safety Representative or Superintendent must ensure the following:
 - (1) Contact Texas811 (1-800-344-8377) for confirmation number.
 - (2) Ground penetrating radar (GPR) **and** review of exiting plans must be performed as part of the underground utility locating methods. GPR reports must include an Underground Utility Location Survey/Utility Map which shows the positioning and identification of underground utilities in relation to any planned excavation activity.
 - (3) Potholing/hand digging is required within three (3) horizontal feet of "located" centerlines, and in areas where knowledge is lacking.
- c) The review of existing plans and any other reasonable efforts must be made to determine if any underground utilities (power lines, water lines, fuel lines, etc.) are present within the boundaries of the proposed work area.
- d) As the excavation work approaches the location of any known utilities, the lines must be uncovered, using extreme caution not to disturb the lines, and adequate measures must be taken to protect the lines from damage while the work progresses.
- e) All utilities known but not identified must be exposed by hand.
- f) All excavation must be inspected daily by a competent person, or after heavy rain, or other change that may have caused a change in ground stability conditions. Any excavation greater than 20 feet must be designed by an engineer and a copy forwarded to the Bond Program Safety Manager for review.

- g) Any personnel at the edge of a well, pit, shaft, and similar excavation six (6) feet or more in depth must be protected from falling by guardrail systems, barricades, or covers.
- h) Where a guardrail system or barricade is infeasible, the use of personal fall arrest systems are required.
- i) Any disturbed areas must be returned to existing and safe condition prior to departure.
- j) If the Contractor must make a cut, cavity, trench, or depression in the Earth's surface formed by earth removal, it must comply with the applicable OSHA Regulations.
- k) General Contractors must train, or require to be trained, those employees who will work in and around the excavation about the hazards, as required by OSHA, in the areas of daily inspections, soil testing, soil classifications, and protective or support systems.

6.16 Trenching and Excavation Safe Plan of Action (SPA)

A Trenching and Excavation Safe Plan of Action (SPA) is a site-specific comprehensive Trenching/Excavation Program which outlines what methods, procedures, and utility strike prevention efforts will be used in its program. This evaluation and program must be in writing and must be submitted to the Owner's Representative prior to any Trenching/Excavation work. Review and acceptance by the Contractor Safety Manager is required prior to submission and the start of work.

- a) General Contractor must coordinate and conduct an on-site Trenching and Excavation SPA pre-dig meeting one week prior to any planned excavation or trenching (hand digging included). The Cover Letter (EXHIBIT E) must be submitted along with a Safe Plan of Action (SPA). The safety plan must be evaluated and approved by the General Contractor Safety Manager prior to submission.
- b) The Trenching and Excavation SPA pre-work meeting agenda must include discussion about the scope and review of the existing underground utilities as it relates to the planned trenching/excavation. At the pre-dig meeting, the General Contractor must present a contingency plan regarding any utility struck during execution of such work.
- c) To hold a Trenching and Excavation SPA pre-work meeting, at a minimum, the following parties must be present:
 - (1) Sub-Contractor Competent Person
 - (2) General Contractor Safety Representative
 - (3) Owner's Representative [Optional]

<u>NOTE</u>: As defined by OSHA, an excavation as any man-made cut, cavity, trench, or depression in the Earth's surface formed by earth removal. A trench is defined as a narrow excavation (in relation to its length) made below the surface of the ground.

6.17 Pier Drilling

The General Contractor must ensure the establishment of a written Pier Drilling Procedure that adheres to OSHA Regulations. A copy of this procedure must be submitted to the Owner's Representative, made part of the Contractor's Construction Project Safety Manual as $\underline{EXHIBIT}$ <u>F</u>, and maintained on-site.

- a) The Contractor must at no time perform any pier drilling activities during regular school hours or near occupied school areas.
- b) Prior to any pier drilling activity, the General Contractor Safety Representative or Superintendent must ensure the following:
 - (1) Contact Texas811 (1-800-344-8377) for confirmation number.
 - (2) Ground penetrating radar (GPR) **and** review of exiting plans must be performed as part of the underground utility locating methods. GPR reports must include an Underground Utility Location Survey/Utility Map which shows the positioning and identification of underground utilities in relation to any planned excavation activity.
 - (3) Potholing/hand digging is required within three (3) horizontal feet of "located" centerlines, and in areas where knowledge is lacking.
- c) The review of existing plans and any other reasonable efforts must be made to determine if any underground utilities (power lines, water lines, fuel lines, etc.) are present within the boundaries of the proposed work area.
- d) As the excavation work approaches the location of any known utilities, the lines must be uncovered, using extreme caution not to disturb the lines, and adequate measures must be taken to protect the lines from damage while the work progresses.
- e) All utilities known but not identified must be exposed by hand.
- f) Any personnel at the edge of a well, pit, shaft, and similar excavation six (6) feet or more in depth must be protected from falling by guardrail systems, barricades, or covers.
- g) Where a guardrail system or barricade is infeasible, use of personal fall arrest systems are required.
- h) Pier Drilling equipment must remain barricaded at all times and NOT be operated in occupied school areas.
- i) Any disturbed areas must be returned to existing and safe condition prior to departure.
- j) If the Contractor must make a cut, cavity, trench, or depression in the Earth's surface formed by earth removal, it must comply with the applicable OSHA Regulations.
- k) General Contractors must train, or require to be trained, those employees who will work in and around the pier drilling operation about the hazards, as required by OSHA, in the areas of daily inspections, soil testing, soil classifications, and protective or support systems.

6.18 Pier Drilling Safe Plan of Action (SPA)

A Pier Drilling Safe Plan of Action (SPA) is a site-specific comprehensive Pier Drilling Program which outlines what methods, procedures, and utility strike prevention efforts will be used in its program. This evaluation and program must be in writing and must be submitted to the Owner's Representative prior to any Pier Drilling work. Review and acceptance by the General Contractor Safety Manager is required prior to submission and the start of work.

- a) When working adjacent to any Pier six (6) feet in depth or greater, an appropriate means of fall protection must be provided.
- b) General Contractor must coordinate and conduct an on-site Pier Drilling SPA pre-work meeting one week prior to any planned pier drilling. The Cover Letter (EXHIBIT F) must be submitted along with a Safe Plan of Action (SPA). The safety plan must be evaluated and approved by the General Contractor Safety Manager prior to submission.
- c) The Pier Drilling SPA pre-work meeting agenda must include discussion about the scope and review of the existing underground utilities as it relates to the planned pier drilling operation. At the pre-work meeting, the General Contractor must present a contingency plan regarding any utility struck during the pier drilling of such work.
- d) To hold a Pier Drilling SPA pre-work meeting, at a minimum, the following parties must be present:
 - (1) Sub-Contractor Competent Person
 - (2) General Contractor Safety Representative
 - (3) Owner's Representative [Optional]

6.19 Locating Utilities

Prior to any underground work being performed, all utilities within the area of work must be located. Safety representative must ensure that Texas811 (1-800-344-8377) has been notified, and Ground Penetrating Radar (GPR) **and** review of exiting plans is be performed as part of the underground utility locating methods and a confirmation number has been issued prior to any excavation.

- a) The General Contractor must coordinate with the Program Manager Network or the Architect to have all utilities within the area of work located.
- b) The contract specifications and drawings must be reviewed by the General Contractor for notations of utility companies that may not be a member of an underground service alert group. Those not members of an underground service alert group must be contacted directly.
- c) All calls to the utility companies must be logged and retained by the General Contractor.
- d) The General Contractor must visually check the area for signs indicating the possibility of recent underground relocation work by an outside entity.
- e) The General Contractor must take all necessary steps to protect the utilities from damage.
- f) Ground penetrating radar (GPR) must be performed as part of the underground utility locating methods prior to any excavation activity.

- g) GPR reports must include an Underground Utility Location Survey or Utility Map which shows the positioning and identification of underground utilities in relation to any planned excavation activity.
- h) "Potholing" and/or hand digging must be required within three (3) horizontal feet of "located" centerlines, and in areas where knowledge is lacking, prior to any planned excavation activity.

6.20 Utility and Electrical Shutdowns

Prior to any type of shutdown, re-energizing, re-pressurizing, or tie-in activities, the General Contractor is responsible for completing the Shutdown Notification Guidelines as outlined in <u>Attachment V</u>, along with the applicable safety submittal requirements outlines in this section.

- a) The General Contractor or Subcontractor of any tier must at no time perform any type of power or other utility shutdown activities during regular school hours. Shutdowns are to be scheduled during weekends or extended breaks.
- b) **10-Day Notice of Shutdown** General Contractor must provide Dallas ISD with notification of power or other utility shutdown no less than ten (10) calendar days in advance of the shutdown. Notification includes Dallas ISD Central Maintenance Office, A/E, Program Manager, and the Principal at each affected school.
- c) Shutdown Authorization Form (<u>EXHIBIT I</u>) must be submitted to the Dallas ISD Bond Program Manager and Dallas ISD Project Manager for signatures of approval.
- d) The General Contractor must ensure confirmation of readiness from affected Dallas ISD Departments (Including but not limited to HVAC, Kitchen, Fire Suppression, etc.) prior to any power or other utility shutdown activities.
- e) When adding HVAC units, the General Contractor must notify the Project AE for approval of increased load
- f) Prior to relocating any utility, Dallas ISD Sustainability Department must be notified.

6.21 Utility and Electric Shutdown Safe Plan of Action (SPA)

A Utility or Electrical Shutdown Safe Plan of Action (SPA) is a site-specific comprehensive Shutdown Program which outlines what methods, procedures, and contingency efforts will be used in its program. This evaluation and program must be in writing and must be submitted to the Owner's Representative prior to any power or other utility shutdown activities. Review and acceptance by the General Contractor Safety Manager is required prior to submission, and utility shutdown activities.

- a) General Contractor must coordinate and conduct an on-site Shutdown pre-work meeting prior to any planned Utility or Electrical Shutdown. The applicable Cover Letter (EXHIBIT G or EXHIBIT H) must be submitted along with a Utility or Electrical Shutdown SPA. The safety plan must be evaluated and approved by the General Contractor Safety Manager prior to submission.
- b) The Utility or Electrical Shutdown SPA pre-work meeting agenda must include discussion about the scope and review of any existing or potential hazards and contingency efforts as it relates to the planned shutdown.

- c) To hold an Electrical or Utility Shutdown SPA pre-work meeting, at a minimum, the following parties must be present:
 - (1) Sub-Contractor Competent Person
 - (2) General Contractor Safety Representative
 - (3) Owner's Representative [Optional]

6.22 Electrical Work

All electrical work for and throughout the course of any construction project must be provided and performed in accordance with the National Electric Code (NEC), and OSHA, 29 CFR 1926 Subpart K, 29 CFR 1926 Subpart V, NFPA 70E and NFPA 70.

- a) All 120-volt single-phase 15 and 20 ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure and which are in use by employees, must have approved ground fault circuit interrupters (GFCI) for personal protection.
- b) Receptacles on a two-wire single-phase portable or vehicle-mounted generator rated not more than 5 kw, when the circuit conductors are insulated from the generator frame and all other grounded surfaces, need not be protected with ground fault circuit interrupters.
- c) Employees must be instructed to visually inspect each cord set, plug, and receptacle of cord sets, temporary lighting and all equipment connected by the cord and plug before each day's use for external defects and/or damage. When there is evidence of damage, the damaged item must be taken out of service, tagged until tested, and required repairs made or the item is replaced.
- d) No work must not be performed on any energized electrical circuit, busbars, equipment, or panels unless an approved written work plan in accordance with NFPA 70E and submittal for review prior to performance of work. If energized work is required during commissioning, troubleshooting, and/or maintenance work must be performed under an energized electrical permit and the requirements of NFPA 70E.
- e) Panel Covers must be kept in place whenever any panel is energized.
- f) All Electrical Systems must be inspected and maintained on a regular basis.

6.23 Lockout/Tagout (LOTO)

A Lockout/Tagout procedure must be in place in accordance with OSHA 29 CFR 1926.417 and 1910.147 whenever performing inspections, maintenance, repairs, and modifications to equipment, machinery or electrical systems where unexpected release of energy or stored energy could create an injury. A Site LOTO log must be maintained and posted within the GC trailer and/or jobsite officing area.

Electrical box panels, even during breaks, must not be left exposed. Exposed boxes must be physically covered with the panel cover, and areas must be protected with barricades if necessary.

6.24 Electrical Power Lines

All electrical power line must be considered energized until the person owning such line or operating official of the electrical utility supplying the line assures that it is not energized, and it has been visibly grounded.

- a) Operations adjacent to power lines are prohibited unless at least one of the following conditions is satisfied:
 - (1) Power has been shut off and positive means taken to prevent the lines from being energized (Lock out/Tag out).
 - (2) Equipment, or any part, should not have the capability of coming within the minimum clearance of energized overhead lines. As specified in OSHA Regulations, the equipment must be positioned and blocked to ensure no part, including cables, can come within the minimum clearances. A notice of the minimum required clearance must be posted at the operator's position.

6.25 Fall Prevention and Protection

General Contractors are responsible for implementing the requirements to achieve fall protection in accordance with all OSHA, Federal, State, and local regulations, this Manual, and must ensure each Subcontractor meets those requirements. A copy of this procedure must be submitted to the Owner's Representative, made part of the Contractor's Construction Project Safety Manual as, <u>EXHIBIT J</u> and maintained on-site.

- a) All personnel regardless of craft working at a height of six (6) feet or greater above a lower level, and not protected by standard guardrails or other means must use an appropriate means of fall protection. The fall protection system selected should provide the employees the best means of protection while allowing the employees as much mobility as possible.
- b) All employees working where there is a danger of falling must use approved fall protection equipment or devices. Fall protection is required.
- c) The employer must prepare a written training program to ensure that each employee who might be exposed to a fall hazard is knowledgeable of the Fall Protection Program requirements. Training documentation must be retained and kept on file at the jobsite.
- d) The Fall Protection Program must detail in writing when fall protection is required and exactly how this protection is to be provided. Sketches may be used to assist in the fall protection definition. This written program is required for any General Contractor or Subcontractor of any tier exposing workers to falls six (6) feet or greater above a lower level.
- e) Employees must also be trained on the proper wearing, use, and limitations of personal Fall Protection and Arresting Device Systems. Training documentation must be retained and kept on file at the jobsite.
- f) Fall arrest systems must be rigged such that an employee can neither free fall more than six (6) feet, nor contact any lower level.
- g) Connecting two snap hooks together, as the possibility of a "roll-out" exists, must not be used to lengthen lanyards.

- All harnesses and lanyards must be inspected frequently by the General Contractor and/or Subcontractor Competent Person. Regular inspections for wear, damage, or corrosion is a daily requirement. Damaged or defective equipment must be removed from service by the responsible Contractor or General Contractor and be destroyed to eliminate the possibility of using at a later date.
- i) The employer must assure that a Competent Person, qualified in the following areas, has trained each employee as necessary:
 - (1) Complete understanding of all Federal, State, and Local Fall Protection Regulations.
 - (2) The nature of fall hazards in the work area.
 - (3) The correct procedures for erecting, maintaining, disassembling, and inspecting fall protection systems to be used.
 - (4) The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones, and other protection to be used.
 - (5) The role of each employee in the safety monitoring system (when this system is used).

6.26 Elevated Work Safe Plan of Action (SPA)

An Elevated Work Safe Plan of Action (SPA) is a site-specific comprehensive Fall Protection Program which outlines what methods, procedures, and equipment will be used in its program. This evaluation and program must be in writing and must be submitted to the Owner's Representative prior to any employee exposure at an elevation of six (6) feet or greater. Review and acceptance by the General Contractor Safety Manager is required prior to submission, the start of work, or employee exposure.

- a) General Contractors must coordinate and conduct an on-site Elevated Work SPA prework meeting one week prior to any planned elevated work six (6) feet or more from a lower level. The Cover Letter (<u>EXHIBIT J</u>) must be submitted along with an Elevated Work SPA. The safety plan must be evaluated and approved by the General Contractor Safety Manager prior to submission.
- b) The Elevated Work SPA pre-meeting agenda must include discussion about the scope and review of any existing and/or potential fall hazards as it relates to the planned elevated work.
- c) To hold an Elevated Work SPA pre-work meeting, at a minimum, the following parties must be present:
 - (1) Sub-Contractor Competent Person
 - (2) General Contractor Safety Representative
 - (3) Owner's Representative [Optional]
6.27 Roofing

No roofing work, regardless of the extent, is to be done over an occupied area. No other work will be allowed over an occupied area if it requires access to the roof. This includes, but is not limited to coring, drilling, or installation of electrical and plumbing pipe, Roof blocking, curb construction or reconstruction, flashing etc.

The intent is to restrict the activity that may cause a hazard to the occupants below. Inspections and maintenance activities are allowed as long as it does not involve significant work that might fall into the realm of the aforementioned hazard.

<u>NOTE</u>: An Elevated Work SPA (<u>EXHIBIT J</u>) may be required for roof work six (6) feet or grater in height or above a lower level.

6.28 Melting Kettles

Before firing a kettle (following the manufacturer's instructions), employees must check hoses, gauges, fuel tanks, bumpers, and other equipment for defects and make sure the lid fits tightly. Burners should not be ignited near fuel or flammable materials. All kettles must be equipped with after-burner devices.

- a) Other workers who may be working on the roof should keep clear of the kettle workers and their equipment.
- b) Work areas where melting kettles are in use will be barricaded off at a minimum distance of twenty-five (25) feet from other work areas.
- c) No combustible materials, including insulation and bitumen, should be stored near the kettle.
- d) Kettles should not be placed directly on combustible roofs. When it is necessary to place a kettle on such roofs, noncombustible surfaces must be placed under the kettle.
- e) Heating devices or melting kettles should be placed on a level, firm foundation and protected against traffic, accidental tipping, or similar hazards.
- f) A minimum of three (3) 20 lb. (A: B:C) dry chemical fire extinguishers must be provided for each kettle and tanker operation, each open flame torching operation, and each work crew using mechanical equipment, power tools, hot bitumen, or flammable liquids.
- g) Travel distance from the kettle work area to the nearest fire extinguisher must be located within twenty-five (25) feet, on opposite sides of the kettle. These extinguishers shall be readily accessible at all times in case of an emergency.
- h) Hot kettles should never be left unattended, **even during lunch periods**. The kettle covers should be readily available and fit tightly. All kettle workers should know how to put out a kettle fire.
- i) Before refueling, burners and engines must be safely shut down and allowed to cool.
- j) A non-combustible surface must be available on which to put a burner when removed from the kettle.
- k) Enclosed areas in which hot substances are being heated or applied should be properly ventilated.

- 1) Hoisting equipment should be used to raise bitumen to the roof. Hot bitumen should never be carried up ladders. The hoisting equipment must be strong enough to hoist the load and be properly secured.
- m) Employees must know the proper way to pick up a bucket and not jerk or kick a bucket that is stuck to a roof.
- n) At the conclusion of work, roofing mops should be "fanned out" onto a noncombustible surface to minimize the chance of spontaneous ignition.

6.29 Scaffolding

The erection, alteration or moving, of any scaffolding system or work platform must be performed under the direction of a designated "Competent Person."

- a) Guardrails, mid-rails, and toe-boards must be installed on all open sides of scaffolds. This guardrail system should be constructed from components furnished by the manufacturer.
- b) Unauthorized personnel must not alter scaffolds or work platforms.
- c) Guardrails are required for all scaffolding greater than six (6) feet in height. All employees working on scaffolds 6 ft. or higher must have adequate means of fall protection.
- d) Where uplift may occur, scaffold planks must be cleated or secured and must extend over the end supports by at least 6 inches but not by more than 12 inches.
- e) A competent person must visually inspect all scaffold members before each use. Damaged scaffold members must be removed from service immediately.
- f) Access ladders must be provided for each scaffold in accordance with OSHA 1926.450.
- g) Adequate mudsills and/or base plates or other rigid footing, capable of withstanding the maximum intended load, must be provided.
- h) Scaffolds must be tied off to the building or structure at intervals in accordance with OSHA 1926.450.
- i) Scaffolds must not be overloaded. Materials shall be brought up as needed. Excess materials and scrap must be removed from the scaffold when work is completed.
- j) Barrels, boxes, kegs, horses, ladders, loose tile blocks, loose piles of bricks, or other unstable objects must not be used as work platforms or mounted on top of other work platforms.
- k) Where persons are required to work or pass under a scaffold, a screen of 18 gauges, 1/2inch wire mesh or equivalent protection is required between the toe boards and the guardrail.
- 1) Overhead protection is required if employees working on scaffolds are exposed to overhead hazards.

<u>NOTE</u>: An Elevated Work SPA (<u>EXHIBIT J</u>) may be required for scaffolding systems six (6) feet or grater in height or above a lower level.

6.30 Floor and Wall Openings

As defined by OSHA, a hole constitutes as any gap or void two (2) inches or more in its least dimension, in a floor, roof, or other walking/working surface. Hole covers must be capable of supporting without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.

6.30.1 General

- a) All floor holes and openings into which persons can accidentally walk or fall through must be guarded by a physical barrier or cover, secured, and labeled, "HOLE COVER DO NOT REMOVE", or protected by a standard guardrail system.
- b) Wall openings, from which there is a drop of more than 6 feet, and where the bottom of the opening is less than 42 inches above the working surface, must be guarded with a top rail, mid-rail, and toe board.
- c) A standard guardrail system or perimeter cable must guard every open-sided floor or platform 6 feet or more above the adjacent floor or ground level.
- d) When it is necessary to work inside the barricade around a floor opening, or building edge, workers must wear and use a Personal Fall Arrest System, which must be tied off.

6.30.2 Guardrails

- a) Top rails and mid-rails protecting all work areas 4 feet or more in height must be smooth surfaced throughout their length and have a vertical height of 42 inches. Midrails must be halfway between the toprails and the floor, platform, runway, or ramp. Synthetic or natural fiber ropes must not be used as top-rails or mid-rails.
- b) Wire rope, when used as top-rails or mid-rails, must be free of sharp edges, burrs, or projections which may be a hazard. The maximum deflection of the top rail when a load of 200 pounds is applied in any direction at any point on the top rail must not exceed 3 inches in one direction, which includes the free hanging sag in the wire rope. Support posts must not be positioned more than eight (8) feet apart.
- c) Wood top railing must be at least 2 x 4-inch stock or equivalent. Wood railing posts must be of at least 2 x 4-inch lumber spaced not to exceed 8 feet. Mid-rails must be at least 1 x 6-inch stock or equivalent. Toe boards must be 1 x 4-inch lumber or equivalent and securely fastened.
- d) When materials are piled to such a height that a standard toe board does not provide protection, paneling, or screening from the floor to top-rail or mid-rails must be provided.
- e) All guardrails and handrails must be inspected daily and repaired immediately, as needed.

6.31 Stairways and Ladders

6.31.1 Ladders

- a) Manufactured ladders must be at minimum Type 1A rated (300lb.)
- b) Portable aluminum ladders shall be prohibited.
- c) All job-made wooden ladders and stairs, regardless of height, must be constructed according to OSHA and ANSI specifications.
- d) Extension ladders must not exceed forty-four (44) feet in length.
- e) Stepladders must not exceed twenty (20) feet in length.
- f) Single cleat ladders must not exceed thirty (30) feet in length.
- g) Double cleat ladder must not exceed a maximum length of twenty-four (24) feet.
- h) Workers must maintain three points of contact, with the ladder, while ascending or descending and always face the ladder; Hands must be free of tools and materials.
- Fixed Ladders: Fall protection must be provided for employees climbing or working from fixed ladders above twenty-four (24) feet. A fixed ladder is a ladder that cannot be readily moved or carried because it is an integral part of a building, structure, or scaffolding system.

6.31.2 Stairways

- a) Stairs having 4 or more risers must have its sides protected by a standard handrail system.
- b) All job-made wooden ladders and stairs, regardless of height, must be constructed according to OSHA and ANSI specifications.
- c) On temporary stairways, for every 12 feet of vertical riser, there must be a landing platform, and:
 - (1) Stairs must be at least 24 inches wide and equipped with treads and handrails.
 - (2) Temporary stairs must have a 30-inch-wide landing for every 12 feet of vertical rise.
 - (3) Stairs must be properly illuminated (5 footcandles).
 - (4) Stairways, ramps, or ladders must be provided at all points where a break in elevation of 19 inches or more occurs in a frequently traveled passageway, entry, or exit.
- d) Where permanent stairways are not installed, concurrently with the construction of each floor, a temporary stairway must be provided to the work level. Joints must be locked together by lock pins, bolts, or equivalent fastenings.
- e) Handrails must be of construction similar to a standard guardrail. All handrails and railings must be provided with a clearance of approximately 3 inches between the handrail or railing and any other object.
- f) Handrails must be not more than 37 inches or less than 30 inches from upper surface of handrail to surface of tread. Handrails must also be in line with the face of the riser, or to the surface of the ramp.

6.32 Crane Operations

A Crane Operations Safe Plan of Action (SPA) pre-operational meeting is required to review the appropriate lift plan prior to making any Critical lift, Major lift, or Standard lift. It should never be assumed that any member of the crew is aware of all aspects of the lift, and therefore all aspects of the lift plan should be reviewed.

- a) The General Contractor must ensure that its Subcontractors meet the requirements set forth by ASME B30.5.2011 and OSHA 29 CFR Subpart CC.
- b) The following documentation must be available inside of the cab, before crane is placed into service:
 - (1) current monthly inspection
 - (2) Manufacturer's load chart
 - (3) Manufacturer's operating manual.
- c) All cranes must receive regular, thorough, and periodic inspections, in accordance with the manufacturer's recommendations or applicable governing standards. All defects noted during any crane inspection must be corrected, prior to use.
- d) All cranes must be used in accordance with manufacturer guidelines.
- e) Cranes must never be operated in excess of its rated capacity.
- f) Contractors must not use a crane to lift/lower and/or suspend personnel in man baskets or work platforms. Any exception to this rule must be cleared through the Contractor's project manager or superintendent.
- g) All rigging equipment (i.e., slings, softeners, bridles, blocking cables, etc.) must be inspected prior to use and documented monthly.
- h) The General Contractor must ensure that crane and wire rope inspections are performed and that daily, monthly, quarterly, and annual logs are maintained. Crane Inspection Record is included as <u>EXHIBIT K</u> (equivalent form(s) may be utilized).
- i) All rigging must be kept in good condition, working load limit capacities properly identified, and properly stored when not in use.
- j) All Rigging work must only be done by qualified riggers.
- k) Booms and/or suspended loads must not be allowed to pass over playground or other school property when students and/or staff are present in these areas.
- 1) Safety hooks must be used on all operations where loads are being handled.
- m) All suspended loads must be controlled by tag lines of enough length to control the load.
- n) All signal persons must:
 - (1) Receive proper signaling training.
 - (2) Never allow a suspended load to pass over or come within ten (10) feet of power lines.
 - (3) Never allow a suspended load to pass over, nor any individual to pass under, a suspended load.
 - (4) Be in constant view and communication with the crane operator. Constant communications include proper hand signals and/or radio communications.

- (5) Make daily general inspections of the crane prior to use and maintain a log of these inspections. The Operator, or other qualified person may also conduct the daily inspection.
- o) All crane operators must:
 - (1) Be thoroughly trained and must have related experience,
 - (2) Be familiar with safe crane practices and procedures.
 - (3) Have a complete understanding of all manuals, including maintenance and operating instructions provided for the specific crane in use.
 - (4) Have no physical, visual, or mental reactions or impairments that will affect the safe operations of the assigned crane.
- p) The crane operator and crew must not engage in any practice such as cell phone usage during crane operations that could divert their attention.
- q) For all Dallas ISD property that lies within an Airport Control Zone (within 5 miles of any airport) the General Contractor will ensure that the crane's boom lighting, flagging, raising, and lowering comply with FFA rules.
- r) To provide clearance for air traffic, all booms must be below 175 feet above ground level (AGL) during the hours of sunset to sunrise. However, if this is not possible and temporary construction cranes are left up during this time period or utilized in support of construction activities, then all cranes must have lighting in accordance with FFA Advisory Circulation 70/7460-1, "Obstruction Marking and Lighting."

6.33 Crane Operations Safe Plan of Action (SPA)

A Crane Operations Safe Plan of Action (SPA) is a site-specific comprehensive crane lift plan which outlines what methods, procedures, and equipment will be used in its plan. This evaluation and program must be in writing and must be submitted to the Owner's Representative prior to any crane activity. Review and acceptance by the General Contractor Safety Manager is required prior to submission.

- a) Any changes in site conditions that could affect the safe operation of the crane must be evaluated and included within the SPA; this plan must be approved by a qualified person.
- b) General Contractor must coordinate and conduct an on-site Crane Operations SPA prework meeting one week prior to any planned crane activity. The Cover Letter (EXHIBIT K) must be submitted along with a Crane Operations SPA. The safety plan must be evaluated and approved by the General Contractor Safety Manager prior to submission.
- c) Prior to any crane activity, the General Contractor must submit, to the Bond Program Safety Director, or designee:
 - (1) A copy of the crane certification and documentation of the most recent annual inspection prior to crane use.
 - (2) Crane certificate of insurance
 - (3) A copy of the annual crane inspection as well as current maintenance reports.
 - (4) Crane Operator certification
 - (5) Crane Operator medical card

- (6) Crane Location plan that identifies known hazards for underground and overhead crane operations, and where the crane is approved or not approved to operate.
- (7) Any changes in site conditions that could affect the safe operation of the crane; this plan must be approved by a qualified person.
- (8) Rigger and/or Signal Person's training records
- (9) Job Hazard Analysis
- d) To hold a Crane Operations SPA pre-work meeting, at a minimum, the following parties must be present:
 - (1) Sub-Contractor Competent Person
 - (2) General Contractor Safety Representative
 - (3) Owner's Representative [Optional]

6.34 Steel Erection

Structural stability must be maintained at all times during the steel erection process. The General Contractor must ensure the establishment of a written Steel Erection Procedure that adheres to OSHA, Federal, State, and local regulations. A copy of this procedure must be submitted to the Owner's Representative, made part of the Contractor's Construction Project Safety Manual as <u>EXHIBIT L</u>, and maintained on-site.

6.34.1 Site Layout and Construction Sequence

General Contractors must provide erectors with a site layout/map which includes, but is not limited to:

- (1) Pre-planned routes for hoisting loads
- (2) Pre-planned routes for delivering material, equipment, etc.
- (3) Material staging area(s)
- (4) Known hazards that may affect underground and/or overhead operations.

6.34.2 Structural Steel Assembly

In addition to the items listed in this section, all contractors of any tier must comply with all federal, state, and local requirements, including those in other sections of this safety manual. All contactors must be required to comply with all parts of these requirements based on their scope of work.

- a) Contractors of any tier must not erect steel until receiving a written certification of proper curing of the concrete in the footings, piers, walls, etc. is of sufficient strength to support the loads imposed during steel erection.
- b) Prior to the erection of any column, the General Contractor must provide written notification to the steel erector if there has been any repair, replacement, or modification of the anchor rods (anchor bolts) of that column.

6.34.3 Hoisting and Rigging

Contractors of any tier must use qualified riggers during hoisting activities for assembly and disassembly work (29 CFR 1926.1404(r)(1)). Additionally, qualified riggers are required

whenever workers are within the fall zone and hooking, unhooking, or guiding a load, or doing the initial connection of a load to a component or structure (29 CFR 1926.1425(c)).

- a) All Rigging and Signal person(s) must be properly trained in accordance with all Federal, State, and local regulations.
- b) Free rigging is the practice of attaching ropes, chains, or slings to a telehandler/forklift tine(s) for the purpose of lifting and moving. Free rigging must not be permitted without the telehandler/forklift manufacturer's letter of approval.
- c) Exposure to overhead loads must be minimized through pre-planned routes for hoisting loads and/or other contracting personnel who may be transiting the jobsite.
- d) Any procedure(s) for multiple rigging lifts (Christmas-treeing) is prohibited.
- e) General Contractors must pre-plan site-specific work practices regarding safely landing loads while maintaining proper protection from fall hazards.

6.34.4 Column Anchorage and Double Connections

Columns must be set on level finished floors, pre-grouted leveling plates, leveling nuts, or shim packs which are adequate to transfer the construction loads.

- a) All columns must be evaluated by a competent person to determine whether guying or bracing is needed; if guying or bracing is needed, it must be installed.
- b) All columns must be anchored by a minimum of 4 anchor rods (anchor bolts).
- c) Anchor rods (anchor bolts) must not be repaired, replaced, or field-modified without the approval of the project structural engineer of record.
- d) When two structural members on opposite sides of a column web, or a beam web over a column, are connected sharing common connection holes, at least one bolt with its wrench-tight nut must remain connected to the first member unless a shop-attached or field-attached seat or equivalent connection device is supplied with the member to secure the first member and prevent the column from being displaced (See Appendix H of 29 CFR 1926 subpart R for examples of equivalent connection devices).

6.34.5 Falling Object Protection

- a) All materials, equipment, and tools, which are not in use while aloft, must be secured against accidental displacement.
- b) The General Contractor must bar any construction processes below steel erection activities unless overhead protection for the employees below is provided.

6.34.6 Fall Protection

Each employee engaged in any steel erection activity who is on a walking/working surface with an unprotected side or edge more than six (6) feet above a lower level must be protected from fall hazards by guardrail systems, safety net systems, personal fall arrest systems, positioning device systems, or fall restraint systems.

a) A safety railing of 1/4-inch wire rope, or equal, must be installed approximately 42 inches high, around the periphery of a temporary planked or metal deck floor during structural steel erection. This wire rope must be flagged every six (6) feet.

b) Wire rope should be securely fastened yet allow for temporary removal in order to land materials.

6.34.7 Controlled Decking Zone (CDZ)

A controlled decking zone may be established in the area of the structure over fifteen (15) feet and up to thirty (30) feet above a lower level where metal decking is initially being installed and forms the leading edge of a work area. In each CDZ, the following must apply:

- a) Each employee working at the leading edge within a CDZ must be protected from fall hazards six (6) feet or greater above a lower level.
- b) Access to a CDZ must be limited to only those employees engaged in leading edge work.
- c) The boundaries of a CDZ must be designated and clearly marked. The CDZ must not be more than ninety (90) feet wide and ninety (90) feet deep from any leading edge. The CDZ must be marked by the use of control lines or the equivalent. (Examples of acceptable procedures for demarcating CDZ's can be found in Appendix D of 29 CRF 1926 subpart R).
- d) Each employee working in a CDZ must have completed CDZ training in accordance with 29 CFR 1926.761.
- e) Unsecured decking in a CDZ must not exceed three thousand (3,000) square feet.
- f) Safety deck attachments must be performed in the CDZ from the leading edge back to the control line and must have at least two attachments for each metal decking panel.
- g) Final deck attachments and installation of shear connectors must not be performed in the CDZ.

6.34.8 Training

Each employee engaged in any steel erection activity who is on a walking/working surface with an unprotected side or edge more than six (6) feet above a lower level must be trained and instructed, but not limited to, the following areas:

- a) Have completed connector training in accordance with 29 CFR 1926.761
- b) Each employee working in a CDZ must have completed CDZ training in accordance with 29 CFR 1926.761.
- c) The recognition and identification of fall hazards in the work area.
- d) The use and operation of protective systems, such as guardrail systems, personal fallarrest systems, positioning-device systems, fall- restraint systems, safety-net systems, and other protection to be used.
- e) The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used.
- f) Procedures for protection from falls to lower levels and into holes and openings in walking/working surfaces and walls.

6.35 Steel Erection Safe Plan of Action (SPA)

A Steel Erection Safe Plan of Action (SPA) is a comprehensive site-specific steel erection plan which outlines key erection elements such as methods, procedures, and equipment that will be utilized during all phases of the steel erection operation. This evaluation and plan must be in writing and must be submitted to the Owner's Representative prior to any steel erection activity. Review and acceptance by the General Contractor Safety Manager is required prior to submission, the start of work, or any employee engagement with this activity.

- a) General Contractors must coordinate and conduct an on-site Steel Erection SPA pre-work meeting one week prior to any engagement of steel erection activities. The Cover Letter (EXHIBIT L) must be submitted along with a Steel Erection SPA. The safety plan must be evaluated and approved by the General Contractor Safety Manager prior to submission.
- b) The Steel Erection SPA pre-meeting agenda must include discussion about the scope and review of any existing and/or potential hazards as it relates to the planned scope of work.
- c) To hold a Steel Erection SPA pre-work meeting, at a minimum, the following parties must be present:
 - (1) Sub-Contractor Competent Person
 - (2) General Contractor Safety Representative
 - (3) Owner's Representative [Optional]

6.36 Aerial Crane Operations

The General Contractor must ensure the establishment of a written Aerial Crane Procedure that adheres to all applicable regulations of the Federal Aviation Administration (FAA) 14 CFR – Part 77, and the Occupational Safety and Health Administration (OSHA) 29 CFR 1926.551 – Subpart N, in addition to applicable State and local regulations. A copy of this procedure must be submitted to the Owner's Representative, made part of the Contractor's Construction Project Safety Manual as <u>EXHIBIT M</u>, and maintained on-site.

Every precaution must be taken to provide protection against flying objects in the rotor downwash. All loose objects within one hundred (100) feet of any areas susceptible to rotor downwash must be secured or removed prior to any Aerial Crane Lift.

- a) Aerial Crane Operations must not be performed during regular school hours or near occupied areas.
- b) No unauthorized person(s) must be allowed to approach within fifty (50) feet of the helicopter when the rotor blades are turning.
- c) Open flames, hot work, or any other spark producing activities must not be permitted in an area that could result in fires being spread by the rotor downwash.
- d) Ground personnel must be properly trained when required for safe helicopter loading and unloading operations.
- e) Constant reliable communication must be provided between the pilot, and a designated employee of the ground crew who acts as a signalman during the period of loading and unloading. This signalman must be distinctly recognizable from other ground personnel.

- f) When visibility is reduced by dust or other conditions, ground personnel must exercise special caution to keep clear of main and stabilizing rotors. Precautions must also be taken by the General Contractor to eliminate any conditions of reduced visibility.
- g) Personal protective equipment for ground persons receiving the load shall consist of complete eye protection and hard hats secured by chinstraps.
- h) The helicopter operator is responsible for size, weight, and manner in which loads are connected to the helicopter. If, for any reason, the helicopter operator believes the lift cannot be made safely, the lift shall not be made. The weight of any external load must not exceed the manufacturer's rating.
- i) When Contractors are required to perform work under hovering craft, a safe means of access must be provided for workers to reach the hoist line hook and engage or disengage cargo slings. Employees must not perform work under hovering craft except when necessary to hook or unhook loads.
- j) Static charge on the suspended load shall be dissipated with a grounding device before ground personnel touch the suspended load, or protective rubber gloves must be worn by all ground personnel touching the suspended load.
- k) Loads shall be properly slung, and tag lines shall be of a length that will not cause them to be drawn up into rotors.
- Electrically operated cargo hooks must have the electrical activating device designed and installed to prevent inadvertent operation. In addition, these cargo hooks must be equipped with an emergency mechanical control for releasing the load. The hooks must be tested prior to each day's operation to determine that the release functions properly, both electrically and mechanically.

6.37 Aerial Crane Operations Safe Plan of Action (SPA)

An Aerial Crane Operations Safe Plan of Action (SPA) is a site-specific comprehensive aerial lift plan which outlines what methods, procedures, and equipment will be used in its plan. This evaluation and program must be in writing and must be submitted to the Owner's Representative prior to any aerial crane activity. Review and acceptance by the General Contractor Safety Manager is required prior to submission.

- a) Any changes in site conditions that could affect the safe operation of the aerial lift must be evaluated and included within the SPA. This plan must be approved by a qualified person.
- b) General Contractor must coordinate and conduct an on-site Aerial Crane Operations SPA pre-work meeting one week prior to any planned crane activity. The Cover Letter (EXHIBIT M) must be submitted along with a Crane Operations SPA. The safety plan must be evaluated and approved by the General Contractor Safety Manager prior to submission.
- c) This briefing shall set forth the plan of operation for the pilot and ground personnel. A copy of this procedure must be made part of the Contractor's Construction Project Safety Manual as <u>EXHIBIT M</u> and maintained on-site.

- d) Prior to any aerial crane activity, the General Contractor must submit, to the Dallas ISD PM and Bond Program Safety Manager the following minimum elements of an Aerial Crane Operations SPA:
 - (1) Lift Plan (scope of work, travel path, ground level and ariel hazards or obstructions)
 - (2) Site Set-Up (map of staging areas, sequence of operation, primary and alternate emergency area locations, and potential drop zones in relation to occupied areas)
 - (3) Material to be lifted (method of attachment, rigging to be used, configuration, and load capacities)
 - (4) Roles and responsibilities (communication methods for ground crew, roof crew, and operator)
 - (5) Competent Person Designation form (must identify areas of competency along with proof of training)
 - (6) Rigger and signal person training records
 - (7) JHA (include hazard assessment, equipment, and PPE needed to safely perform this task)
 - (8) Emergency Action Plan (including emergency contact information and medical facility)
 - (9) Standard Airworthiness Certificate
 - (10) Congested Area Plan Request to FAA
 - (11) FAA Registry of Aircraft
 - (12) FAA Airman Detail Report
 - (13) Notification of Dallas City Officials
 - (14) Certificate of Aircraft liability insurance (insurance limit must be \$10 million, per contract amount)
 - (15) Evidence of additional insured and waiver of subrogation endorsement
- e) To hold an Aerial Crane Operations SPA pre-work meeting, at a minimum, the following parties must be present:
 - (1) Sub-Contractor Competent Person
 - (2) General Contractor Safety Representative
 - (3) Owner's Representative [Optional]

<u>NOTE</u>: The District's Safety Department must receive acceptance of Certificate of Insurance (COI) from the District's insurer prior to any Aerial Crane Activity.

6.38 Hot Work

All work that includes an open flame, burning, welding, or spark producing of any type must be defined as "hot work" and must require the presence of a fire extinguisher, at least one fire watch, and a Hot Work Permit.

6.38.1 General

In addition to strictly following the provisions of OSHA and NFPA, each Contractor must also comply with the following:

- a) No hot work must be conducted during occupied hours
- b) A Hot Work Permit issued by the Fire Marshal must be Posted within the General Contractor's trailer or on-site officing area.
- c) A Hot Work Permit must be completed for each task using <u>EXHIBIT N</u> or equivalent.
- d) Fire extinguisher(s) used for "Hot Work" must be placed within this immediate vicinity of each task operation and must be of proper size and type for the activity, fully charged, and inspected prior to use. Extinguisher location must be kept clear and accessible at all times.
- e) A fire watch must be present during all hot work operations and remain at the work area 30 minutes after work is completed. All fire watch personnel must be trained in fire extinguisher safety.

6.39 Welding and Cutting

- a) All welding operations must provide appropriate screening measures, erected in advance, to contain the high energy light. Welding operations must not be allowed to present an opportunity for flash burn exposures to the eyes of any workers in the vicinity.
- b) Shielding, or welding curtains must be placed around established work areas to protect other workers from flash and sparks.
- c) Ventilation must be provided to adequately remove harmful fumes and gasses.
- d) The unused stubs of welding electrodes "rod butts" must be collected and placed in proper disposal containers as soon as each one is expended. Whenever an operation is idle, the welding electrode must be removed from stinger/electrode holder.
- e) Workers must receive training on the proper use, inspection, and limitations of all welding and cutting equipment and Personal Protective Equipment, as it pertains to the operation.
- f) Regulators for fuel gas and oxygen cylinders must be inspected before each use and be maintained in good working order.
- g) Anti-flashback arrestors must be properly installed on all cutting torches so that they prevent ignition of any gas sources upstream from the torch.
- h) Acetylene cylinder valve key must be kept with the cylinder at all times. Valve keys must be kept in position while in use.

6.40 Compressed Gas Cylinders

Contractor must store oxygen cylinders separate from fuel gas cylinders. This separation must be either a minimum distance of 20 feet or by a fire resistive wall/partition with a one-half hour fire rating and a minimum of five (5) feet in height. All compressed gas cylinders must be properly secured from movement – in an upright (vertical) position.

- a) All cylinders must be stored in the upright position, especially acetylene. When an acetylene cylinder is stored on its side, the acetylene may separate from the acetone, becoming unstable, and cause an internal explosion.
- b) Valves of the empty cylinders must be in the closed position.
- c) Cylinders must not be moved by tilting and rolling them on their bottom edges.
- d) When not in use, cylinders must have their protective caps in place and be hand tightened.
- e) Workers must be trained in the safe handling, storage and use of compressed gas cylinders.
- f) Workers must be trained in the proper use and handling of fuel gas and O2 cylinders

6.41 Earth Moving Equipment and Powered Industrial Trucks

A Powered Industrial Truck (PIT) is defined by any mobile, power-pulled truck used to carry, push, pull, lift, stack, or tier materials, whether ridden by the operator or controlled by a walking operator.

- a) All earth moving equipment and PIT must be maintained in a safe working condition and must be appropriate and adequate for the intended use. Excavation activities must not be conducted during occupied hours.
- b) Only authorized personnel must operate equipment. Operators of equipment, machinery, vehicles, or PIT must be qualified and properly authorized for the operation involved.
- c) Equipment and PIT operators must perform a pre-shift walk around safety inspection of their equipment, and any conditions that may affect safe operation will be corrected before use.
- d) Equipment must not be operated unless all required safety devices are in place and functioning properly.
- e) Careless, reckless, or otherwise unsafe operation or use of equipment must result in discipline and may constitute grounds for dismissal.
- f) Equipment maintenance is to be performed only by qualified mechanics.
- g) When equipment is serviced or repaired the operator must dismount until the service or repair is completed. Prior to remounting, operators must perform a complete walk-around safety inspection of the equipment.
- h) Before performing any service or repair work, all equipment must:
 - (1) Be stopped and positively secured against movement or operation.
 - (2) locked and tagged out of service, unless it is designed to be serviced while running, following the manufacturer's instructions.

- i) All bi-directional earth moving equipment, PIT, and motor vehicles with an obstructed view to the rear must be equipped with a warning horn and an automatic back-up (reverse) alarm that can be heard above and distinguished from the surrounding noise level.
- j) All off-highway earth moving equipment and trucks such as loaders, dozers, scrapers, motor graders, rock trucks, tractors, rollers, and compactors will be equipped with roll-overprotective structures (ROPS) and seat belts, per OSHA standards.
- k) Seat safety belts, when required by the manufacturer, must be used by all operators of equipment.
- 1) Mobile equipment must not be left unattended unless parked securely to prevent movement, with all ground engaging tools lowered to the ground, brakes set, and the engine off.
- m) Equipment parked at night will be illuminated, barricaded, or otherwise clearly marked where exposed to potential traffic.
- n) Personnel must not be transported or ride on any equipment or vehicles that are not equipped with seats for passengers.
- o) When fueling equipment or vehicles with gasoline or liquefied petroleum gas (LPG) the engine must be shut off.
- p) All equipment and vehicles must be equipped with appropriate fire extinguishers or fire suppression system.
- q) Equipment, tools, and materials hauled on pickups and flatbed trucks must be secured to prevent them from falling onto the road.

6.42 Haul Routes

Haul roads must be designed, constructed, and maintained for safe operation consistent with the type of haulage equipment in use. Standard traffic control signs must be used where necessary.

- a) Elevated roadways must have axle high beams or guards maintained on their outer banks.
- b) Equipment, pickups, and passenger vehicles must be parked well away from the work area to reduce congestion and avoid collision.
- c) Vehicle and equipment speed limit while traversing school property must be a maximum of five (5) miles per hour during school hours and/or when children are present.

6.43 Traffic Control

- a) All General Contractors, Subcontractors, and employees must comply with local city ordinances when work interfaces with traffic of the general public.
- b) Vehicle and equipment speed limit while traversing school property must be a maximum of five (5) miles per hour during school hours and/or when children are present.
- c) All materials and equipment deliveries should be coordinated with General Contractors as to prevent traffic congestion around peak school hours for children being dropped off or picked up from school.

6.44 Environmental and Hygiene

General Contractors and Subcontractors of any tier must comply with all applicable federal, state, and local statutes, laws, rules, regulations, ordinances, codes, and any amendments relating to the environment, hazardous substances or exposure to hazardous substances, including without limitation the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), the Superfund Amendments and Reauthorization Act of 1986 (SARA), the Hazardous Material Transportation Act (HMT A), Resource Conservation and Recovery Act (RCRA), the Toxic Substances Control Act (TSCA), the Clean Water Act (CWA), the Clean Air Act (CAA), the Oil Pollution Act (OPA) and the Safe Drinking Water Act (SDW A).

The General Contractor is responsible for the implementation and management of its Storm Water Pollution Prevention Plan (SWPPP) and SWPPP Oversight as <u>Attachment VI</u> of this manual.

Where necessary, The General Contractor must provide, and the General Contractor's Safety Representatives must be trained and capable of, properly operating industrial hygiene equipment as required by any Federal, State, and local regulations. Tests must be performed as often as necessary to afford protection to employees and the general public.

6.45 Spill Prevention and Response

When utilizing hazardous and non-hazardous substances that could cause a negative impact when released on land, water, and\or the atmosphere, the General Contractor must exercise extreme caution by developing and implementing a site-specific spill prevention and spill response procedure in accordance with OSHA, Federal, State, and local regulations.

No Contractor must omit or discharge any substance into the environment in violation of the Environmental Protection Agency (EPA), OSHA or other regulatory agencies. Where necessary, the General Contractor's Safety Representative must be responsible for all environmental monitoring and testing.

6.46 Portable Relocation

Prior to commencement of work, the Controlling Contractor is responsible for obtaining the Disconnection Form provided by the Moving Contractor for each portable to be relocated. The Controlling Contractor must provide a completed copy of the Disconnection Form along with applicable safety submittal documentation to the Owner's Representative prior any relocation, demolition, or disconnection of portables.

- a) The relocation of portables must be coordinated around peak hours of school traffic, i.e., morning drop off of children and afternoon pick-ups.
- b) All relocation activities (including haul routes) must remain properly separated from occupied areas. Barriers for outdoor areas affected by construction must consist of six (6) foot chain link fencing.
- c) Haul routes must be designed, constructed, and maintained for safe operation consistent with the type of haulage equipment in use. Standard traffic control signs must be used where necessary.

- d) Equipment, pickups, and passenger vehicles must be parked well away from the work area to reduce congestion and avoid collision.
- e) Vehicle and equipment speed limit while traversing school property must be a maximum of five (5) miles per hour during school hours and/or when children are present.
- f) The Moving Contractor and/or General Contractor must field verify the safe relocation of portables from site "A" to site "B" and inspect the safe passage of established haul routes.
- g) portable classrooms and ADA approved ramps, decks, steps, etc. must meet the specifications contained in the RFP, Contract Award Doc, and applicable Federal, State, and local requirements.

<u>NOTE</u>: Contractors are responsible for submitting moving permit applications to the City and are responsible for communication with the city of Dallas to resolve all action items related to the moving permit.

7. INCIDENT NOTIFICATION GUIDELINES

The District's objective is an injury and incident-free project, with a focus on project safety that must not be compromised to achieve any other business objective. The General Contractor must structure an effective and systematic safety management approach that emphasizes **continuous safety process improvement.**

The District recognizes that the General Contractor and Subcontractors may have existing safety management programs with established safety policies, processes, procedures, and work practices. The District will support these where they prove to be as effective and meet the intent and purpose of this Section.

- a) General Contractors and Subcontractors of any tier must instruct all workers to immediately report every incident to their supervisor, even if there is no obvious injury or property damage. Supervisors must immediately notify the General Contractor, who must immediately notify the Owner's Representative of any incident.
- b) The Bond Program Safety Manager and others as directed must be included in the incident notification process. Depending on potential severity of the incident, notifications may be in written and/or verbal form as directed.
- c) Upon request of the Owner's Representative, the General Contractor and/or Subcontractors of any tier must promptly produce and provide copies of any required documents related to project safety or property damage.
- d) Where opportunities for improvement are identified, the General Contractor and Subcontractors of any tier must work collaboratively with the Owner's Representative in making appropriate revisions to progress toward an injury and incident-free workplace.
- e) The General Contractor's Safety Representative must generate a formal incident report using <u>EXHIBIT O</u>, or equivalent company accident report forms, in the manner and time as directed by the Owner's Representative.
- f) The General Contractor's Safety Representative, accompanied by the Owner's Representative, must perform a site inspection immediately following any near miss,

property damage, fire, hazardous chemical spill, or accident involving construction equipment that results in injury to a worker, student, school employee, or visitor to the site.

g) Contractors must review the filed copy of the pre-construction Site-specific Safety Plan and/or Safe Plan of Action (SPA) that was performed prior to commencement of any construction activity.

[Notification Flow Chart is located on the next page]

7.1 DISD Incident/Crisis Notification Flowchart



7.2 Incident Investigations

When an accident or near miss with major potential for a loss occurs, the supervisor of the crew(s) involved must perform an accident investigation. The General Contractor and involved Subcontractors must tailor the magnitude and depth of the investigation effort to correspond to the potential, rather than the actual outcome of the incident.

- a) Investigation team members must include safety personnel, project management, line management, affected workers, and consultants as the circumstances dictate. The Owner's Representatives reserves the right to participate in any incident investigation.
- b) Upon request of the Owner's Representative, the General Contractor and/or Subcontractors of any tier must provide a Root Cause Analysis as outlined in <u>Section 7.4</u> of this manual or its equivalent.
- c) Once a root cause has been identified and recommendations for corrective action have been determined, a procedure may be implemented to prevent a similar incident from occurring again.

7.3 Incident Follow-up Guidelines

All near miss incidents, first Aid injuries, high risk safety inspection observations, and other such incidents must be investigated. The General Contractor's Safety Manager must lead the efforts and follow a structured incident investigation program that emphasizes **continuous safety process improvement.**

The General Contractor and involved Subcontractors must tailor the magnitude and depth of the investigation effort to correspond to the potential, rather than the actual outcome of the incident. The Bond Program Safety Manager and/or designee reserves the right to participate in any incident investigation.

- a) Investigation team members must include, at minimum:
 - (1) General Contractor and Subcontractor Safety Representatives
 - (2) General Contractor and Subcontractor Project Management
 - (3) Designated Competent Person (Front Line Management)
 - (4) Affected workers, and consultants as the circumstances dictate.
- b) The General Contractor must develop a Root Cause Analysis report that summarizes the incident, identifies the underlying contributing factor(s), determines which process element(s) failed to control the incident, determines which process element(s) will be implemented or improved, and the time needed to take sustainable corrective action(s).
- c) The General Contractor must conduct and submit an incident investigation report that supports the Root Cause Analysis in the manner and time as directed by the Owner's Representative. The Bond Program Safety Manager and/or designee reserves the right to determine the acceptability of the findings.
- d) The General Contractor must prepare and submit reports that will allow the Bond Program Safety Director, designee, and Subcontractors to understand findings and any planned changes to the operating procedure(s) based on those findings.

7.4 Contributing Factors to Consider

The Root Cause Analysis investigation should thoroughly address the following:

- (1) Was the incident controlled and limited so that all workers and the project were made safe post-incident? If so, what was done?
- (2) Explain what happened (facts and circumstances) that resulted in the incident.
- (3) Are there other work areas or tasks where this type of incident could occur again?
- (4) What processes were in place to prevent the incident? (Identify processes that failed)
- (5) What processes could've been implemented or improved that might have prevented this incident?
- (6) What processes will be improved or implemented to reduce risk of recurrence?

8. CONSTRUCTION SAFETY FOR STUDENTS

8.1 Introduction

The aim of Program Managers, General Contractors, and Subcontractors of any tier is to carry out their work activities in a safe and efficient manner to complete each project in a timely manner.

The safety of the children is of the utmost importance, and every effort must be made to see to it that in those projects that are concurrent with school activities, each job done be evaluated for child safety.

Our children are totally dependent on us to create a safe place for them to learn, study and play. Any work related or work generated condition deemed to be unsafe must be corrected immediately, because children do not see the world as we do. Children are often attracted by what is new and alien to them and will try to gain access to what may seem to be great places to play and have fun.

Therefore, it is the responsibility of everyone to control the potentially dangerous areas that exist on any construction project. All, regardless of the trades involved, must make this effort. In other words, the responsibilities of each person working in occupied areas become that much larger or expanded due to child safety conditions. Remember, it is for the children that construction is underway.

8.2 Separation of Construction Activities

Should any part of an occupied and operational school facility be shut down for construction work, then the General Contractor must erect appropriate construction barricades to completely eliminate access for non-construction personnel to the work area.

General Contractors must ensure safety inspections are conducted in all work areas regularly and periodically throughout the work shift to ensure proper elimination, mitigation, and/or safeguarding of hazards which may result as contributing factors that may lead to any exposure, injury, or property damage. **All unsafe conditions must be corrected immediately.**

- a) Construction work areas must be kept segregated from school operations, staff, and students at all times. Separation may include, but is not limited to fencing, privacy fencing, bulkheads, and coordination of planned construction activities.
- b) Barriers for indoor construction must be made of 3/4" plywood, and must extend from floor to ceiling, wall to wall. The temporary barrier must have a door that can be locked. This barrier will remain until work in the specified area is completely finished. Proper signage should be displayed near the temporary barrier, according to safety regulations.
- c) Barriers for outdoor areas affected by construction must consist of six (6) foot chain link fencing.
- d) Doors and/or gates must remain secured/closed when they open directly into occupied areas. A security service may be utilized if necessary.
- e) The requirements of NFPA 101, Life Safety Code for Occupied Schools must be maintained during construction. Separate atmospheres must be maintained between the school areas in full occupancy and the areas under construction. Construction activities must not interfere or interrupt the normal teaching schedules.
- f) Means of egress for the school occupancy must be maintained free of obstructions, clean and properly lighted. While this may be a function of the school custodian, no construction related operations must be allowed to cause an impairment of the normal means of egress.
- g) All components and/or combinations of existing life safety systems (smoke detection, fire alarms, fire suppression, communication, alarm systems, intrusion control, etc.) must be maintained during construction.
- h) School entrances and exits must not be blocked until school officials have been notified and re-routing has been established.
- i) Appropriate warning and directional signage must be maintained at all times.
- j) Dust and noise must be properly controlled to ensure the school maintains its teaching schedules without interruptions. General Contractors must respond to complaints and immediately establish control measures.
- k) All deliveries (heavy equipment, tools, materials, etc.) must be coordinated around peak hours of school traffic, i.e., morning drop off of children and afternoon pick-ups.
- 1) Electrical box panels, even during breaks, must not be left exposed. Exposed boxes must be physically covered with the panel cover, and areas must be protected with barricades if necessary.
- m) Construction debris and/or material must not be left in areas occupied by students and staff.
- n) All construction debris must be removed before the end of each work shift and must not be left overnight.
- o) Nails and screws must not be left protruding from lumber or other materials. All nails and screws must be removed or bent over.
- p) Compressed gas cylinders must never be left unattended or overnight in occupied areas. Cylinders must remain secured in upright position; caps on and regulators disconnected when not in use.
- q) Tools and equipment must not be left unattended.

9. CRISIS COMMUNICATION

A crisis is an emergency event that usually requires police, fire, or EMS response and could attract media or public attention. A crisis on a construction site might involve a fire, hazardous chemical spill, or accident involving construction equipment that results in injury to a worker, student, school employee, or visitor to the site.

- a) The General Contractor must instruct all construction employees not to discuss the incident with reporters. All media inquiries must be referred to an official Dallas ISD spokesperson.
- b) The Dallas ISD spokesperson must be the only person authorized to release live or prerecorded video or written statements to the media. All Contractors of any tier must cooperate with the Dallas ISD spokesperson for all media arrangements as directed.
- c) Should a crisis, serious emergency, or incident occur (requiring the presence of an ambulance, Fire Department or Police) the Contractor must immediately implement the Crisis Communication Guidelines and contact by phone the Bond Program Safety Director, **including nights, weekends, and holidays.**

9.1 Suggested Steps for Crisis Situations

- (1) Evaluate the situation and extent of damage or injuries.
- (2) If students are present, immediately contact the principal or school office.
- (3) Call **9-1-1** if necessary. Be prepared to give the dispatcher details of the accident and injuries, the exact address and where emergency crews should enter the site.
- (4) Assign someone to meet emergency crews at the gate.
- (5) Call Dallas ISD Communications at (972) 925-3917. Be prepared to provide as much information as possible.
- (6) Call Dallas ISD Police at (214) 932-5627.
- (7) Call Construction Services at (972) 925-7200.
- (8) Call the Safety Manager at (214) 435-2204.
- (9) Do not speak to reporters or photographers. Refer them to Dallas ISD Communications.

9.2 EMERGENCY TELEPHONE NUMBERS

Dallas ISD Police	DISD Police	(214) 932-5627
District Spokesperson	Robyn Harris	(972) 925-3917
DISD Bond Safety Manager	Alvaro Meza	(214) 435-2204

9.3 Emergency Planning

On a regular basis, the General Contractor must review and update, when necessary, its Emergency Procedures for maximum effectiveness.

The updated procedures must be submitted to the Owner's Representative for review in accordance with the safety guidelines outlined in this manual and all applicable OSHA, Federal, State, and local regulations and maintained on-site.

The following provisions must be included in the emergency procedure:

- a) The highest-ranking supervisor automatically becomes responsible for handling any emergency that occurs during working hours and may call upon the assistance of any available employee.
- b) Following an emergency, ranking personnel must:
 - (1) Secure the area as expediently as possible.
 - (2) Provide access and an account of the emergency to authorized representatives of the District and specific government agencies. Questions from the media must be referred to the Dallas ISD spokesperson.
- c) To ensure prompt emergency services, the General Contractor must:
 - (1) Determine who is responsible for making emergency calls (preferably the highest-ranking supervisor present).
 - (2) Conspicuously post a list of emergency phone numbers, along with information to be transmitted.

10. CONTRACTOR SAFETY AUDITS

10.1 Purpose

The effectiveness of this program depends upon the active participation and cooperation of all Engineers, Project Managers, Inspectors, Supervisors and General Contractors, their employees, and Subcontractors. The primary goals of this program are to increase safety awareness, raise safety standards in the work environment, provide incentives to make the workplace safer, and increase management involvement in the safety process.

General Contractors must ensure safety inspections are conducted in all work areas regularly and periodically throughout the work shift to ensure proper elimination, mitigation, and/or safeguarding of hazards which may result as contributing factors that may lead to any exposure, injury, or property damage. **All unsafe conditions must be corrected immediately.**

10.2 Jobsite Safety Inspections

- a) The General Contractor must ensure that its Safety Representative conducts inspections of the project as needed (including storage areas, office areas, barriers, separation of activities, work areas, etc.) to ensure compliance with the District and OSHA requirements.
- b) Contractors may utilize the Construction Safety Inspection Checklist <u>EXHIBIT P</u>, or its equivalent. Safety deficiencies that are noted during the inspection must be recorded on

the form and those deficient items must be communicated to his/her project manager/superintendent in a timely manner.

- c) The project manager and/or superintendent must be responsible for implementing corrective action.
- d) The General Contractor's Safety Representative will follow up and note the status of each safety deficiency until the deficiency has been abated, but until abatement takes place, each previously noted deficiency should be recorded during each subsequent site inspection.
- e) In addition to performing jobsite safety inspections, the General Contractor's Safety Representative must cooperate with designated District Representatives who conduct jobsite inspections (i.e., Insurance Carrier Loss Control personnel).

10.3 Inspections by Regulatory Agencies

The General Contractor must immediately notify the Owner's Representative of the arrival of any representative of a Regulatory Agency (OSHA Compliance Officer, TCEQ Representative, Law Enforcement Officer, etc.), and provide the Owner's Representative with a copy of any published findings or citations issued to any employer and must ensure that statutory posting requirements are met. The General Contractor must provide the Owner's Representative with a copy of any employer's response to the same findings or citations. No Contractor of any tier must prohibit the entry of an OSHA Compliance Officer onto Dallas ISD property.

11. GREENFIELD PROJECTS

<u>Greenfield Project</u> must refer to as any DISD property that does not have students and/or Staff present during the duration of the Project. If, during the project, staff or students are present or any District/school operation is active, it is not considered a Greenfield job site.

<u>Property</u> must refer to all land owned by the District, to all property thereon; buildings, structures, facilities, platforms, fixtures, tunnels, installations, and to all project vehicles, stationary or mobile equipment, whether owned or leased. This definition may also include other work locations while in the scope and course of employment on the District's Construction Projects.

<u>Worker</u> must refer to any employee or agent included as example, but not by way of limitation, persons providing services on the project including all persons or entities performing all or part of the services the General Contractor has undertaken to perform on the project regardless of whether that person has employees. This includes, without limitation, independent contractors, Subcontractors, owner-operators, employees of any such entity, or employees of any entity that furnishes persons to provide services on the project.

11.1 Greenfield Shutdown Guidelines

Prior to conducting any type of permanent or temporary shutdown, the General Contractor is responsible for completing the Greenfield Utility Authorization Request Guidelines as outlined in <u>Attachment VII</u>, along with the applicable safety submittal requirements outlined in <u>section</u> <u>6.15</u> of this manual.

11.1.1 Permanent Utility Shutdown Guidelines

- (1) **10-Day Notice of Shutdown** The General Contractor must provide Dallas ISD with notification of power or other utility shutdown no less than ten (10) calendar days in advance of shutdown.
- (2) The General Contractor must select "Permanent" on the top right portion of the Shutdown Authorization Form (<u>EXHIBIT I</u>) prior to submitting for approval (See <u>Attachment VII</u> for reference).
- (3) The General Contractor is responsible for providing power for the duration of the project.
- (4) Once the project reaches substantial completion, the General Contractor and PMF representative must provide the Dallas ISD Sustainability Department with a copy of the General Contractor's utility bills for transfer of the utility service to Dallas ISD. Should Contractors have questions regarding this process, please reach out to the Dallas ISD Sustainability Department via email at: <u>sg9453@dallasisd.org</u>

NOTE: Before demolishing a portable and/or building, all meter numbers must be provided to the DISD sustainability department to close the account and have meters removed through the Owner provider. It is important <u>ALL</u> Utility Accounts are closed through sustainability to prevent the General Contractor from reimbursing the District. DISD is not responsible for providing General Contractors with utilities at Greenfield Project locations.

11.2 Greenfield Badging

Personnel who are issued a Greenfield Job Site Identification Badge are authorized to work on Greenfield Project **Sites until seven (7) days prior to substantial completion of the project or project site commencing operations** (no longer a Greenfield Project Site), whichever comes first. All other requirements for Non-Greenfield Project Sites (sites where district operations are on-going, or students/staff present) remain in effect.

- a) General Contractors must issue/provide all workers with a Greenfield Identification Badge, along with a site-specific safety orientation prior to conducting any construction activity.
- b) General Contractors must issue identification badges, at their own expense, for all workers on DISD Greenfield Project Sites.
- c) Workers must wear the General Contractor issued identification badge at all times while on DISD Greenfield Project Sites.
- d) Greenfield Project Site Identification Badge Requirements: Greenfield Identification Badges issued by the General Contractor must be issued by Dallas ISD's approved thirdparty badging vendor. Badges must contain the following information:
 - (1) The issuing/authorizing General Contractor's company logo in lieu of the DISD logo
 - (2) The issuing/authorizing General Contractor's company name

- (3) The authorized Subcontractor or Vendor's company name
- (4) The name of the specific project site authorized to work at
- (5) A photograph and name of the authorized employee receiving the badge
- (6) Badges must be labeled "Greenfield"

12. UNMANNED AIRCRAFT SYSTEM (DRONE) POLICY

The purpose of this Unmanned Aircraft System (UAS) Policy is to establish minimum standards for the safe use and operation of UAS and Small Unmanned Aircraft Systems (SUAS) on any Dallas ISD Bond Projects.

This policy requires that all UAS operations are performed in a manner that mitigates risks to safety, security, and privacy, and ensures compliance with the Federal Aviation Administration (FAA), 14 CFR Part 107 (for commercial purposes) and all applicable laws.

Contractors of any tier that will operate a UAS at a Dallas ISD Project must receive approval in advance in accordance with this Policy.

12.1 Operating Requirements

This Policy sets the minimum requirements for operating UAS. The requirements below must be implemented by the General Contractor, through their respective designated Project Manager. Minimum Requirements for UAS Operations and Operator:

- a) Operations of UAS must not be conducted during occupied hours or extracurricular activities.
- b) Operators of any UAS must hold a current Remote Pilot Certification.
- c) Unmanned Aircraft must be FAA registered.
- d) Certificate of Authorization must be in place and all requirements followed. The General Contractor must provide UAS / Drone liability coverage either through endorsement to its General Liability policy or a separate Aircraft Liability policy. The policy must name Dallas ISD as an Additional Insured and provide a waiver of subrogation in favor of Dallas ISD.

12.2 Pre-Operation Procedure

- (1) General Contractor must submit a request to the Project Manager and DISD Safety Department **48 hours** prior to fly-through.
- (2) Project Manager and DISD Safety Department may accept or reject this request.
- (3) The Project Manager must verify with school admin that no activities will be taking place during fly-through.
- (4) The Project Manager must notify Dallas ISD Police dispatch and school principal of UAS fly-through.

EXHIBITS

POLICY STATEMENT

It is the Dallas ISD's policy that, prior to work, Contractors are required to submit for review, an acceptable Site-Specific Safety Plan that includes safe and health work practices. The Owner's Representative will evaluate the plan to see that it meets the safety requirements for the Project's scope of work.

It is critical that contractors understand the importance of developing an effectively functioning Site-Specific Safety Plan that is pro-active and addresses the exposures to their employees for the particular work to be done. This should be addressed extensively in the Site-Specific Safety Plan.

The Site-Specific Safety Plan must provide guidelines to implement an accident prevention program on Dallas ISD projects, and fully describes the Contractor's commitments for meeting its obligations to provide safe and healthful working conditions for its employees.

This Document is intended to provide a working, uniform minimal level of program guidelines to assist or provide direction to the Contractors. This Document is not intended to replace the need for each Contractor of any tier to establish and maintain a proper Illness and Injury Prevention Program as required by the Department of Labor, Occupational Safety and Health Act (29 CFR 1926 and 29 CFR 1910) and the State of Texas.

EXHIBITS:

- <u>EXHIBIT A Campus Readiness Form</u>
- <u>EXHIBIT B Job Hazard Analysis (JHA)</u>
- <u>EXHIBIT C Demolition SPA Cover Letter</u>
- <u>EXHIBIT D Confined Space SPA Cover Letter</u>
- <u>EXHIBIT E Trenching and Excavation SPA Cover Letter</u>
- <u>EXHIBIT F Pier Drilling SPA Cover Letter</u>
- <u>EXHIBIT G Utility Shutdown SPA Cover Letter</u>
- EXHIBIT H Electrical Shutdown SPA Cover Letter
- <u>EXHIBIT I Shutdown Authorization Form</u>
- <u>EXHIBIT J Elevated Work SPA Cover Letter</u>
- <u>EXHIBIT K Crane Operation SPA Cover Letter</u>
- <u>EXHIBIT L Steel Erection SPA Cover Letter</u>
- <u>EXHIBIT M Aerial Crane Operation SPA Cover Letter</u>
- <u>EXHIBIT N Hot Work Permit</u>
- EXHIBIT O Incident Investigation Report
- <u>EXHIBIT P Safety Inspection Checklist</u>
- <u>EXHIBIT Q Contractor Acknowledgement Statement</u>

EXHIBIT A – Campus Readiness Form

A completed copy of this form, along with **photographs of each area** must be provided to the Owner's Representative one (1) working day prior to the return of staff and students to ensure sustainability of proper separation of all work areas and conditions affected by all construction activities.

 General Contractor:
 Project & ORG Number:

 Person in Charge:
 Date and Time of Completion:

Column: $\mathbf{A} = Adequate$

Column: \mathbf{B} = Inadequate

Column: **C** = Not Applicable

Focused Areas	A	В	C
Appropriate Barricades to prevent non-construction personnel from entering work areas.			
Proper signage displayed near the temporary barricades.			
Access to school facility clean, orderly, and safe, e.g., sidewalks, building entrances, lobbies, corridors, aisles, stairways, etc.			
Critical systems functional, e.g., life safety systems, air conditioning systems, water systems, electrical systems, etc.			
Laydown and Staging areas neat and orderly.			
Campus EAP not impacted by construction activities, e.g., travel ways, access, emergency exits, and egress points, maintained clear of obstructions.			
Proper Traffic Control with work that interfaces with traffic or public			
Trash Dumpsters maintained			
Excavations, Trenches properly barricaded			
All floor holes and openings into which persons can accidentally walk or fall through are guarded by a physical barrier or cover, secured, and labeled.			
Heavy Equipment inside a fenced area and properly secured to prevent unauthorized access.			
Hydraulic Booms and/or Cranes not suspended over playgrounds or occupied areas.			
Construction work areas are kept segregated from school operations, staff, and students			
Nails, screws, and rebar not protruding from lumber or other materials in occupied areas.			
Means of egress for the school occupancy is maintained, free of obstructions, clean, and properly illuminated.			
Remarks:			

EXHIBIT B – Job Hazard Analysis (JHA)

Project Name:	Contractor Name:
Date:	Competent Person Name:
Scope of work to be Performed:	

EMERGENCY CONTACT LIST ASSOCIATED WITH THIS ACTIVITY				
Name	<u>Title</u> Phone Number			
1.	1.	1.		
2.	2.	2.		
3.	3.	3.		

STEPS OF THE ACTIVITY	POTENTIAL HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS
1.		
2		
2.		
3.		
4.		

2023 Revision

STEPS OF THIS ACTIVITY	POTENTIAL HAZARDS	ACTIONS TO ELIMINATE OR MINIMIZE HAZARDS
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		

Poten	tial Fall Hazards		Potential Struck-By Hazards			
1.			1.			
2.			2.			
3.			3.			
4.			4.			
Potential	Electrical Hazards		Pote	ntial (Caug	ht In-between Hazards
1.			1.			
2.			2.			
3.			3.			
4.			4.			
5.		1.D	5.			
_	Kequi	red Perso	onal Protected Equipr	nent		(ist Other Protective Equipment (DDE)
Hard Hat	Fall Protection	L	Welding Hood			List Other Protective Equipment (PPE)
Gloves	Life Vest	[Welding Leathers		1.	
Respirator	Hearing Protection	۵	Welding Gloves		2.	
Safety Boots	Face Shield	[Safety Vest		3.	
Rubber Boots	Cutting Goggles	[High Vis Pants		4.	
Safety Toed Boots	Safety Glasses	[Blasting Hood		5.	
Tyvek Suits	Safety Goggles		Other (if checked list	PPE in	the c	olumn spaces above)
	ŀ	Required	Equipment and Tools			
Telehandler	Concrete Saw	🗖 we	lding Machine			Other Equipment & Tooling
Crane	Concrete Bucket	🗖 An	gle Grinder	1.		
	I addar		DA Filtared Teels	2.		
Scissor Lift			PA Fillered Tools	3.		
Boom Lift	Generator		TO System	4.		
Scoffolding System	Hand Tools	GF GF	CI	5.		
	Powder Actuated		tting Torch	6.		
Excavator	4-Gas Meter	O th	ner (list on right side)	7.		
Required Tr	affic Control Equipment			 T∃tilit	ties I	ocated / Marked
	Pilot Car		Gas			Overhead
Barrier Rail				l		Sewer/Water
Trench Plates	Speed Limit		Fiber		1	Felecommunications
Flagger Station	6' Fencing		Irrigation	Ī		Other Utilities Located:
	C C			_		

PERSONNEL PARTICIPATING IN THIS ACTIVITY				
Name (Printed)	Signature	<u>Company</u>		
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

EXHIBIT C – Demolition SPA Cover Letter

The following Demolition requirements have been established for the General Contractor's Safety Manager. The General Contractor's Safety Manager must ensure and approve that its Subcontractor's SPA documentation meet all Federal, State, and local regulations and the requirements outlined in this manual prior to submitting for review.

The General Contractor's Safety Manager must submit this Cover Letter, along with the criteria listed below, to the Owner's Representative 5-7 days of any planned critical phases of work. **Demolition** activities must not be performed during regular school hours or near occupied areas.

To hold an on-site Demolition SPA pre-work meeting, at a minimum, the following parties must be present:

- ✓ Subcontractor Competent Person
- ✓ General Contractor Safety Representative
- ✓ Owner's Representative [Optional]

Demolition SPA must include but is not limited to the following:

- □ Scope of Work (describe methods, safe working procedures, and any critical systems affected by this operation. Critical systems include life safety systems, security systems, etc.)
- □ Make Safe (confirm if asbestos, lead, and/or other hazardous materials are present within the immediate work areas, provide LOTO procedure, and engineering survey)
- □ Asbestos Awareness Training Records (for all crewmembers performing this task)
- Competent Person Letter of Designation (include areas of competency and signatures)
- Competent Person Training Documentation (OSHA 10-hour and First Aid/CPR)
- □ Silica Exposure Prevention Plan
- □ Existing Utilities (describe safe working practices associated with any known utilities that may be affected by demolition activities)
- □ Site Map (identifying areas to be affected by demolition)
- Emergency Action Plan (including emergency contact information and medical facility)
- □ JHA (include hazard assessment, equipment, and PPE needed to safely perform this task)

<u>Note:</u> This Document is **not** intended to replace the need for each Contractor to establish and maintain a proper Illness and Injury Prevention Program as required by the Department of Labor, Occupational Safety and Health Act (29 CFR 1926 and 29 CFR 1910) and the State of Texas.

EXHIBIT D – Confined Space SPA Cover Letter

The following Confined Space Entry requirements have been established for the General Contractor's Safety Manager. The General Contractor's Safety Manager must ensure and approve that its Subcontractor's SPA documentation meet all Federal, State, and local regulations and the requirements outlined in this manual prior to submitting for review.

The General Contractor's Safety Manager must submit this Cover Letter, along with the criteria listed below, to the Owner's Representative 5-7 days of any planned critical phases of work.

To hold an on-site Confined Space SPA pre-work meeting, at a minimum, the following parties must be present:

- ✓ Subcontractor Competent Person
- ✓ General Contractor Safety Representative
- ✓ Owner's Representative [Optional]

Campus Name and ORG Number:
Subcontractor Name and Competent Person:
General Contractor Name and Site-Superintendent:
General Contractor Safety Manager Signature of Approval:
Anticipated Entry Date:

Confined Space SPA must include but is not limited to the following:

- □ Scope of Work (describe methods, operating procedures, and affected work areas)
- □ Confined Space Entry Procedure (describe atmospheric testing/monitoring methods, ventilation, communication, and make safe procedures to be taken prior to entry)
- □ Site Map (identifying entry points, emergency egress locations, and work areas affected by this operation)
- □ Confined Space Training Records (for all crewmembers performing this task)
- □ Competent Person Letter of Designation (include areas of competency)
- Competent Person Training Documentation (OSHA 10-hour and First Aid/CPR)
- □ Emergency Action Plan (describe emergency actions to be taken should a worker need rescue, first aid, medical treatment, or emergency contact information)
- □ JHA (include hazard assessment, equipment, and PPE needed to safely perform this task)

<u>Note:</u> This Document is **not** intended to replace the need for each Contractor to establish and maintain a proper Illness and Injury Prevention Program as required by the Department of Labor, Occupational Safety and Health Act (29 CFR 1926 and 29 CFR 1910) and the State of Texas.

EXHIBIT E – Trenching and Excavation SPA Cover Letter

The following Trenching and Excavation SPA pre-meeting requirements have been established for the General Contractor's Safety Manager. The General Contractor's Safety Manager must ensure and approve that its Subcontractor's SPA documentation meet all Federal, State, and local regulations and the requirements outlined in this manual prior to submitting for review.

The General Contractor's Safety Manager must submit this Cover Letter, along with the criteria listed below, to the Owner's Representative 5-7 days of any planned critical phases of work. Trenching and Excavation activities must not be performed during regular school hours or near occupied school areas.

To hold an on-site Excavation SPA pre-work meeting, at a minimum, the following parties must be present:

- ✓ Subcontractor Competent Person
- ✓ General Contractor Safety Representative
- ✓ Owner's Representative [Optional]

Campus Name and ORG Number:
Subcontractor Name and Competent Person:
General Contractor Name and Site-Superintendent:
General Contractor Safety Manager Signature of Approval:
Anticipated Start Date:

Trenching and Excavation SPA must include but is not limited to the following:

- □ Scope of Work (describe methods, known utilities in the area, and any affected right-of-way)
- Utility Strike Prevention (include GPR report, potholing method, and preventative measures)
- □ Excavation Training Records (for all crewmembers performing this task)
- □ Competent Person Letter of Designation (include areas of competency and signatures)
- Competent Person Training Documentation (OSHA 10-hour and First Aid/CPR)
- □ Site Map (identify areas affected by this operation and underground utility shut-off locations)
- Emergency Action Plan (including emergency contact information and medical facility)
- □ JHA (include hazard assessment, equipment, and PPE needed to safely perform this task)

<u>Note:</u> This Document is **not** intended to replace the need for each Contractor to establish and maintain a proper Illness and Injury Prevention Program as required by the Department of Labor, Occupational Safety and Health Act (29 CFR 1926 and 29 CFR 1910) and the State of Texas.
EXHIBIT F – Pier Drilling SPA Cover Letter

The following Pier Drilling SPA pre-meeting requirements have been established for the General Contractor's Safety Manager. The General Contractor's Safety Manager must ensure and approve that its Subcontractor's SPA documentation meet all Federal, State, and local regulations and the requirements outlined in this manual prior to submitting for review.

The General Contractor's Safety Manager must submit this Cover Letter, along with the criteria listed below, to the Owner's Representative 5-7 days of any planned critical phases of work. **Pier Drilling activities must not be performed during regular school hours or near occupied school areas.**

To hold an on-site Pier Drilling SPA pre-work meeting, at a minimum, the following parties must be present:

- ✓ Subcontractor Competent Person
- ✓ General Contractor Safety Representative
- ✓ Owner's Representative [Optional]

Campus Name and ORG Number:	
Subcontractor Name and Competent Person:	
General Contractor Name and Site-Superintendent:	
General Contractor Safety Manager Signature of Approval:	
Anticipated Start Date:	

Pier Drilling SPA must include but is not limited to the following:

- □ Scope of Work (describe methods, known utilities in the area, and any affected right-of-way)
- Utility Strike Prevention (include GPR report, potholing method, and preventative measures)
- □ Competent Person Letter of Designation (include areas of competency and signatures)
- Competent Person Training Documentation (OSHA 10-hour and First Aid/CPR)
- □ Site Map (identify areas affected by this operation and underground utility shut-off locations)
- Emergency Action Plan (including emergency contact information and medical facility)
- □ JHA (include hazard assessment, equipment, and PPE needed to safely perform this task)

EXHIBIT G – Utility Shutdown SPA Cover Letter

The following Utility Shutdown requirements have been established for the General Contractor's Safety Manager. The General Contractor's Safety Manager must ensure and approve that its Subcontractor's SPA documentation meet all Federal, State, and local regulations and the requirements outlined in this manual prior to submitting for review.

The General Contractor's Safety Manager must submit this Cover Letter, along with the criteria listed below, to the Owner's Representative 5-7 days of any planned critical phases of work. Contractors of any tier must at no time perform any type of power or other utility shutdown activities during regular school hours.

To hold an on-site Utility Shutdown SPA pre-work meeting, at a minimum, the following parties must be present:

- ✓ Subcontractor Competent Person
- ✓ General Contractor Safety Representative
- ✓ Owner's Representative [Optional]

Campus Name and ORG Number:
Subcontractor Name and Competent Person:
General Contractor Name and Site-Superintendent:
General Contractor Safety Manager Signature of Approval:
Anticipated Shutdown Date:

Utility Shutdown SPA must include but is not limited to the following:

- □ Shutdown Authorization Form (EXHIBIT I) must be submitted **10 days prior** to any planned shutdown and must contain pre-work notification signatures of approval)
- □ Scope of Work (describe methods, operating procedures, and any critical systems affected by this shutdown. Critical systems include life safety systems, security systems, kitchen, etc.)
- □ De-energizing System (describe system to be shutdown, methods for controlling hazardous energy, inadvertent release of stored energy, and make safe procedures)
- □ Contingency Plan (to prevent any disruptions to school operations, describe emergency actions to be taken for restoring system operations as quickly as possible)
- □ Restoring System (describe methods for safely restoring systems, removal of LOTO devices)
- □ Competent Person Letter of Designation (include areas of competency and signatures)
- Competent Person Training Documentation (OSHA 10-hour and First Aid/CPR)
- □ Site Map (identifying areas where shutdown is to be performed)
- Emergency Action Plan (including emergency contact information and medical facility)
- □ JHA (include hazard assessment, equipment, and PPE needed to safely perform this task)

EXHIBIT H – Electrical Shutdown SPA Cover Letter

The following Electrical Shutdown requirements have been established for the General Contractor's Safety Manager. The General Contractor's Safety Manager must ensure and approve that its Subcontractor's SPA documentation meet all Federal, State, and local regulations and the requirements outlined in this manual prior to submitting for review.

The General Contractor's Safety Manager must submit this Cover Letter, along with the criteria listed below, to the Owner's Representative 5-7 days of any planned critical phases of work.

To hold an on-site Electrical Shutdown SPA pre-work meeting, at a minimum, the following parties must be present:

- ✓ Subcontractor Competent Person
- ✓ General Contractor Safety Representative
- ✓ Owner's Representative [Optional]

Campus Name and ORG Number:
Subcontractor Name and Competent Person:
General Contractor Name and Site-Superintendent:
General Contractor Safety Manager Signature of Approval:
Anticipated Shutdown Date:

Electrical Shutdown SPA must include but is not limited to the following:

- □ Shutdown Authorization Form (EXHIBIT I) must be submitted **10 days prior** to any planned shutdown and must contain pre-work notification signatures of approval)
- □ Scope of Work (describe methods, operating procedures, and any critical systems affected by this shutdown. Critical systems include life safety systems, security systems, kitchen, etc.)
- □ De-energizing System (describe system to be shutdown, methods for controlling hazardous energy, inadvertent release of stored energy, and make safe procedures NFPA 120.2)
- □ Contingency Plan (to prevent any disruptions to school operations, describe emergency actions to be taken for restoring system operations as quickly as possible)
- □ Restoring System (describe methods for safely restoring systems, removal of LOTO devices)
- □ Electrically Qualified Person [NFPA 70 E] Training Records NFPA 120.2(b)(2)
- □ Competent Person Letter of Designation (include areas of competency and signatures)
- Competent Person Training Documentation (OSHA 10-hour and First Aid/CPR)
- □ Site Map (identifying areas where shutdown is to be performed)
- Emergency Action Plan (including emergency contact information and medical facility)
- □ JHA (include hazard assessment equipment, and PPE needed to safely perform this task)

EXHIBIT I – Shutdown Authorization Form

Dallas Indepen Bond Program Scheduled Utility S	dent School	l District 10rization Form:	General Contra	actor(s)
SECTION A. GENERAL INFOR	MATION:		*Permanent	🗌 Temporary
School Name and Org. #:				
Bond Program Manager (PM) Name:			_	
General Contractor (GC) Person In-Charge:				
Sub-Contractor (SUB) Person In-Charge:	(Name)		(Contact No.)	
SECTION B. PRE-WORK NOTIF	ICATION:			
Utility System(s) to Be Shut down:				
Utility Meter number				
Description of Work Performed:				
Describe Procedure for Shutdown:				
Safety Measures/ Precautions for Shutdown:				
Date/ Time Requested for Shutdown:				
Project as enumerated below. We note that <u>f</u> been coordinated and scheduled to achieve of	ive (5) days advance i	notice is required as a mi	nimum. I hereby cert	ify that the required work has
SUB Person-In-Charge: GC Person-In-Charge:	(Sign)	requested time-period.	(Date (Sign)	e) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval:	(Sign)	requested time-period.	(Date (Sign) (Sign)	e) (Date) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval:	(Sign)	requested time-period.	(Date (Sign) (Sign) (Sign)	e) (Date) (Date) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT	(Sign)	requested time-period.	(Date (Sign) (Sign) (Sign)	e) (Date) (Date) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT Actual Date/ Time for Shutdown:	(Sign)	Shutdown Time	(Date (Sign) (Sign) (Sign) Restart Date	e) (Date) (Date) (Date) (Date) (Date) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT Actual Date/ Time for Shutdown: GC Person-In-Charge Certification:	(Sign)	Shutdown Time	(Date (Sign) (Sign) (Sign) Restart Date (Sign)	e) (Date) (Date) (Date) (Date) (Date) (Date) (Date) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT Actual Date/ Time for Shutdown: GC Person-In-Charge Certification: Bond Program Manager (PM) Certification:	(Sign)	Shutdown Time	(Date (Sign) (Sign) (Sign) Restart Date (Sign) (Sign)	e) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT Actual Date/ Time for Shutdown: GC Person-In-Charge Certification: Bond Program Manager (PM) Certification: DISD Project Manager Certification:	(Sign) IIFICATION: Shutdown Date	Shutdown Time	(Date (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign)	e) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT Actual Date/ Time for Shutdown: GC Person-In-Charge Certification: Bond Program Manager (PM) Certification: DISD Project Manager Certification: DISD Sustainability Certification:	(Sign)	Shutdown Time	(Date (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign)	e) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT Actual Date/ Time for Shutdown: GC Person-In-Charge Certification: Bond Program Manager (PM) Certification: DISD Project Manager Certification: DISD Sustainability Certification: SECTION D. PROCESS FOR SCHEI	(Sign) (Sign) (IFICATION: Shutdown Date DULED UTILITY	Shutdown Time	(Date (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign)	e) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT Actual Date/ Time for Shutdown: GC Person-In-Charge Certification: Bond Program Manager (PM) Certification: DISD Project Manager Certification: DISD Sustainability Certification: SECTION D. PROCESS FOR SCHEET A. The General Contractor is to complete the Utilit Program Manager for approval.	(Sign) (Sign) (IFICATION: Shutdown Date ULED UTILITY by Shutdown Request Form	Shutdown Time Shutdown Time Shutdown Time SHUTDOWN AUTH	(Date (Sign) (Si	e) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT Actual Date/ Time for Shutdown: GC Person-In-Charge Certification: Bond Program Manager (PM) Certification: DISD Project Manager Certification: DISD Project Manager Certification: DISD Sustainability Certification: SECTION D. PROCESS FOR SCHEEI A. The General Contractor is to complete the Utility Program Manager for approval. B. The Bond Program Manager (PM) will review and the second	(Sign) (Sign) (IFICATION: Shutdown Date DULED UTILITY ty Shutdown Request Form ad approve submitted Utility	Shutdown Request Form and for	(Date (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) ORIZATION to the scheduled utility shu	e) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT Actual Date/ Time for Shutdown: GC Person-In-Charge Certification: Bond Program Manager (PM) Certification: DISD Project Manager Certification: DISD Project Manager Certification: DISD Sustainability Certification: SECTION D. PROCESS FOR SCHEIT A. The General Contractor is to complete the Utility Program Manager for approval. B. The Bond Program Manager (PM) will review and C.	(Sign)	Shutdown Time Shutdown Time Shutdown AUTH states 5 working days prior Shutdown Request Form and for the PM.	(Date (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) to the scheduled utility shu	e) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT Actual Date/ Time for Shutdown: GC Person-In-Charge Certification: Bond Program Manager (PM) Certification: DISD Project Manager Certification: DISD Project Manager Certification: DISD Sustainability Certification: SECTION D. PROCESS FOR SCHEIT A. The General Contractor is to complete the Utility Program Manager for approval. B. The Bond Program Manager (PM) will review and C. The Dallas ISD Project Manager will review and D. PM forwards approved form to Director/Mainter	(Sign)	Shutdown Time Shutdown Time Shutdown Time Shutdown AUTH , at least <u>5 working days</u> prior Shutdown Request Form and for the PM. Deputy Chief Director, Emergen	(Date (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) ORIZATION to the scheduled utility shu rward to the respective Dall	e) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT Actual Date/ Time for Shutdown: GC Person-In-Charge Certification: Bond Program Manager (PM) Certification: DISD Project Manager Certification: DISD Project Manager Certification: DISD Sustainability Certification: SECTION D. PROCESS FOR SCHEI A. The General Contractor is to complete the Utility Program Manager for approval. B. The Bond Program Manager (PM) will review and C. D. PM forwards approved form to Director/Mainter Note: All scheduled shutdown requests will require a jod District departments involved on the shutdown request	(Sign)	Shutdown Time Shutdown Time Shutdown Time SHUTDOWN AUTH , at least <u>5 working days</u> prior Shutdown Request Form and for the PM. Deputy Chief Director, Emergen am Manager and the School staff	(Date (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) ORIZATION to the scheduled utility shu rward to the respective Dall acy Operations and Bond Pro f 48 hours in advance to disc	e) (Date)
SUB Person-In-Charge: GC Person-In-Charge: Bond Program Manager (PM) Approval: DISD Project Manager Approval: SECTION C. POST-WORK CERT Actual Date/ Time for Shutdown: GC Person-In-Charge Certification: Bond Program Manager (PM) Certification: DISD Project Manager Certification: DISD Project Manager Certification: DISD Sustainability Certification: SECTION D. PROCESS FOR SCHEIT A. The General Contractor is to complete the Utility Program Manager for approval. B. The Bond Program Manager (PM) will review and D. PM forwards approved form to Director/Mainter Note: All scheduled shutdown requests will require a jod District departments involved on the shutdown request will approved form to Director/Mainter Note: For electrical shutdowns (Scheduled/ involuntary) alarms working at all times.	(Sign)	Shutdown Time Shutdown Time Shutdown Time SHUTDOWN AUTH , at least <u>5 working days</u> prior Shutdown Request Form and for the PM. Deputy Chief Director, Emergen am Manager and the School staff ; operations, the General contract r/ utility to be restored	(Date (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) (Sign) ORIZATION to the scheduled utility shu rward to the respective Dall acy Operations and Bond Pro- f 48 hours in advance to disc for must supply a power gen	e) (Date)

Dallas ISD Construction Safety Guidelines

EXHIBIT J – Elevated Work SPA Cover Letter

The following Elevated Work SPA pre-meeting requirements have been established for the General Contractor's Safety Manager. The General Contractor's Safety Manager must ensure and approve that its Subcontractor's SPA documentation meet all Federal, State, and local regulations and the requirements outlined in this manual prior to submitting for review.

The General Contractor's Safety Manager must submit this Cover Letter, along with the criteria listed below, to the Owner's Representative 5-7 days of any planned critical phases of work. No roof work, regardless of the extent, is to be done over an occupied area/building.

To hold an on-site Elevated Work SPA pre-work meeting, at a minimum, the following parties must be present:

- ✓ Subcontractor Competent Person
- ✓ General Contractor Safety Representative
- ✓ Owner's Representative [Optional]

Elevated Work SPA must include but is not limited to the following:

- □ Scope of Work (describe methods, operating procedures, and affected work areas)
- □ Fall Protection (describe systems to be used, methods, anchor point locations, etc.)
- □ Fall Protection Training Records (for all crewmembers performing this task)
- □ Competent Person Letter of Designation (include areas of competency and signatures)
- Competent Person Training Documentation (OSHA 10-hour and First Aid/CPR)
- □ Site Map (identifying areas where work is to be performed)
- Emergency Action Plan (including emergency contact information and medical facility)
- □ JHA (include hazard assessment, equipment, and PPE needed to safely perform this task)

EXHIBIT K – Crane Operation SPA Cover Letter

The following Crane Operation requirements have been established for the General Contractor's Safety Manager. The General Contractor's Safety Manager must ensure and approve that its Subcontractor's SPA documentation meet all Federal, State, and local regulations and the requirements outlined in this manual prior to submitting for review.

The General Contractor's Safety Manager must submit this Cover Letter, along with the criteria listed below, to the Owner's Representative 5-7 days of any planned critical phases of work. Booms or suspended loads must not be allowed to pass over playgrounds or other school property when there is a potential for students or staff to be present in these areas and/or within any fall radius.

To hold an on-site Crane Operations SPA pre-work meeting, at a minimum, the following parties must be present:

- ✓ Subcontractor Competent Person
- ✓ General Contractor Safety Representative
- ✓ Owner's Representative [Optional]

Campus Name and ORG Number:	
Subcontractor Name and Competent Person:	
General Contractor Name and Site-Superintendent:	
General Contractor Safety Manager Signature of Approval:	
Anticipated Lift Date:	

Crane Operations SPA must include but is not limited to the following:

- □ Scope of Work (describe methods, operating procedures, and affected work areas)
- □ Crane Location and Logistics Plan (identify underground and overhead crane hazards)
- Lift Plan (identify load capacities, means of communication, and rigging/lifting methods)
- □ Site Map (identifying sequence of operation and fall radius in relation to any occupied areas)
- □ Crane Certificate of Insurance and Annual Inspection Records
- □ Competent Person Letter of Designation (include areas of competency and signatures)
- Competent Person Training Documentation (OSHA 10-hour and First Aid/CPR)
- □ Crane Operator Certification and Medical Card
- □ Rigger and Signal Person Training Records
- □ Fall Protection (if applicable, describe systems to be used, methods, anchor point locations, etc.)
- □ Fall Protection Training Records (for all crewmembers performing this task)
- Emergency Action Plan (including emergency contact information and medical facility)
- □ JHA (include hazard assessment, equipment, and PPE needed to safely perform this task)

EXHIBIT L – Steel Erection SPA Cover Letter

The following Steel Erection requirements have been established for the General Contractor's Safety Manager. The General Contractor's Safety Manager must ensure and approve that its Subcontractor's SPA documentation meet all Federal, State, and local regulations and the requirements outlined in this manual prior to submitting for review.

The General Contractor's Safety Manager must submit this Cover Letter, along with the criteria listed below, to the Owner's Representative 5-7 days of any planned critical phases of work. **Steel Erection must not be allowed when students and/or staff are present in occupied areas and/or within any fall radius.**

To hold an on-site Steel Erection SPA pre-work meeting, at a minimum, the following parties must be present:

- ✓ Subcontractor Competent Person
- ✓ General Contractor Safety Representative
- ✓ Owner's Representative [Optional]

Anticipated Start Date: _____

Steel Erection SPA must include but is not limited to the following:

- □ Scope of Work (describe methods, operating procedures, and affected work areas)
- □ Steel Erection Plan (describe equipment placement, lifting methods, and connection procedures)
- □ Written Notification from the General Contractor confirming concrete footings, piers, and/or walls have been cured to a level that will provide adequate structural strength and stability.
- □ Site Map (identifying sequence of operation and fall radius in relation to any occupied areas)
- □ Fall Protection procedures (describe systems to be used, Controlled Access Zones, etc.)
- □ Fall Protection Training Records (for all crewmembers performing this task)
- □ Rigger and Signal Person Training Records
- □ Competent Person Letter of Designation (include areas of competency and signatures)
- Competent Person Training Documentation (OSHA 10-hour and First Aid/CPR)
- Emergency Action Plan (including emergency contact information and medical facility)
- □ JHA (include hazard assessment, equipment, and PPE needed to safely perform this task)

EXHIBIT M – Aerial Crane Operation SPA Cover Letter

The following Aerial Crane Operation requirements have been established for the General Contractor's Safety Manager. The General Contractor's Safety Manager must ensure and approve that its Subcontractor's SPA documentation meet all Federal, State, and local regulations and the requirements outlined in this manual prior to submitting for review.

The General Contractor's Safety Manager must submit this Cover Letter, along with the criteria listed below, to the Owner's Representative 5-7 days of any planned critical phases of work. Aircraft or suspended loads must not be allowed to pass over playgrounds or other school property when there is a potential for students, staff, or public to be present in these areas and/or within any potential drop zones.

To hold an on-site Aerial Crane Operations SPA pre-work meeting, at a minimum, the following parties must be present:

- ✓ Subcontractor Competent Person
- ✓ General Contractor Safety Representative
- ✓ Owner's Representative [Optional]

Campus Name and ORG Number:

Subcontractor Name and Competent Person:

General Contractor Name and Site-Superintendent: ______ General Contractor Safety Manager Signature of Approval: ______

Anticipated Lift Date:

Aerial Crane Operations SPA must include but is not limited to the following:

- Lift Plan (scope of work, travel path, ground level and ariel hazards or obstructions)
- □ Site Set-Up (overhead map of staging areas, sequence of operation, primary and alternate emergency area locations, and potential drop zones in relation to occupied areas)
- □ Material to be lifted (method of attachment, rigging to be used, configuration, and load capacities)
- □ Roles and responsibilities (communication methods for ground crew, roof crew, and operator)
- □ Competent Person Letter of Designation form (include areas of competency and proof of training)
- □ Rigger and signal person training records
- □ JHA (include hazard assessment, equipment, and PPE needed to safely perform this task)
- □ Emergency Action Plan (including emergency contact information and medical facility)
- □ Standard Airworthiness Certificate
- $\hfill\square$ Congested Area Plan Request to FAA
- □ FAA Registry of Aircraft
- FAA Airman Detail Report
- □ Notification of Dallas City Officials
- □ Certificate of Aircraft liability insurance (insurance limit must be \$10 million, per contract amount)
- $\hfill\square$ Evidence of additional insured and waiver of subrogation endorsement

EXHIBIT N – Hot Work Permit

All temporary work involving open flames, intense heat, or sparks will require a Hot Work Permit. The permit must be issued by the contractor and authorized by the appropriate supervisor before any hot work (welding, brazing, cutting, grinding, etc.) can begin. Two copies of the Hot Work Permit must be made. One should be filed with the contractor. The second copy should be posted at the site of the hot work until the job is completed.

Issue Date:	Permit Expires:			
Building:	Sub: Area:			
Authorizing Supervisor (GC):	Start Time:	End Time:		
Operator:	Fire Watch:			

Checklist

Following items must be checked by the authorizing supervisor and operator/welder. If any item is checked "No", then hot work must not begin until item or area is corrected.

Yes	No	
	C	Work area examined
		Equipment inspected, in good repair
		PPE inspected, in good repair
		Sprinkler system operable
		Combustible materials/items moved a radius of 35 feet away from work area.
		Explosive atmosphere (s) eliminated
		Floor and wall openings covered
		Fire watch assigned and required during work and for 30 minutes afterwards*
		*Fire watch must be at least 30 minutes in duration
		Fire watch has ample extinguishing equipment and is trained to properly use it
		Work area is considered a confined space (if yes additional confined space
	_	will be required. Contact supervisor before proceeding)
		Proper ventilation provided for the work area
		Other precautions

Other precautions

 1.______

 2.______

 Authorizing Supervisor Signature:______

 Date:_______

Final Checkup: To be completed after hot work is finished and fire watch is over

The work area and all surrounding areas subjected to heat and sparks were monitored during the hot work operations and during the required fire watch period and found to be safe.

Fire Watcher Signature: Title: Date:	
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EXHIBIT O – Incident Investigation Report

CONTRACTOR:ACCIDENT DATE:TIME:LOCATION
ACCIDENT LOCATION (SPECIFIC):
WHAT HAPPENED? (Describe operation, activity, condition and how accident or loss occurred.
Use separate sheet and diagram if necessary):
Recommended correction action:
Equipment involved #:Employee involved:
Employee Injury (Describe):
Root Cause (Describe):
Medical referral? Yes No
Company Property Damage or Loss
(Describe):
DISD Property, Damage, or Injury to Others
(Describe):
Witnesses (Name, address, phone):
Police Report Number: DISD Police Report Number:
Foreman/Supervisor Date:
Keep Original in contractor's File and CC: Owner's Representatives

[Attach Photos]

EXHIBIT P – Safety Inspection Checklist

SAFETY INSPECTIO	N CHI	ECKI	LIST	
Contractor:	Cor	ntract	No.	
Job-site Location:				
Person in Charge:				
Date: Time:				
Person(s) making inspection:				
	Co Not	lumn: Appl	A= Ade icable	equate B= Inadequate N/A =
PROGRAM ADMINISTRATION:	Α	В	N/A	REMARKS
1. Posting OSHA and other job-site warning posters.				
2. Do you have safety meetings?				
3. Job safety training, including first-aid training?				
4. Is first-aid equipment and supplies available?				
5. Are job-site injury records being kept?				
6. Are emergency telephone numbers, such as police department, fire department, doctor, hospital, and ambulance, posted?				
HOUSEKEEPING AND SANITATION:	Α	В	N/A	REMARKS
1. General neatness of working areas.				
2. Regular disposal of waste and trash.				
3. Passageways and walkways clear?				
4. Adequate lighting.				
5. Protruding nails removed or bent over?				
6. Oil and grease removed.				
7. Waste containers provided and used.				
8. Sanitary facilities adequate and clean.				
9. Drinking water potable.				
10. Adequate supply of water.				

11. Disposable drinking cups.				
FIRE PREVENTION:	Α	В	N/A	REMARKS
1. Fire instructions to personnel.				
2. Fire extinguishers identified, checked, accessible.				
3. Proper fire extinguishers provided.				
4. Hydrants clear, access to public thoroughfare open.				
5. Good housekeeping.				
6. "No Smoking" signage posted and enforced where needed.				
7. Fire brigades.				
ELECTRICAL INSTALLATIONS:	Α	В	N/A	REMARKS
1. Adequate wiring, well insulated.				
2. Circuit breakers and GFCI (where required) provided.				
3. Fire hazards checked.				
4. Electrical danger signs posted.				
5. Are terminal boxes equipped with required covers? Are covers used?				
HAND TOOLS:	Α	В	N/A	REMARKS
1. Proper tool being used for each job.				
2. Neat storage, safe carrying.				
3. Inspection and maintenance.				
4. Damaged tools repaired or replaced promptly. Are employee's tools inspected and repaired?				

POWER TOOLS:	А	В	N/A	REMARKS
1. Good housekeeping where tools are used.				
2. Tools and cords in good condition.				
3. Proper grounding.				
4. Proper instruction in use.				
5. All mechanical safeguards in use.				
6. Tools neatly stored when not in use.				

7. Right tool being used for the job at hand.				
8. Wiring properly installed.				
POWDER ACTUATED TOOLS:	Α	В	N/A	REMARKS
1. Local laws and ordinances complied with.				
2. All operators trained.				
3. Tools and charges protected from unauthorized use.				
4. Competent instruction and supervision.				
5. Tools checked and in good working order.				
6. Tools not used on anything but recommended materials.				
 Safety goggles or face shields provided and used. 				
8. Flying hazard checked by backing up, removal of personnel, or use of captive stud tool.				
LADDERS:	Α	В	N/A	REMARKS
1. Ladders inspected and in good condition?				
2. Secured to prevent slipping, sliding, or falling?				
3. Do side rails extend 36" above top of landing?				
4. Rungs or cleats not over 12" on center.				
5. Metal ladders not used around electrical hazards.				
6. Proper maintenance and storage.			_	
7. Are ladders not painted?				

SCAFFOLDING:	Α	В	N/A	REMARKS
1. Is erection properly supervised?				
2. Will all structural members meet the safety factor?				
3. Are all connections secure?				
4. Is scaffold tied into structure where necessary?				
5. Are working areas free of debris, snow, ice, grease?				
6. Are base plates and mud sills provided?				
7. Are workers protected from falling objects?				

8. Is the scaffold plumb and square with cross- bracing?				
9. Are guardrails, intermediate rails, and toe boards				
in place?				
10. Are hoist ropes and cables in good condition?				
HOISTS, CRANES AND DERRICKS:		B	N/A	REMARKS
1. Inspect cables and sheaves.				
2. Check slings and chains, hooks, and eyes.				
3. Equipment firmly supported.				
4. Outriggers used, proper cribbing.				
5. Power lines deactivated, removed or at safe distance				
6. Proper loading for capacity of lifting radius.				
7. All equipment properly lubricated and maintained.	[
8. Signalman where needed.				
9. Signals understood and observed.				
10. Are inspection and maintenance logs maintained?				
HEAVY EQUIPMENT:	A	В	N/A	REMARKS
1. Regular inspection and maintenance.				
2. Lubrication and repair of moving parts.				
3. Lights, brakes, warning signals operative.				
4. Wheels chocked when necessary.				
 Haul roads well maintained and laid out properly. 				
6. Protection when equipment is not in use.				
7. Shut-off devices on hose lines in case of failure?				
MOTOR VEHICLES:	Α	В	N/A	REMARKS
1. Regular inspection and maintenance.				
2. Qualified operators.				
3. Brakes, lights, warning devices operative.				

4. Weight limits and load sizes controlled.				
5. Is all glass in good condition?				
6. Are back-up (reverse) alarms provided?				
7. Fire extinguishers provided in all vehicles?				
BARRICADES:		В	N/A	REMARKS
1. Floor openings planked over and secured, or barricaded.				
2. Roadways and sidewalks effectively protected.				
3. Adequate lighting provided.				
4. Traffic controlled.				
HANDLING AND STORAGE OF MATERIALS:	Α	В	N/A	REMARKS
1. Are materials properly stored or stacked?				
2. Are passageways clear?				
3. Stacks on firm footings, not too high.				
4. Proper number of men for each operation.				
5. Are workers lifting loads correctly?				

6. Are materials protected from weather conditions?				
7. Protection against falling.				
8. Is dust protection observed?				
9. Extinguishers and other fire protection provided.				
10. Is traffic controlled in the storage area?				
EXCAVATION AND SHORING:	Α	В	N/A	REMARKS
1. Are adjacent structures properly shored?				
2. Is shoring, benching, or sloping used for soil depth or excavation properly sloped?				
3. Are roads and sidewalks supported and protected?				
4. Is material stored at least 2 feet from excavations?				
5. Is excavation barricaded and lighting provided?				
6. Is equipment a safe distance from edge of excavation?				
7. Are ladders provided where needed?				

8. Are equipment ramps adequate?				
9. Is job supervisor on-site during trenching operations?				
DEMOLITION:		В	N/A	REMARKS
1. Are operations planned ahead?				
2. Is there shoring of adjacent structures?				
3. Are material chutes used?				
4. Is there sidewalk and other public protection?				
5. Adequate access ladders or stairs.				
FLAMMABLE GASSES AND LIQUIDS:		В	N/A	REMARKS
1. All containers U.L. approved meeting OSHA requirements with contents clearly identified.				
2. Proper storage practices observed.				
3. Fire hazards checked.				
4. Proper storage temperatures and protection.				
5. Proper types and number of extinguishers nearby.				
6. Carts for moving cylinders available.				
MASONRY:	Α	В	N/A	REMARKS
1. Proper scaffolding.				
2. Saws properly equipped; dust protection provided.				
ROADWAY CONSTRUCTION:	Α	В	N/A	REMARKS
1. Laws and ordinances observed.				
2. Flag-person properly dressed, instructed, and posted.				
3. Adequate warning signs and markers.				
4. Equipment not blocking right of way.				
5. Traffic control through construction site.				
6. Adequate marking and maintenance of detours.				
7. Dust control.				
8. Adequate lighting.				
PERSONAL PROTECTIVE EQUIPMENT:	Α	В	N/A	REMARKS
1. Eye and Head protection.				
2. Face shields.				
3. Respirators and masks.				
List actions to be taken for all items found non-compl	iant			

EXHIBIT Q – Contractor Acknowledgement Statement

Campus Name and ORG Number:

Contractor Name:

Date:

By executing this document as an authorized representative of the referenced Company identified above, I acknowledge and confirm that I have read and understand the contents of the Dallas ISD Construction Safety Program Guidelines in its entirety.

I also recognize and acknowledge that the obligation to protect the safety and health of all persons affected by construction activities is not limited to the requirements of the Dallas ISD Construction Safety Program Guidelines only, but also includes all applicable OSHA, Federal, State, and local regulations, and guidelines necessary to provide a safe and healthful working environment for all contractors, campus staff, students, and general public.

The Contracting Company and its employees will comply with all applicable safety requirements while performing work on any Dallas ISD property. The Company will further communicate the requirements of the Dallas ISD Construction Safety Program Guidelines and other applicable OSHA, Federal, State, and local regulations, and guidelines to all tiered Subcontractors that will perform work on the Project and retain a physical signed copy of this Contractor Acknowledgement Statement from each such Subcontractor.

(Name of Authorized Representative)

(Signature of Authorized Representative)

(Date Signed)

ATTACHMENTS

- Attachment I Dallas ISD Orientation Location and Schedule
- Attachment II Site-Specific Safety Plan Guidelines
- <u>Attachment III Crisis Communications Poster</u>
- <u>Attachment IV Visitor's Release and Hold Harmless Agreement</u>
- <u>Attachment V Shutdown Notification Guidelines</u>
- <u>Attachment VI SWPPP Oversight Flowchart</u>
- Attachment VII Greenfield Shutdown Authorization Request Guidelines
- <u>Attachment VIII Intruder Detection</u>
- <u>Attachment IX Campus Security Reminders</u>
- Attachment X Safety Meeting Sign-in Sheet
- <u>Attachment XI Geotechnical Soil Sampling Safety Guidelines</u>
- Attachment XII Inclement Weather Plan of Action

Dallas ISD Orientation Location and Schedule



Construction Services





Dallas ISD Construction Safety Orientation (Orientacion de Seguridad)

> Location/Ubicacion Forester Field 8233 Military Pkwy Dallas, TX 75227

Schedule/Horario 7:30am-8:30am Tuesday and Thursday Martes y Jueves

You must have your Dallas ISD Badge to attend this orientation.

Usted debe tener su identificacion para poder asistir a esta Orientacion.

2023 Revision

Site-Specific Safety Plan Guidelines

CRITERIA FOR DEVELOPING A SITE-SPECIFIC SAFETY PLAN

Prior to work, Contractors are required to submit for review, an acceptable Site-Specific Safety Plan that includes safe and health work practices. The Owner's Representative will evaluate the plan to see that it meets the safety requirements for the Project's scope of work.

A Site-Specific Safety Plan must include but is not limited to the following:

- (1) **Scope of Work:** A description of the scope of work is to be included on the front page of the Site-Specific Safety Plan.
- (2) **Job Safety Procedures:** Explain in detail and specifically how job safety is to be incorporated into each phase of the scope of work. Use of ladders, scaffolds, flagging, equipment, exposures, special conditions, fall protection, etc., must be included for the plan to be accepted. Generalities will not be accepted to Explain the safety and health conditions employees will be exposed to.
- (3) **General Contractor's Site-Specific Safety Orientation:** Each employee who is new to the jobsite must receive a thorough safety and hazard communication orientation, which imparts basic information about the project safety and health program, federal/state regulations, and other safety rules and regulations needed to perform tasks safely. Future safety instructions may be necessary if hazardous work and/or unfamiliar tasks are performed.
- (4) **Competent Person Designation(s):** Competent Person Designation Form(s) accompanied by a valid First Aid/CPR and OSHA 30-hour certification (within 5 years of the issuing date) must be provided for all on-site persons designated as competent.
- (5) **Supervising for Safety:** Explain how supervisors are going to constantly review the safe practices and procedures. Jobsite inspections are required daily. An inspection checklist should be documented at least weekly.
- (6) **Disciplinary Policy:** Contractor must explain disciplinary action for any employee who jeopardizes his health or safety, or the health or safety of others.
- (7) **Subcontractor Compliance:** Explain how Subcontractor compliance with your safety program and the Construction Minimum Safety Program Guidelines Manual will be verified and documented. When Subcontractor's programs are deficient, the General Contractor must be responsible for providing them with the necessary training and protection. This must be documented.
- (8) Incident Investigation Procedure: Explain how the General Contractor and involved Subcontractors will investigate all incidents involving a near miss, injury, and/or property damage. Investigation Procedures must include a Root Cause Analysis and Corrective Action Plan to prevent reoccurrence.
- (9) **Emergency Action Plan:** Describe Actions to be taken should an emergency occur. Emergency Action Plans must cover injuries, fires, evacuations, and similar situations. Plans must include designated emergency contact names and telephone numbers, e.g., on-site supervision, police department, fire department, doctor, hospital, and ambulance.

[Criteria for Developing a Site-Specific Safety Plan – Continued]

- (10) **Personal Protective Equipment:** Describe Personal Protective Equipment (PPE) to be worn, training requirements, and parameters for its use.
- (11) **Occupational Health Programs:** Site-specific Occupational Health and Illness Prevention Programs are required to protect employees working on the project, i.e., Asbestos Awareness, Air Monitoring, Silica, Sampling, Special Protective Clothing or Equipment, and Particular Hazards.
- (12) Job Hazard Analysis (JHA): Explain the formal job hazard analysis process
- (13) **Task Training:** Contractors are required to task train employees in the exposures they will be confronted with and the job they are expected to perform. Other situations, however, may arise during the course of the project that will require additional training. Explain how task training will be accomplished, how often it will be conducted, and who will be conducting the training.
- (14) **Reporting Unsafe Acts or Conditions:** Explain the program in place that promotes positive feedback to supervision and employees who report unsafe acts and/or conditions.
- (15) **Toolbox Talk Safety Meetings:** These must be held and documented at least weekly. Explain who will be responsible for conducting these meetings, when they will be held, and where they will be held.
- (16) **Fire Prevention and Protection Plan:** Explain the job-site fire prevention and protection program in detail.
- (17) Hazard Communication Program: Provide copy of the Site-specific Haz-Com program.
- (18) Lock-out/Tag-out (LOTO) Program: Provide a copy of the Site-specific LOTO Program
- (19) Confined Space Entry: Provide a copy of the Site-specific Confined Space Program
- (20) **Trenching/Excavation and Utility Strike Prevention**: Provide a copy of the Site-specific Trenching/Excavation Procedures and a Utility Strike Prevention Plan.
- (21) **Fall Protection and Prevention Program:** Provide a copy of the Site-specific Fall Protection and Prevention Program
- (22) Traffic Control Plan: Provide a copy of the Site-specific Traffic Control Plan
- (23) Substance Abuse Policy: Provide a copy of the Substance Abuse Policy
- (24) **Special Instructions and Information:** Provide any special instruction or additional safety information as it relates to the unique conditions and/or environment associated with the project.

Note: The requirements outlined in this Document are intended to provide a working, uniform minimal level of program guidelines to assist or provide direction to Contractors. This Document is **not** intended to replace the need for each Contractor of any tier to establish and maintain a proper Illness and Injury Prevention Program as required by the Department of Labor, Occupational Safety and Health Act (29 CFR 1926 and 29 CFR 1910) and the State of Texas.

CONSTRUCTION SITE



Communications GUIDELINES

SUGGESTED STEPS FOR CRISIS SITUATIONS:

- Evaluate the situation and extent of damage or injuries.
- If students are present, immediately contact the principal or school office.
- Call 9-1-1 if necessary. Be prepared to give the dispatcher details of the accident and injuries, the exact address and where emergency crews should enter the site.
- Assign someone to meet emergency crews at the gate.
- Call Dallas ISD Communications at (972) 925-3917. Be prepared to provide as much information as possible.
- 6. Call Dallas ISD Police at (214) 932-5627.
- 7. Call Construction Services at (972) 925-7200.
- 8. Call the Safety Manager at (214) 435-2204.
- Other than as noted below, *do not speak* to reporters or photographers. Refer them to Dallas ISD Communications.

How to handle reporters who come to the construction site:

There is no such thing as "off the record." Be polite, but firm. Tell reporters and photographers they must wait off-site, outside the main gate, until an authorized Dallas ISD spokesperson arrives. Do not push, shove, block, or attempt to physically restrain a reporter or photographer. When dealing with reporters, photographers or TV crews, always assume that they are recording.

EMERGENCY TELEPHONE NUMBERS:

Dallas ISD Police (214) 932-5627

Robyn Harris Dallas ISD Communications/ District Spokesperson

(972) 925-3917

Alvaro Meza Bond Program Safety Manager

(214) 435-2204



Visitor's Release and Hold Harmless Agreement

General Contractor:

Project Name: _____ Date: _____

In consideration of being permitted, for my own purposes and interests, to enter upon the premises or construction site of Dallas Independent School District Construction Project, I hereby release, hold harmless, and indemnify the Dallas Independent School District, Consultants, Inspectors, Contractors and Subcontractors from and against, and assume the risk for and on behalf of myself, my heirs, my supervisor and my estate, all damages, losses, injuries and any and all other claims of any type whatsoever for personal injury (including death) and other loss or damage of any nature whatsoever including damage to my personal property, and reasonable attorney's fees and court costs sustained or caused while on such premises or site.

In the event any clause, term, or provision of this agreement must be declared or adjudicated void or invalid, it must in no manner affect the other clauses, terms, and provisions hereof, which must remain in full force and effect, as if the clause, term, or provision so declared or adjudicated invalid was not originally a part hereof.

Visitor's Name:

Visitor's Signature:

Address: _____

Date: _____

Shutdown Notification Guidelines

The General Contractor must provide Dallas ISD with notification of power or other utility shutdown no less than ten (10) calendar days in advance of the shutdown. Notification includes Dallas ISD Central Maintenance Office, A/E, Program Manager, and the Principal at each affected school.

- Shutdown Authorization Form (<u>EXHIBIT I</u>) must be submitted to the Dallas ISD Bond Program Manager and Dallas ISD Project Manager for signatures of approval **10 days prior** to any planned shutdown.
- > Shutdowns to be scheduled during weekends or extended breaks.
- > Overtime Code may be needed for Dallas ISD Personnel involved after hours.
- Permanent shutdowns must be field verified by Contractor. If utility service remains active, immediately report to DISD Sustainability via Bond PM.

Water Shut-off Guidelines

Notification To:

- ✓ Dallas ISD Quadrant Supervisor
- ✓ Dallas ISD Department Supervisor
- ✓ Affected Dallas ISD Departments & Confirmation of readiness (Including but not limited to HVAC, Kitchen, Fire Suppression, etc.)
- ✓ Dallas ISD Sustainability Manager and/or Technician

Content of Notification:

- ✓ Signed Authorization form-DISD PM.
- ✓ Type of Shutdown: Emergency, Minor, Complete, Relocation.
- ✓ Meter number (if applicable).
- ✓ Area affected, Duration, and Contingency Plan
- ✓ SPA-Cover Letter Authorized by GC Safety Representative
- ✓ When relocating a utility, DISD Sustainability department must be notified.

Dallas ISD Plumbing Department:

- Department Manager: Bart Braswell
- SE Quad Supervisor: Jesse Rincon
- SW Quad Supervisor: James Baker
- NE Quad Supervisor: Justin Morris
- NW Quad Supervisor: David Martin
- Sustainability Department Manager: Bryant Shaw
- Sustainability Department Technician: Stephanie Garcia

Re-pressurizing:

- ✓ Include City Inspection
- ✓ Contractor to provide post inspection along with photos to DISD Plumbing Manager

Gas Shut-off Guidelines

Notification To:

- ✓ Quadrant Supervisor
- ✓ Department Manager
- ✓ Affected Departments & Confirmation of readiness (Including but not limited to HVAC, Kitchen, etc.)
- ✓ Dallas ISD Sustainability Manager and/or Technician

NOTE: When adding HVAC units, Project AE approval of increased load is expected.

Content of Notification:

- ✓ Signed Authorization form-DISD PM.
- ✓ Type of Shutdown: Emergency, Minor, Complete, Relocation.
- ✓ Meter number (if applicable).
- ✓ Area affected, Duration, and Contingency Plan
- ✓ SPA-Cover Letter Authorized by GC Safety Representative
- ✓ When relocating a utility, DISD Sustainability department must be notified.

Re-pressurizing:

- ✓ Include City Inspection
- ✓ Contractor to provide post inspection along with photos to DISD Plumbing Manager

Sanitary Sewer Guidelines

Notification To:

- ✓ Quadrant Supervisor
- ✓ Department Manager
- ✓ Dallas ISD Sustainability Manager and/or Technician

Content of Notification:

- ✓ Signed Authorization form-DISD PM
- ✓ Type of Shutdown: Emergency, Minor, Complete
- ✓ Meter number (if applicable)
- ✓ Area affected, Duration, and Contingency Plan
- ✓ SPA-Cover Letter Authorized by GC Safety Representative
- ✓ PMF PM to provide a Post Audit to DISD Plumbing Manager
- ✓ Include Pictures of tie-in
- ✓ Include City Inspection for all work.

Tie-In Guidelines:

✓ PMF PM to provide post inspection of service to DISD Plumbing Manager.

Electrical Shutdown Guidelines

Notification To: [Prior to Shut down and after restoration of service]

- ✓ ONCOR (if applicable)
- ✓ DISD Electrical Quadrant Supervisor
- ✓ DISD Electrical Department Supervisor
- ✓ MEP Director
- ✓ Dallas ISD Sustainability Manager and/or Technician.
- ✓ Affected Departments & Confirmation of readiness (HVAC, Kitchen, IT, Building Security, Fire Alarm, etc.)

Dallas ISD Electrical Department:

- Department Director: Bart Webster
- Department Manager: George Lakes
- NW Supervisor: Ainsworth, Steven
- NE Supervisor: Kevin T Liles
- SE Supervisor: Douglas Hall
- SW Supervisor: Jim Ward

Dallas ISD Sustainability Department:

- Sustainability Department Manager: Bryant Shaw
- Sustainability Department Technician: Stephanie Garcia

Content of notification:

- ✓ Signed Authorization form-DISD PM
- ✓ Type of Shutdown: Emergency, Minor, Complete
- ✓ Meter number (if applicable)
- ✓ When relocating a utility, DISD Sustainability department must be notified
- ✓ Area affected, Duration, and Contingency Plan
- ✓ SPA-Cover Letter Authorized by GC Safety Representative
- ✓ Complete-Shutdowns-

Re-energizing:

- ✓ Quadrant Supervisor
- ✓ Department Supervisor
- ✓ Affected Departments & Confirmation of readiness (HVAC, Kitchen, IT, Building Security, Fire Alarm, etc.)
- ✓ Electrical Contractor to gradually increase power

SWPPP Oversight Flowchart



2023 Revision

Dallas ISD Construction Safety Guidelines

See below set of guidelines for greenfield projects requesting permanent utility shutdown:

- 1. Utility Shutdown request should select PERMANENT on the top right portion of our authorization form. (See below sample)
- 2. General Contractor (GC) responsible to provide power for the duration of the project.
- 3. Once the project reaches substantial completion, the GC/PMF to provide the Dallas ISD Sustainability Department with a copy of the GC utility bills to transfer the utility service to Dallas ISD.

If you have any questions, please reach out to Dallas ISD Sustainability Department: sg9453@dallasisd.org

Note:

- Before demolishing a portable and/or building all meters numbers should be provided to DISD sustainability department to closed account and have the meters removed through the Owner provider.

- Please be reminded there is a "Minimum of 10day(s) advance notice" for utilities.

It is very important that ALL Utility Accounts are closed through sustainability to prevent the GC reimbursing the district.

- Lastly, DISD is not responsible to provide GC utilities on Greenfield Locations.

SECTION A. GENERAL INFOR	MATION:		Permanent	Temporary	
School Name and Org #					
Boad Program Manager (PM) Name.					
General Continuor (GC) Person In-Charge	<u></u>		<u></u>		_
Sub-Costancer (SUB) Person In-Charge:	(Next)		(Ganas No.)		
SECTION B. PRE-WORK NOTIF	ICATION:				
Utility System(1) to Be Shut down.					
hiry Meter number					
Description of Work Performed					
Describe Procedure for Standows					
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Intruder Detection

AGENDA FOR CAMPUS SECURITY MEETING

Sign-in Sheet

✓ All personnel in attendance must sign-in

Welcome

✓ Purpose of the Meeting – To Review the Requirements Regarding Intruder Detection and Campus Security.

Intruder Detection

- ✓ All visitors must enter through the campus' secured entry point
- ✓ Immediately report any suspicious activity to the Project Management Team
- ✓ Always be alert See Something, Say Something, Do Something
- ✓ Stop any individuals in your building who do not display a District Badge or Visitor Badge and escort them to the main office.

Propped Doors and Secured Areas

- ✓ **NEVER** prop open a door for any reason
- ✓ All exterior doors must remain locked at all times
- ✓ All interior doors leading into construction areas must remain locked at all times
- \checkmark Portable doors are considered exterior doors and must be locked at all times
- ✓ Immediately notify the Project Management Team of any exterior door that you may find unlocked or propped open

Questions and Answers:

<u>Note for General Contractors:</u> All locked doors leading into construction areas and/or restricted pathways must be communicated with the campus Principal and Fire Marshal to ensure restrictions and/or physical alterations of any kind do not conflict with Campus Emergency Action Plans, Emergency Egress and NFPA 101 Life Safety Codes.

Campus Security Reminders



Safety Meeting Sign-in Sheet

DATE: _____ PROJECT: _____

CONTRACTOR:_____

Foreman's Signature:

Safety Representative:

TOPICS DISCUSSED:

NAME – PRINTED	SIGNATURE	COMPANY
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		

Geotechnical Soil Sampling Safety Guidelines

General Information:		
School Name and Org #:		
Bond Program Manager: _		
Company Name:	Supervisor:	Cell Phone
Scope:	Boring Map Lo	ocation Attached: [circle] YES or NO
Mobilization Date:	_ Demobilization Date:	Work Hours:

Minimum Drilling Safety Guidelines:

- 1. ALL crew members must be properly badged.
- 2. Schedule site access through your Dallas ISD Project Manager
- 3. [If Applicable] Pre-approved signed forms for custodial overtime may apply. Please confirm with your Dallas ISD PM.
- 4. During arrival, check in at the front office with badge displayed in the upper body and face cover.
- 5. Drill Rig must be barricaded and NOT be operated in occupied school areas.
- 6. Before any excavation is started, should contact 811 DIG-TESS for confirmation, Ground penetrating radar (GPR), review of existing plans, and any other reasonable efforts shall be made to determine if any underground utilities (i.e.: power lines, water lines, fuel lines, etc.) are present within the boundaries of the proposed work area. As the excavation work approaches the location of any known utilities, the lines shall be uncovered, using extreme caution not to disturb the lines, and adequate measures shall be taken to protect the lines from damage while the work progresses.
- 7. Any disturbed areas must be returned to existing and safe condition prior to departure.
- 8. Damage to property-Injuries Beyond First Aid must be immediately reported to Alvaro Meza 214-435-2204 and your Dallas ISD Project Manager.

NOTE: This Document is intended to provide a working, uniform minimal level of program guidelines to assist or provide direction to the Contractors. This Document is not intended to replace the need for each Contractor to establish and maintain a proper Illness and Injury Prevention Program as required by the Department of Labor, Occupational Safety and Health Act (29 CFR 1926 and 29 CFR 1910) and the State of Texas.

General Guidelines

PMFs are required to notify and coordinate with the GCs to take proactive steps during inclement weather events. •Construction Services may schedule a coordination call prior to any severe weather event with PMF (in a group call or individually- These calls or meetings may be on a regular or impromptu basis as needed) to share information about projects with medium/high probability of damage to property or interruption to school operations. The intent is to provide Construction Services a complete situational awareness of a school's readiness for return of students, and to eliminate or mitigate risk to DISD's facilities.

PRIOR to Inclement Weather Event:

For projects under construction PMF to provide a report to DISD Construction Services any conditions that may impact campus occupancy or function. Coordination with DISD Maintenance (Managers and Supervisors) and Custodial Services

(campus, and supervisors), along with Principals is REQUIRED. Be prepared to report this coordination.

POST Inclement Weather Event:

PMFs to conduct a field verification and begin the mitigation phase.
Work with contractors and appropriate maintenance personnel to create a recovery plan
Provide Construction Services a real time update - by campus- on said issue(s)
Reporting shall continue as needed till mitigation is completed.

Return of Students and Staff

•PMF Leadership or designee to coordinate with campus Principal and Facility Supervisor. iffeasible, PMF Project Manager will be on site for that morning to confirm good working schooloperations.

Sample Reporting •013-FD Roosevelt – No issues to report •013-FD Roosevelt- 2. Campus has an issue – Provide detailed description and mitigation.

The intent of this document is to establish a minimum level of proactive steps/reporting, but not be completely inflexible.

After Action Reviews or a Root Cause Analysis may be required. Information should be captured to support these events

[End of Document]



DISD 2020 Bond - General Contractor

Step One: Set up your project account with Field Control Analytics formerly FC Construction Services

- Visit <u>www.fcbackground.com/clientsignup/</u> (Internet Explorer 5.0 or higher required)
- Enter your Project Pass Code: DI20SC21

EXISTING CUSTOMERS: You will be required to provide login credentials to complete signup. If you do not know your login credentials contact Customer Support @ <u>customer.support@fieldca.com</u>

You will be required to provide the following information. You will be unable to complete signup without all.

- Billing address and contact information
- Contact information for all authorized users
- Name and contact information for the company that hired you (Prime Contractor)
- Credit card information for payment

ALLOW TWO FULL BUSINESS DAYS FOR ACCOUNT SETUP COMPLETION AND NOTICE TO CLIENT/EMPLOYER

Step Two: Initiate Project Drug Testing, Background Check, and Badging

DISD 2020 Bond - \$74.50 (see Pricing Agreement for details) *Replacement Badge Fee - \$25.00 * Enrollment Fee - \$50.00*

- 1. Upon setup completion, contractor receives Web Instructions to download/print Consent Document.
- 2. Consent Document. (\$25.00 handling fee for employees without a properly authorized Consent Document. No appointment necessary and maps are available online.)
- 3. Most results are available within one business day, but may take up to three. Authorized users will receive an e-mail notification when report results are available.
- 4. DISD badges will be printed and available for pickup at the facility selected during project setup.

Other Important Information

- FCA notifies your General Contractor of all unpaid invoices.
- If a worker fails a drug test, he/she will not be authorized to work for the duration of the project.

Background checks and badging requires one of the following identification sources of a person:

- Current U.S. Driver's License
- U.S. Birth Certificate (along with photo id)
- Current US Passport
- U.S. Citizenship Naturalization
- Foreign Passport

- U.S. issued photo ID Card
- Temporary identification card
- Resident Visa
- Employment Visa

Acceptable forms of ID do not include the non-US issued Matricula Card.

DISD 2020 Bond Badge Qualifications:

- Negative drug test result
- No felony convictions, no open or pending felony cases for crimes against a minor (no time limit)
- No felony convictions, no open or pending felony cases for crimes against a person (25 years)
- No felony convictions, no open or pending felony cases (7 years)
- No misdemeanor crimes (see misdemeanor offenses below). Misdemeanor records are limited to the previous 7-years.
- No registered sex offenders
- No outstanding warrants for crimes that would disqualify an individual from receiving a badge

Misdemeanor Offenses Include the following: Possession of a Prohibited Weapon Unlawful Carrying Weapon Purchase/Furnish Alcohol to Minor Assault Causes Bodily Injury Terroristic Threat Enticing a Child Harboring Runaway Child Violation of a Protective Order **Criminal Mischief** Burglary Shoplifting Theft Larceny Fraud Forgery Passing Forgery Writing Fleeing from Police Officer Leaving Scene of Accident Failure to Stop and Give Information Fail to Identify Giving False/Fictitious Info **Resisting Arrest** Evading Arrest/Detention Escape from Custody Interference with Public Duties **Disorderly Conduct** Interference with Emergency Call Harassment Prostitution

FCA Client Support Team Phone: (972) 404-4479 Monday - Friday 6:00am – 6:00pm CST_ customer.support@fieldca.com




DISD 2020 Bond – Professional Services

Step One: Set up your project account with Field Control Analytics formerly FC Construction Services

- Visit <u>www.fcbackground.com/clientsignup/</u> (Internet Explorer 5.0 or higher required)
- Enter your Project Pass Code: **DI20PS21**

EXISTING CUSTOMERS: You will be required to provide login credentials to complete signup. If you do not know your login credentials contact Customer Support @ <u>customer.support@fieldca.com</u>

You will be required to provide the following information. You will be unable to complete signup without all.

- Billing address and contact information
- Contact information for all authorized users
- Name and contact information for the company that hired you (Prime Contractor)
- Credit card information for payment

ALLOW TWO FULL BUSINESS DAYS FOR ACCOUNT SETUP COMPLETION AND NOTICE TO CLIENT/EMPLOYER

Step Two: Initiate Project Drug Testing, Background Check, and Badging

DISD 2020 Bond - \$74.50 (see Pricing Agreement for details) *Replacement Badge Fee - \$25.00 * Enrollment Fee - \$50.00*

- 1. Upon setup completion, contractor receives Web Instructions to download/print Consent Document.
- 2. Consent Document. (\$25.00 handling fee for employees without a properly authorized Consent Document. No appointment necessary and maps are available online.)
- 3. Most results are available within one business day, but may take up to three. Authorized users will receive an e-mail notification when report results are available.
- 4. DISD badges will be printed and available for pickup at the facility selected during project setup.

Other Important Information

- FCA notifies your General Contractor of all unpaid invoices.
- If a worker fails a drug test, he/she will not be authorized to work for the duration of the project.

Background checks and badging requires one of the following identification sources of a person:

- Current U.S. Driver's License
- U.S. Birth Certificate (along with photo id)
- Current US Passport
- U.S. Citizenship Naturalization
- Foreign Passport

- U.S. issued photo ID Card
- Temporary identification card
- Resident Visa
- Employment Visa

Acceptable forms of ID do not include the non-US issued Matricula Card.

DISD 2020 Bond Badge Qualifications:

- Negative drug test result
- No felony convictions, no open or pending felony cases for crimes against a minor (no time limit)
- No felony convictions, no open or pending felony cases for crimes against a person (25 years)
- No felony convictions, no open or pending felony cases (7 years)
- No misdemeanor crimes (see misdemeanor offenses below). Misdemeanor records are limited to the previous 7-years.
- No registered sex offenders
- No outstanding warrants for crimes that would disqualify an individual from receiving a badge

Misdemeanor Offenses Include the following: Possession of a Prohibited Weapon Unlawful Carrying Weapon Purchase/Furnish Alcohol to Minor Assault Causes Bodily Injury Terroristic Threat Enticing a Child Harboring Runaway Child Violation of a Protective Order **Criminal Mischief** Burglary Shoplifting Theft Larceny Fraud Forgery Passing Forgery Writing Fleeing from Police Officer Leaving Scene of Accident Failure to Stop and Give Information Fail to Identify Giving False/Fictitious Info **Resisting Arrest** Evading Arrest/Detention Escape from Custody Interference with Public Duties **Disorderly Conduct** Interference with Emergency Call Harassment Prostitution

FCA Client Support Team Phone: (972) 404-4479 Monday - Friday 6:00am – 6:00pm CST_ customer.support@fieldca.com





DISD 2020 Bond - Subcontractor

Step One: Set up your project account with Field Control Analytics formerly FC Construction Services

- Visit <u>www.fcbackground.com/clientsignup/</u> (Internet Explorer 5.0 or higher required)
- Enter your Project Pass Code: DI20SC21

EXISTING CUSTOMERS: You will be required to provide login credentials to complete signup. If you do not know your login credentials contact Customer Support @ <u>customer.support@fieldca.com</u>

You will be required to provide the following information. You will be unable to complete signup without all.

- Billing address and contact information
- Contact information for all authorized users
- Name and contact information for the company that hired you (Prime Contractor)
- Credit card information for payment

ALLOW TWO FULL BUSINESS DAYS FOR ACCOUNT SETUP COMPLETION AND NOTICE TO CLIENT/EMPLOYER

Step Two: Initiate Project Drug Testing, Background Check, and Badging

DISD 2020 Bond - \$74.50 (see Pricing Agreement for details) *Replacement Badge Fee - \$25.00 * Enrollment Fee - \$50.00*

- 1. Upon setup completion, contractor receives Web Instructions to download/print Consent Document.
- 2. Consent Document. (\$25.00 handling fee for employees without a properly authorized Consent Document. No appointment necessary and maps are available online.)
- 3. Most results are available within one business day, but may take up to three. Authorized users will receive an e-mail notification when report results are available.
- 4. DISD badges will be printed and available for pickup at the facility selected during project setup.

Other Important Information

- FCA notifies your General Contractor of all unpaid invoices.
- If a worker fails a drug test, he/she will not be authorized to work for the duration of the project.

Background checks and badging requires one of the following identification sources of a person:

- Current U.S. Driver's License
- U.S. Birth Certificate (along with photo id)
- Current US Passport
- U.S. Citizenship Naturalization
- Foreign Passport

- U.S. issued photo ID Card
- Temporary identification card
- Resident Visa
- Employment Visa

Acceptable forms of ID do not include the non-US issued Matricula Card.

DISD 2020 Bond Badge Qualifications:

- Negative drug test result
- No felony convictions, no open or pending felony cases for crimes against a minor (no time limit)
- No felony convictions, no open or pending felony cases for crimes against a person (25 years)
- No felony convictions, no open or pending felony cases (7 years)
- No misdemeanor crimes (see misdemeanor offenses below). Misdemeanor records are limited to the previous 7-years.
- No registered sex offenders
- No outstanding warrants for crimes that would disqualify an individual from receiving a badge

Misdemeanor Offenses Include the following: Possession of a Prohibited Weapon Unlawful Carrying Weapon Purchase/Furnish Alcohol to Minor Assault Causes Bodily Injury **Terroristic Threat** Enticing a Child Harboring Runaway Child Violation of a Protective Order **Criminal Mischief** Burglary Shoplifting Theft Larceny Fraud Forgery Passing Forgery Writing Fleeing from Police Officer Leaving Scene of Accident Failure to Stop and Give Information Fail to Identify Giving False/Fictitious Info Resisting Arrest Evading Arrest/Detention Escape from Custody Interference with Public Duties **Disorderly Conduct** Interference with Emergency Call Harassment Prostitution

FCA Client Support Team Phone: (972) 404-4479 Monday - Friday 6:00am – 6:00pm CST_ customer.support@fieldca.com





FCA EXPRESS - DALLAS SCREENING & BADGING FACILITY

ADDRESS

12801 N. Stemmons Frwy. Ste. 807 Farmers Branch, TX 75234 Phone: 833.227.0637; option 2 Hours: 7:30am - 4:30pm Monday - Friday

OPENING FEBRUARY 14, 2022



Scan the QR code for instant directions!









All FCA Express locations can process screens that require a background, drug test and badge.

www.fieldcontrolanalytics.com | 800-388-88827

PART 1 - GENERAL

<<< Revise this Section by deleting and inserting text to meet Project-specific requirements.

Much of this Section consists of Project-specific data. Examples given in the model text in the Evaluations illustrate possible Section content. Use the model text to develop text for specific Project requirements. See Evaluations.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed. >>>

1.1 Related Documents

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 Summary

- A. Section includes:
 - 1. Project information
 - 2. Work covered by Contract Documents
 - 3. Phased construction
 - 4. Access to site
 - 5. Coordination with occupants
 - 6. Work restrictions

B. Related Sections:

- 1. Division 00 Section 00 31 00 Available Project Information
- 2. Division 00 Section 00 31 18 School Operations Parameters Statement
- 3. Division 01 Section 01 50 00 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities
- 4. Division 01 Section 01 52 14 "Temporary Facilities for Students" for specifications and procedures regarding the use of temporary swing space that the Contractor may furnish and install to accommodate the Work

1.3 **Project Information**

A. Refer to Section 00 31 00

ORG 220 – MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED – RENOVATION

- 1. Provide security updates including cameras, card access readers, and door contacts.
- 2. Provide secure front vestibule.
- 3. Replace exterior waterproofing/sealant joints.
- 4. Replace fire alarm system.
- 5. Replace exterior lights with LED lighting and controls.
- 6. Partial Interior LED light replacement and controls.
- 7. Replace teaching surfaces at each classroom.
- 8. Provide new marquee sign located at front entry.
- 9. Remove and replace concrete pavement and sidewalks.
- 10. Mechanical/HVAC improvements include new split system, central station, rooftop and fan coil units, water pumps and piping, VAV boxes, ductwork, and controls on pumps and units.
- 11. Plumbing improvements include grease waste and waste piping replacement, new hot water heater and hose replacement.
- 12. Provide/replace IDF/MDF air conditioning.
- 13. Replace Sanitary Sewer Lines
- 14. Update and relocate Nurse Clinic

1.5 Multiple Project Site Representation for Bid Packages. If multiple project sites are identified in the Work, the contractor shall employ and designate one qualified full-time Superintendent who shall oversee the performance on each individual project site within the bid package, for the duration of the project. Any deviation from this will need to be approved by DISD and the Program Manager.

1.6 Schedule of Values for Bid Packages. If multiple project sites are identified in the Work, the contractor shall provide one Schedule of Values for each project site attached to each application for payment. In addition, each school site shall have a separate schedule of values in the CSI format followed in the bid documents, identifying the labor and material components separately. Projects that have both Renovation and Addition scope shall have a sub-total for each of these two categories, within the Schedule of Values.

1.7 Concurrent Construction for Bid Packages. Work (additions and renovations) at each school site will be performed concurrently with the other school sites unless otherwise indicated by DISD.

1.8 Phasing. Since the school buildings will be in use during construction, the Work shall be conducted in such a manner as to not interrupt or disturb school activities. THE PHASING PLANS ARE GUIDELINES AND ARE USED TO IDENTIFY A POSSIBLE APPROACH TO THE WORK. THE CONTRACTOR MAY SUBMIT A PHASING PLAN. ANY DEVIATION FROM THE SUGGESTED PLAN CONTAINED IN THE CONTRACT DOCUMENTS MUST BE APPROVED BY THE A/E, PROGRAM MANAGER, AND PRINCIPAL PRIOR TO IMPLEMENTATION.

- A. Temporary classroom space (Swing Space) if needed, shall be provided by the Contractor. The Contractor will be responsible for all associated planning, permitting, scheduling, installation, removal, site restoration, coordination and costs associated with providing temporary space for classrooms. Temporary classroom space will be in accordance with Section 01 52 14 TEMPORARY FACILITIES FOR STUDENTS.
- B. The Contractor may submit, as part of the proposal, optional phasing plans that can potentially save the District time and money.
- C. Some work may need to be performed after normal school operating hours, nights and weekends. A DISD representative must be present at the school during times that the Contractor is working at the school site. The Owner will incur overtime costs for DISD staff presence at the school site outside normal hours of school operation, including weekends and holidays. Such overtime costs

incurred will be the financial responsibility of the General Contractor and will be credited to the Owner in a manner to be determined by the DISD and the Program Manager.

- D. Refer to the School Operations Parameter Statement Section for details of the regular working hours, holidays and procedures for custodial overtime, etc.
- E. Work cannot start in a particular Phase until students/staff have been relocated to the designated Swing Space (either in the existing building or in Temporary Buildings outside) or until there is an arrangement in place for alternate shift work involved.

1. Close coordination with the A/E, Program Manager, and the School Staff, will be required of the Contractor.

- F. Certain areas included in the Contractor's scope of work may contain furniture, boxes, etc. Protection of these contents is the responsibility of the Contractor.
- G. Refer to Construction Documents for additional Phasing information.

1.9 HVAC and Water Treatment Requirements. Contractor will coordinate with DISD for water treatment and HVAC maintenance. Please refer to the plumbing and mechanical specifications for the contractor's responsibilities related to these requirements.

1.10 Phase Acceptance. Upon certification by the Contractor and recommendation of the A/E, DISD will accept the Work of each individual phase as it is completed. Architectural acceptance shall be called "phase acceptance". The HVAC, electrical, plumbing and roofing systems will be accepted by DISD when the entire project has been completed; at that point, upon completion of all relevant contractual requirements, DISD will issue substantial completion. The contractor will operate and maintain the HVAC, electrical and plumbing systems that are a part of his scope of work until substantial completion. The contractor's warranty for any new HVAC, electrical, plumbing and roofing systems shall commence at substantial completion for each school project. The contractor will install new filters and record date of replacement on each filter upon substantial completion.

1.11 Use of Technology for Project Management. DISD will furnish information related to accessing web-enabled project management applications for this contract. DISD and the Program Manager will implement project management software, that will be easily accessible through the Internet. Contractor will cooperate with the Program Manager for the implementation and use of this tool.

Contractor will be required to create and post several types of documents into the web-enabled project management software via the Internet. Request for Information (RFIs) will be posted by the Contractor and responded to by the A/E(s) in the software via the Internet, thereby facilitating communication among all parties and expediting resolution of issues. A/E responses to RFIs will not be considered official and are still subject to revision until the Program Manager has approved the response in the software. Any meeting minutes and field reports required to be created by the Contractor or A/E(s) will be posted to the software. DISD and the Program Manager reserve the right to require additional documents to be entered into the software at their discretion.

1.12 Permitting. Contractors are responsible for the costs of acquiring the building permit at standard City of Dallas rates.

1.13 Storm Water Pollution Prevention Plan. Once the Notice to Proceed has been issued, the Contractor is obligated to comply with the applicable municipalities and applicable SWPPP codes and protocol. The Contractor assumes full responsibility for any complaints, citations, maintenance and complete management of the SWPPP plan including any and all documentation. For new schools with demolition scope by a separate contractor, Contractor shall coordinate with the separate contractor for a seamless transfer / transition of an existing SWPPP. Contractor will then submit all documentation to the District at closeout.

1.14 Construction Specification Index. All construction documentation will follow the Construction Specification Index format followed by the construction bid documents.

1.15 The contractor shall tag locations of all equipment within the scope of work by securing a plastic tag on the appropriate ceiling grid locations. This will assist easy identification of the equipment to DISD maintenance staff. The contractor will install stickers on all equipment provided indicating the warranty dates/periods and the contact information.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to the Contractor. Refer to the AIA 201 General conditions for additional requirements concerning allowances,
 - 2. All lump-sum and Owner Controlled Allowances are within the Contract Sum, and shall be covered by the bonds, insurance, general conditions, overhead, profit and all other costs so that the totals represented by the Allowances are available without additional charge or cost to the Owner.
- B. Types of allowances include the following:
 - 1. Lump-sum allowances.
 - 2. Owner Controlled Contingency allowances.
- C. Related Sections:
 - 1. Division 00, File 00 41 11 Proposal Form Base Bid.
 - 2. Division 01, File 01 22 00 Unit Prices (for procedures for using unit prices)
 - 3. Divisions 02 through 49 (or as applicable) Sections for items of Work covered by allowances.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, Contractor shall advise Architect and Program Manager of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's or Program Manager's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Once the proposal is approved by the Owner, purchase products and systems selected by Architect from the designated supplier.

1.4 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Allowance Expenditure Request Authorization (AERA).

- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- C. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- D. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include freight, insurance, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials under allowance shall be included as part of the Contract Sum and not part of the allowance.

1.7 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a proposal based on the difference between purchase amount and the allowance.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
 - 3. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

B. Schedule of Allowances is included in section 00 41 11

END OF SECTION 01 21 00

SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Sections:
 - 1. Division 00 Section 00 41 12 Proposal Form Alternates and Unit Pricing.
 - 2. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 3. Division 01 Section "Quality Requirements" for general testing and inspecting requirements (File: 01 40 00)

1.3 DEFINITIONS

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are either increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, and profit.
- B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. If the quantities of the items listed in the Schedule of Unit Prices are increased, the Unit Prices set forth by the Contractor in Section 00 41 12 shall apply to such increased quantities. Unit Prices for adjusting the Contract Sum for less work or material installation will be 95% of these amounts.
- PART 2 PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

3.1 SCHEDULE OF UNIT PRICES

Refer to section 00 41 12 for Schedule of Unit Prices.

END OF SECTION 01 22 00

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by Proposers and stated on the Proposal Form for certain work defined in the Proposal Requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the total addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum. Pricing for alternates may not be submitted or listed in the form of an allowance amount on the proposal form.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
 - 2. Cost listed for each Alternate includes cost of related coordination, modification or adjustment.
- B. Notification: Immediately following award of the Contract, Contractor shall prepare and distribute to each entity or person to be involved in the performance of the Alternate Work, a notification of the status of each Alternate scheduled herein. Indicate which alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates if any.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Contractor shall be responsible for any changes in the Work affected by acceptance of Alternates. Claims for additional costs or time extensions resulting from changes to the Work as a result of the Owner's election of any or all Alternates will not be allowed.

E. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

- 3.1 SCHEDULE OF ALTERNATES
 - A. Refer to section 00 41 12 for Schedule of Alternates

END OF SECTION 01 23 00

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Sections:
 - 1. Division 01 Section "Allowances" for products selected under an allowance.
 - 2. Division 01 Section "Alternates" for products selected under an alternate.
 - 3. Division 01 Section "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
 - 4. Divisions 02 through 49 Sections for specific requirements and limitations for substitutions.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor and Owner.

1.4 SUBMITTALS

- A. Substitution Requests: Submit five (5) copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include related Specification Section number and title, Drawing numbers and titles and complete documentation for substitution. Include the following information with each request:
 - 1. Certification by the Contractor to the effect that, in the Contractor's opinion, after thorough evaluation, the proposed substitution will result in work that in every significant respect is equal to or better than the work required by the Contract Documents, and that it will perform adequately in the application indicated.
 - a. Include in a certification the Contractor's waiver of right to additional payment or time, which may subsequently be necessary because of the failure of the substitution to perform adequately.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.

- b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
- c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
- d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
- e. Samples, where applicable or requested.
- f. Certificates and qualification data, where applicable or requested.
- g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
- h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
- i. Research reports evidencing compliance with building code in effect for Project, from IBC.
- j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
- k. Cost information, including a proposal of change, if any.
- 3. Approval: If necessary, Architect will request additional information or documentation for evaluation within a reasonable amount time from receipt of a request for substitution. Architect will recommend to the Program Manager acceptance or rejection of proposed substitution within a reasonable amount of time from receipt of all required documentation. Program Manager will recommend to the District acceptance or rejection of proposed substitution within a reasonable amount of time from receipt of all required documentation. Upon recommendation from the Program Manager, the District will provide acceptance or rejection of proposed substitution within a reasonable amount of time from receipt of all required documentation.
 - a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work with Program Manager and Owner written approval.
 - b. Rejection will include a statement giving reason for rejection.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions.
- B. The Owner may not consider the request if the Contractor cannot provide the product or method because of failure to pursue work promptly or coordinate activities properly.

2.1 SUBSTITUTIONS

Approval process for both types of substitutions shall be as described above.

- A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than fifteen (15) days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within twenty (20) days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect, only when there is an advantage to the Owner. The Owner may override rejections made by the Architect and request that the Program Managers make a determination as to whether the substitution shall be considered by the Architect.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.

- j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- C. System Substitution: No changes should be anticipated in major building system types or approved manufactures in pricing of schedule; the Owner has standardized materials in place in existing buildings, and will not change for the convenience of the contractor.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 25 00

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Provisions established within the General, Supplementary and Other Conditions of the Contract, Division 1 – General Requirements, and Drawings are collectively applicable to this Section.

1.02 SECTION INCLUDES

A. Procedures for preparation and submittal of Application for Payment.

1.03 RELATED SECTIONS/DOCUMENTS

- A. General Conditions: Progress Payment, and Final Payment.
- B. Section 01340 Shop Drawings, Product Data and Samples
- C. Section 01370 Schedule of Values

1.04 FORMAT

- A. AIA G702 Application and Certificate for Payment
- B. For continuation sheet, use AIA G703 in format at Section 01 29 73 for schedule of values.

1.05 PREPARTATION OF APPLICATIONS

- A. Type required information or use media printout.
- B. Execute certification by authorized officer.
- C. Use data on accepted Schedule of Values. Provide dollar value in each column for each line item for portion of Work performed and for products.
- D. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for original item of Work.
- E. Prepare Application for Final Payment as specified by Program Manager.
- F. Prepare one application with a schedule of values for each school with a breakdown in the CSI format followed by the bid documents.
- G. Projects that have both Renovation and Addition scope shall have a sub-total for each of these two categories, within the Schedule of Values.

1.06 SUBMITTAL PROCEDURES

- A. Schedule meeting (20) days prior to submitting first pay request, to review schedule with Architect, and Project Manager.
- B. Submit one (1) original copy of each Application for Payment at times stipulated in Agreement.
- C. Submit under transmittal letter.

D. Payment Period: Submit at intervals stipulated in the Agreement.

1.07 SUBSTANTIATING DATA

- A. When Architect requires substantiating information, submit data justifying line item amounts in questions. On Owner controlled allowance items, submit actual invoices from supplier of product or service.
- B. Provide one (1) copy of data with cover letter for each copy of submittal. Show Application number and date, and line item by number and description.

1.08 FORMAT AND SUBMITTAL REQUIREMENTS

- A. Set-up format and submittal requirements include but are not limited to the following:
 - a. Contractor must use AIA 702 and AIA 703 forms for Application for Payment.
 - b. All values should be taken to the hundredth (penny).
 - c. All items must be broken down by school, by addition/renovation (where applicable). This break down must match the breakdown as specified in the GC Contract or established with the Program Manager.
 - d. All items must be organized by the CSI division.
 - e. All items must be broken down by material and labor.
 - f. All applicable CSI divisions must be sub-totaled.
 - g. Each addition/renovation (where applicable) and school must be sub-totaled.
 - h. The Owner's Contingency Allowance (O.C.A.) should occupy one line item at the bottom of each addition/renovation and match the amount specified in the GC contract. This line item should be separated from any other CSI division.
 - i. All other contract allowances (pre-bid or post-bid) should be specified per the GC contract and included in CSI division 1.
 - j. Contractor must include a summary by school, by addition/renovation (where applicable), at the end of AIA 703.
 - k. General Conditions, P&P Bonds, Insurance, Fee, Building Permit, and Mobilization must be broken out and included in CSI division 1.
- B. Post-set-up format and submittal requirements include but are not limited to the following:
 - a. Contractor may not change the "scheduled values" after approval of the Schedule of Values (SOV) by the A/E, PM, and DISD (at first Application for Payment).
 - b. Include DISD P.O. number on AIA 702.
 - c. Include DISD P.O. number in application number. For example, "222123-3" would be the third Application for Payment for P.O. 222123.
 - d. Certified by A/E.
 - e. Previous invoice totals match previous invoice.
 - f. Attach fully executed signature page when billing for any DISD-approved CAEAs.
 - g. Attach fully executed signature page when billing for any DISD-approved AERAs.
 - h. Attach fully executed signature page when billing for any DISD-approved CAELs.
 - i. Attach fully executed signature page when billing for any DISD-approved Change Orders.
 - j. Attach an M/WBE Pay Activity Report, signed or acknowledged by e-mail or waiver by all minority subcontractors. (Acknowledgment must include amount paid during current period.)
 - k. Attach all Custodian Overtime Approval forms for the billing period, with a summary of OT hours to date for the project.
 - I. Attach a complete project schedule for each project, updated for the billing period, with substantial completion dates per GC contract.
 - m. Attach a Title Transfer Form insurance/bonding documents for storage facility for any material stored off-site, per GC contract.
 - n. Attach "GC Application for Payment Review & Sign-Off" with GC signature signifying review of all Application for Payment elements.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 01 29 00

SECTION 01 29 73 - SCHEDULE OF VALUES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Provisions established within the General, Supplementary and Other Conditions of the Contract, Division 1 – General Requirements, and the Drawings are collectively applicable to this Section.

1.02 REQUIREMENTS INCLUDED

A. Procedures for preparation and submittal of Schedule of Values.

1.03 RELATED SECTIONS/DOCUMENTS

- A. General Conditions.
- B. Section 01 29 00 Payment Procedures.

1.04 FORMAT

- A. Print schedule on AIA Documents G703 Continuation Sheet for Application and Certificate for Payment.
- B. Follow Table of Contents of Project Manual for listing components parts. Identify each line item by number and title of major Specifications Section.

1.05 CONTENT

- A. Using CSI format, each school shall have a separate schedule of values for Renovation Work and for Addition Work, as applicable.
- B. In CSI format, list installed value of each major item of Work and each subcontracted item of Work as a separate line item to serve as a basis for computing values for Progress Payments. Do NOT Round off values to nearest dollar. All values should be taken to the hundredth (penny).
- C. In CSI format, for each major subcontract, list material and labor of that subcontract as separate line items.
- D. List Owner Controlled Contingency Allowance and other allowances with the specified monetary amount for each allowance in separate divisions.
- E. Contractor to use separate lines for bonds, insurance, temporary facilities and controls, superintendence, and mobilization. Each item shall include pro rata portion of overhead and profit.
- F. The sum of the values listed shall equal total Contract Sum.

1.06 SUBMITTAL

- A. Submit electronic copy of Schedule of Values within ten (10) days of award of contract and prior to Pre-Construction Meeting.
- B. Transmit under Architect accepted form transmittal letter. Identify Project by title and number.
- C. Secure the A/E and Program Manager's (PM) review of the Schedule of Values prior to submitting the first Pay Application.
- D. Limit amount of items on the Schedule of Values not to exceed \$25,000, unless approved by the Architect and the Program Manager.
- E. Break all major equipment costs into equipment and materials/labor at a minimum.

1.07 SUBSTANTIATING DATA

- A. When the A/E or the PM requires substantiating information, submit data justifying line item amounts in question.
- B. Provide one (1) copy of data with cover letter for each copy of Pay Application. Show Pay Application number and date and line item by number and description.
- PART 2 PRODUCTS (Not Applicable)
- PART 3 EXECUTION (Not Applicable)

END OF SECTION - 01 29 73

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Administrative and supervisory personnel.
 - 3. Requests for Information (RFIs).
 - 4. Project meetings.
- B. Related Sections:
 - 1. Division 01 Section "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Owner, Architect, or Contractor seeking information from each other during construction.

1.4 COORDINATION

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.

- 6. Pre-Installation conferences.
- 7. Project closeout activities.
- 8. Startup and adjustment of systems.
- 9. Shutdown requests
- 10. Abatement coordination
- 11. Owner inspections
- 12. Training

1.5 KEY PERSONNEL

- A. Key Personnel Names: Within ten (10) days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
 - 1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.6 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified using the District-specified electronic project management software.
 - 1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
 - 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 - 1. Project name.
 - 2. Project number.
 - 3. Date.
 - 4. Name of Contractor.
 - 5. Name of Architect.
 - 6. RFI number, numbered sequentially.
 - 7. RFI subject.
 - 8. Specification Section number and title and related paragraphs, as appropriate.
 - 9. Drawing number and detail references, as appropriate.
 - 10. Field dimensions and conditions, as appropriate.
 - 11. If solution(s) impacts the Contract Time, Construction Documents or the Contract Sum, Contractor shall state impact in the RFI. Select importance category from pull down menu.
 - 12. Include e-mail notification to the Architect, Program Manager and District Project Manager for all RFI's.
 - 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

- C. RFI Forms: Software-generated form generated using District-specified electronic project management software with substantially the same content as indicated above.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow fourteen (14) working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
 - 1. The following RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for coordination information already indicated in the Contract Documents.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Architect's actions on submittals.
 - f. Incomplete RFIs or inaccurately prepared RFIs.
 - 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
 - 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum will be administered per the general conditions of contract.
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Program Manager in writing within seven (7) days of receipt of the RFI response.
- E. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect and Program Manager within seven (7) days if Contractor disagrees with response.
- F. RFI Log: Prepare, maintain, and submit on a weekly basis a log of RFI's organized by the RFI number. The log should be generated using the District-specified electronic project management software and should contain the following basic information:
 - 1. Project name.
 - 2. Name and address of Contractor.
 - 3. Name and address of Architect.
 - 4. RFI number including RFIs that were dropped and not submitted.
 - 5. RFI description.
 - 6. Date the RFI was submitted.
 - 7. Date Architect's response was received.
 - 8. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.7 PROJECT MEETINGS

- A. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference at the earliest possible date after the execution of the Agreement and before starting construction, at a time convenient to Owner, PM and Architect.
 - 1. Purpose of the conference will be to review responsibilities and personnel assignments.
 - 2. Attendees: Authorized representatives of Owner, PM, Architect, and their consultants; Contractor, Contractor's Project Manager and its superintendents; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Introductions
 - b. Submission of Post Proposal Information if any outstanding

- c. Tentative Construction schedule.
- d. Safety
 - 1) Emergency Contact List
 - 2) First aid.
 - 3) Site Security.
 - 4) Badging requirements
- e. Meetings: dates, locations, attendees, types, agendas
- f. Communication: District-specified electronic project management software set up and administration procedures, correspondence flow
 - 1) Lines of communications, decision ladder and escalation procedures.
- g. Schedule:
 - 1) Phasing
 - 2) Critical work sequencing and long-lead items
- h. Designation of key personnel and their duties
- i. Procedures for processing field decisions and Change Orders
- j. Procedures for RFIs
- k. Consultant / Lab Notification Requirements
 - 1) HazMat
 - 2) Roofing
 - 3) Test & Balance
 - 4) Materials Testing
 - 5) Inspecting
- I. Procedures for processing Applications for Payment
 - 1) Schedule of Values
 - 2) Review
 - 3) M/WBE
- m. Distribution of the Contract Documents.
- n. Submittal procedures.
- o. Preparation of record documents. Use of the premises and existing building Work restrictions.
- p. Working hours.
- q. After hours work requirements and overtime payment procedures.
- r. Owner's occupancy requirements.
- s. Responsibility for temporary facilities and controls.
 - 1) Site access
 - 2) Signage
 - 3) Dumpsters
 - 4) Fencing
 - 5) SWPPP
 - 6) Parking availability
 - 7) Office, work and storage areas
 - 8) Equipment deliveries and priorities
- t. Procedures for shutdowns.
- u. Progress cleaning.
- 4. Minutes: Architect will record and distribute meeting minutes and sign-in sheet using the District-specified electronic project management software.
- B. Progress Meetings: The architect will schedule and administer progress meetings at weekly intervals.
 - 1. Contractor shall make physical arrangements at site for the progress meetings.
 - 2. Location of meetings: Contractor's field office, unless agreed upon mutually by the Architect, Contractor and PM.
 - a. Determine at the Pre-construction Meeting if space in the existing facility or facilities is available for meetings.
 - b. For multiple school Bid Packages, weekly progress meetings will be held at each school site on a rotating basis. Site specific meetings may be held at the discretion of the PM.

- 3. Architect will prepare agenda, distribute notice of the meeting, preside at meetings, record minutes and distribute copies within three (3) days after meeting to participants, and to entities affected by decisions at meetings.
- 4. Coordinate dates of meetings with preparation of payment requests.
- 5. Attendees: In addition to representatives of Owner, Program Manager, Professional Consultants, as appropriate to the agenda, and Architect, each contractor, job superintendent, subcontractor, supplier, and other entities as appropriate to the agenda shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
- 6. Agenda:
 - a. Review and correct or approve minutes of previous progress meeting.
 - b. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - 1) Safety (lost time, accidents, violations, etc.)
 - 2) Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - a) Review schedule for next period.
 - 3) New Business (Field observations, problems, decision, identification of problems which impeded planned progress, non-confirming work, etc.)
 - 4) RFI's and RFI log review
 - 5) Submittals and submittal log review
 - 6) RFP's, CAEAs and related log reviews
 - 7) Review of draft Application for Payment, as necessary.
 - c. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Access.
 - 4) Site utilization.
 - 5) Temporary facilities and controls.
 - 6) Progress cleaning.
 - 7) Quality and work standards.
 - 8) Status of correction of deficient items.
 - 9) Field observations.
 - 10) Pending claims and disputes.
- 7. Minutes: Using the District-specified electronic project management software, the entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction. These include pre-dig, pre-lift, pre-drill, pre-power shutdown, or pre-roof meetings at the work site prior to commencing the specific construction activity.
 - 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Owner, PM, and Architect of scheduled meeting dates, five business (5) days in advance
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

- a. Contract Documents.
- b. Related RFIs.
- c. Approved submittals.
- d. Review of mock-ups.
- e. Possible conflicts and/or delays
- f. Compatibility problems.
- g. Time schedules.
- h. Safety issues and AHA's
- i. Weather limitations.
- j. Manufacturer's written recommendations.
- k. Warranty requirements.
- I. Compatibility of materials.
- m. Acceptability of substrates.
- n. Space and access limitations.
- o. Testing and inspecting requirements.
- p. Installation procedures.
- q. Coordination with other work.
- r. Required performance results.
- s. Protection of adjacent work.
- t. Protection of construction and personnel.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions, using the District specified electronic management software
- 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
- 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Pre-installation Conference: When required in individual Specification Sections, convene a Preinstallation conference at work site prior to commencing work of the section.
 - 1. Require attendance of entities directly affecting or affected by Work of the Section.
 - 2. Notify Owner, PM and Architect at least five (5) business days in advance of meeting date.
 - 3. Prepare agenda, preside at conference, record minutes (using the District specified electronic management software), and distribute copies within two (2) business days after conference to participants.
 - 4. Review conditions of reinstallation, preparation and installation procedures, and coordination with related work.
- E. Project Closeout Conference: Schedule and conduct a Project closeout conference, at a time convenient to Owner, Program Manager and Architect, but no later than fourteen (14) days prior to the scheduled date of Substantial Completion.
 - 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 - 2. Attendees: Authorized representatives of Owner, Program Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of record documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Submittal of written warranties.

- d. Requirements for preparing operations and maintenance data.
- e. Requirements for demonstration and training.
- f. Preparation of Contractor's punch list.
- g. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
- h. Submittal procedures.
- i. Responsibility for removing temporary facilities and controls.
- 4. Minutes: Entity conducting meeting will record and distribute meeting minutes using the District-specified electronic project management software.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Daily construction reports.
 - 2. Material and equipment delivery status reports.
- B. Related Sections:
 - 1. Division 01 Section "Construction Progress Schedule".
 - 2. Division 01 Section "Submittal Procedures" for submitting schedules and reports.
 - 3. Division 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. PDF electronic file uploaded to District's Project Management software.
- B. Daily Construction Reports: Submit at weekly intervals.
- C. Material and Equipment Delivery Status Reports: Submit at weekly construction progress meetings.

PART 2 - PRODUCTS

2.1 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report using the District-specified Project Management software recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. Approximate count of personnel at Project site.
 - 3. Equipment at Project site.
 - 4. Material deliveries.
 - 5. High and low temperatures and general weather conditions, including presence of rain or snow.

- 6. Accidents.
- 7. Meetings and significant decisions.
- 8. Unusual events (refer to special reports).
- 9. Stoppages, delays, shortages, and losses.
- 10. Meter readings and similar recordings.
- 11. Emergency procedures.
- 12. Orders and requests of authorities having jurisdiction.
- 13. Change Orders received and implemented.
- 14. Construction Change Directives received and implemented.
- 15. Services connected and disconnected.
- 16. Equipment or system tests and startups.
- 17. Partial completions and occupancies.
- 18. Substantial Completions authorized.
- B. Material and Equipment Delivery Status Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

PART 3 - EXECUTION – Not Used

END OF SECTION 01 32 00

SECTION 01 32 16 – CONSTRUCTION PROGRESS SCHEDULE

- PART 1 GENERAL
 - 1.01 Description
 - A. Section includes administrative and procedural requirements for developing, submitting and updating a detailed Critical Path Method (CPM) project schedule and related reports. The project schedule is developed by the Contractor and herein referred to initially as the Preliminary CPM Schedule. Subsequent to the Owner, Architect and Contractor acceptance of the Preliminary CPM Schedule, the Contractor completes the development of a more complete and thorough schedule called the Detailed CPM Schedule. Once the Detailed CPM Schedule is accepted by the Program Manager (PM), Architect, and the Contractor, it shall be "baselined" and referred to as the Project Schedule or Detailed CPM Schedule. Monthly progress updates will be compared to the baseline schedule.
 - B. If the Contractor should desire or intend to complete the Work earlier than any required milestone, completion date, or end period of performance, then the Owner/PM shall not be liable to the Contractor for any costs or other damages should the Contractor be unable to complete the work before such milestone, completion date or end of Period of performance.
 - 1.02 Quality Control and Quality Assurance
 - A. The Contractor shall develop and maintain a Project Schedule for each project site (School) (referred to as the Preliminary CPM Schedule and ultimately the Project Schedule) in accordance with the requirements of this Section. The requirement for a Project Schedule is included to:
 - 1. Ensure adequate planning before and during the execution and progress of the Work in accordance with the allowable number of working days and milestones.
 - 2. Assure coordination and execution of the work among various trades of the Contractor, subcontractors, suppliers, third party utility companies or other related entities that may be involved in the Project.
 - 3. Assist the Contractor and the Owner in evaluating:
 - a. Contract performance relative to the required contract schedule milestones
 - b. Monthly progress
 - c. Proposed Contract Modifications
 - d. Documenting anticipated, requested and or approved time extensions
 - e. The documentation of unplanned events, time extensions and other impacts arising from such events

- B. The project schedule shall show the sequence and interdependence of activities required for complete performance of the work. The Contractor shall be responsible for assuring all work sequences are logical and show a coordinated plan of the work. The project schedule shall employ computerized CPM planning, scheduling and progress reporting of the work as described in this specification. The Contractor shall create and maintain the schedule using project scheduling software approved by the Owner and PM that utilizes the fundamentals of CPM for scheduling. The observance of the requirements herein is an essential part of the work under the Contract.
- C. Within seven (7) calendar days after issuance of Notice to Proceed, the Contractor shall designate in writing a schedule representative in the Contractor's organization who shall be responsible for coordinating with the PM during development and maintenance of the Project Schedule. The Contractor's representative shall have the expertise to operate the CPM software and be capable of rapidly evaluating alternate scenarios to optimize management capabilities. The Contractor has the option to utilize qualified outside scheduling consultation for the assistance of developing and maintaining the Project Schedule, however, the use of an outside consultant does not relieve the Contractor of responsibilities for compliance of this specification. The Contractor's schedule representative shall have complete authority to act for the Contractor in fulfilling the schedule requirements of the Contract, and if such authority is interrupted during the Contract, approval shall be obtained in writing by the PM.
- D. All activities shall have at least one predecessor and one successor unless approved by the PM. The exceptions are no predecessor is needed for the Notice To Proceed (NTP) milestone and no successor is needed for the Project Completion milestone.

E. Contractor shall not use any constraints of any type without prior approval of the Owner.

- F. Each activity's "Activity ID" and "Activity Description" or "Task Name" shall remain unchanged throughout the duration of the project subsequent the baseline acceptance by the Owner.
- G. An activity's "Activity Description" may only be revised to clarify an activity's original scope. If the scope of an activity increases or decreases, a replacement activity shall be created-
- H. PM acceptance shall be obtained prior to making any changes or revisions to an activity's "Activity Description".

1.03 Submittals

A. <u>All CPM Schedules</u> shall be presented on two (2) copies (preferable 8 $\frac{1}{2} \times 11$) and one electronic copy (accessible format, not pdf). <u>Preliminary CPM Baseline Schedule:</u> Within fourteen (14) calendar days after issuance of Notice to Proceed, but prior to the start of any construction activities, the Contractor shall submit the Preliminary CPM Baseline Schedule deliverable package. The preliminary baseline

schedule shall cover the planned activities for each project site (school) in sufficient level of detail.

- B. <u>Detailed CPM Schedule:</u> Within thirty (30) calendar days after Notice to Proceed (NTP), the Contractor shall submit the Detailed CPM Baseline Schedule deliverable package, with a detailed schedule for each project site (school). The substantial completion date in the detailed CPM schedule shall coincide with the substantial completion date in the approved preliminary baseline schedule.
- C. <u>Schedule Update:</u> The Contractor shall submit with the payment application a CPM Schedule Update on at least a monthly basis throughout the duration of the Work. The "baselined" Project Schedule, once updated for actual activities, shall be used as the first CPM Schedule Update. All schedule updates shall have a current data date (not older than 5 days). Include a narrative report specifying all changes and modifications made to the CPM schedule.
- D. <u>Recovery or Revision to the Detailed CPM Schedule:</u> The Contractor shall provide a Recovery CPM Schedule within seven (7) calendar days of any CPM Schedule Update Meeting if any milestone, completion date or end of Period Performance falls seven (7) calendar days or greater behind (negative float).
- E. <u>Schedule Review:</u> All schedules that are to be submitted for review shall be stamped as being reviewed/approved by the General Contractor and key subcontractors.

PART 2 PRELIMINARY CPM SCHEDULE

- 2.01 Preliminary CPM Schedule
 - A. The Preliminary CPM Schedule shall be the basis for the sequence of work during the first ninety (90) calendar days of the Contract while the Project Schedule is being developed, submitted, reviewed and accepted. The Preliminary CPM Schedule shall be updated on a monthly basis. If the acceptance of the Project CPM Schedule extends beyond one month, the Preliminary CPM Schedule shall be updated according to the requirements stated in paragraph 3.03.
 - B. The Preliminary CPM Schedule shall include:
 - The Procurement activities for each project site (school) to be accomplished (either in whole or in part) during the first ninety (90) calendar days of the Contract. The procurement activities shall include mobilization, shop drawing submittal, sample submittal, Architect/Engineer review and approval period, material fabrication and delivery of key and long-lead items. If portable swing space buildings are required for a project, the preliminary CPM schedule shall include milestones for relocation and installation of such swing space buildings.
 - The construction activities for each project site (school) to be accomplished (either in whole or in part) during the first ninety (90) days of the Contract. These activities shall be in units of
whole working days and shall be limited to a maximum of ten (10) work days, unless otherwise approved by the PM, except for non-construction activities including mobilization, procurement and concrete curing activities.

- 3. The approach to scheduling the remaining work or phases of work beyond the first ninety (90) calendar days of the contract. The work for each phase or milestone must be represented by at least one summary activity for each major item of work such that they cumulatively indicate the entire schedule, with milestones as defined in Paragraph 3.01, B.7. The approximate duration for each summary activity shall include the Contractor's best estimate for the work it represents.
- 4. Submit a written narrative describing the Contractor's approach to mobilization, procurement, and construction during the first ninety (90) calendar days of the Project. The narrative shall elaborate on the basis for durations, major equipment to be used, and shall identify all major assumptions used to develop and support the schedule. The narrative shall also include the Contractor's description of the critical path work activity as represented in the Preliminary CPM Schedule.
- C. The Preliminary CPM Schedule shall be used for review of time extension request(s) until the Project CPM Schedule is accepted. When changes and alterations are initiated, unplanned events or excusable delays are experienced, or the Contractor desires to revise the sequence of work, the Contractor shall submit a written time impact analysis.
- D. The final determination of all time extensions requested under the Preliminary CPM Schedule shall be determined and finalized subsequent to the review and acceptance of the Project CPM Schedule.
- E. <u>Deliverable</u>: No later than fourteen (14) calendar days after award of Contract, but prior to the start of any construction activities, the Contractor shall submit the Preliminary CPM Schedule deliverable package. The deliverable package shall include at a minimum, the following information:
 - 1. Two (2) copies (preferable 8 $\frac{1}{2}$ x 11). The critical path shall be readily discernible in red ink.
 - 2. Two (2) copies of the written narrative as described in paragraph 2.01B.5.
 - 3. One (1) electronic copy (accessible format not pdf).
- 2.02 Schedule Review and Acceptance
 - A. The PM, Architect/Engineer and the Contractor shall meet within seven (7) calendar days of receipt of the Preliminary CPM Schedule for joint review. The Contractor shall revise any areas, which, in the opinion of the PM and/or Architect/Engineer, conflict with either the intent of this

specification or the timely completion and acceptable coordination of the Project. In the event the Contractor fails to define any element of work activity or logic currently designed and the PM review does not detect this omission or error, such omission or error, when discovered by the Contractor or the PM, shall be corrected by the Contractor and incorporated into the next schedule submission.

Within seven (5) business days after the joint review between the A/E, Contractor and the PM, the Contractor shall revise the Preliminary CPM Schedule in accordance with agreements reached during the joint review and submit the revised schedule per the deliverable requirements.

Acceptance of the Preliminary CPM Schedule by the A/E, Owner or PM does not relieve the Contractor of any of its responsibility for the accuracy or feasibility of the project schedule. However, to the extent that the accepted Project Schedule is reasonable, it becomes a part of this Contract.

B. Submission and final PM and Contractor acceptance of the Preliminary CPM Schedule will be a condition precedent to the application or payment of any progress payments under the Contract, unless otherwise agreed upon by the Owner. The PM shall notify the Contractor of the Owner acceptance of the Preliminary CPM Schedule in writing.

PART 3 PROJECT CPM SCHEDULE

- 3.01 Project Schedule
 - A. The Project Schedule shall begin at the project NTP and incorporate the accepted Preliminary CPM Schedule including all required revisions and applicable progress updating as warranted. The Project Schedule shall indicate a logical sequence of work for each project site (school) and major restrictions from the availability and use of manpower, material and equipment. Utilize the schedule in planning, scheduling, coordinating and performing the work under this Contract (including all activities of subcontractors, equipment vendors and suppliers). The Project Schedule shall indicate the sequence and interdependence of activities required for complete performance of the Work.

Proposed durations assigned to each activity shall be the Contractor's best estimate of time required to complete the activity considering the scope and resources planned for the activity. In developing the Project Schedule, the Contractor shall be responsible for ensuring that subcontractor work scope and sequencing at all tiers, as well as its own work, is included. If a contract for a subcontractor has not yet been awarded for a certain portion of the work, the Contractor is responsible for the development of the schedule for the work as described under this section. After the subcontractor award of contract, the Contractor shall modify the current accepted schedule to reflect any changes or revisions for the subcontractor sequence of work. Under no circumstance or event, shall a schedule modification or revision under

this paragraph extend a milestone. The Project Schedule shall comply with the various limits imposed by the scope of work and by any contractually specified intermediate milestone dates and completion dates. The degree of detail shall be to the satisfaction of the PM the A/E or the Owner.

- B. Provide sufficient detail and clarity of form and technique so that all work can be properly controlled and progress monitored by the PM and A/E. The Project Schedule shall consist of, but not be limited to, the following criteria:
 - Full detail of all major procurement activities including the activities and information contained within the Preliminary CPM Schedule. Break up all procurement activities for major components and long lead items to include submittal dates, fabrication duration, and expected delivery dates.
 - Full detail of all major construction activities including the activities and information contained within the Preliminary CPM Schedule. Add column for responsible party for all construction activities.
 - 3. Multiple Calendars shall be used for establishing Holidays and periods of non-work based on the School Operations Parameter Statement in the Project Information Section of Division 0, concrete curing activities, other weather or ambient temperature sensitive construction activities, and or other work requiring overtime or double shift work.
 - 4. Seasonal weather conditions shall be considered and included in the planning and scheduling of all work influenced by high or low ambient temperatures, precipitation and/or saturated soil to ensure recognition, planning and anticipation of intermittent inclement weather throughout the project duration. In addition, activities of similar nature shall be assigned to independent calendars based on this weather data. The software calendars shall be updated monthly to reflect actual days worked.
 - 5. Activity duration in whole working days with a maximum duration of ten (10) working days each, unless otherwise approved by the PM, except for non-construction activities including mobilization, procurement and concrete curing activities.
 - 6. At a minimum, the following guidelines, intermediate and final milestones shall be included in the project schedules for each individual project site (school), except for activities that are specifically identified to be common for all the project sites for a multi-project bundle:
 - a. Notice to Proceed

- b. Required Periodic Inspections (examples: rebar, utilities, electrical and mechanical rough-in, overhead and architectural
- c. Time allotted for coordination with and execution of abatement activities
- d. Specific Phase start and finish dates renovations and additions
- e. Preliminary CPM Schedule submission and acceptance
- f. Project Schedule submission and acceptance
- g. Building dry-in
- h. Permanent power
- i. Conditioned air available
- j. Completed testing and acceptance of Life Safety Systems and other critical building components
- k. Completion of ADA upgrades in restrooms
- I. Commissioning, when project requires
- m. Ten percent (10%) minimum float for the project
- n. Substantial Completion
- o. Final Completion
- p. Owner Turn-Over / Start-Up / Project Closeout Activity / Warranty Period / Owner Testing/Training
- q. Earliest Date that Owner can occupy the affected portion of the building (by phase, by complete project, etc.). This shall include all necessary approvals, permits (Fire Marshall Acceptance, Certificate of Occupancy, etc.).
- C. The Contractor shall prepare a written narrative explaining the Contractor's approach to construction for the entire Project and include the narrative information as submitted with the Preliminary CPM Schedule deliverable package. The narrative shall elaborate on the basis for durations, major equipment to be used, and shall identify all major assumptions used to develop and support the schedule. The narrative shall also include the Contractor's description of the critical path work activity as represented in the Project Schedule.
- D. <u>Deliverable:</u> Within thirty (30) calendar days after the Notice to Proceed, the Detailed CPM Schedule deliverable submitted by the Contractor shall include at a minimum, the following information:
 - 1. Two (2) copies (preferably 8 $\frac{1}{2}$ x 11) of the project schedule. The critical path shall be readily discernible in red ink.
 - 2. Two (2) copies of the written narrative as described in paragraph 3.01, B.5
 - 3. One (1) electronic copy (accessible format not pdf)
 - 3. A list of all rain days occurring over the past month. Each rain day shall be incorporated into the Project Schedule Calendar as record information subsequent to PM review and acceptance.

3.02 Schedule Review and Acceptance

- A. Within fourteen (14) calendar days of receipt of the Contractor's proposed Project Schedule, the PM shall evaluate the schedule for compliance with this item and other Contract requirements, and notify the Contractor in writing of its findings.
- B. If the PM does not request a revision or justification, The A/E, PM and the Contractor shall meet within seven (7) calendar days on a date selected by the PM and finalize acceptance of the schedule. If a revision or justification is requested by the PM and/or A/E, the Contractor shall re-submit the proposed Project Schedule within seven (7) calendar days and address all issues to the satisfaction of the PM. Any and all disagreements or interpretations of the meaning or intent of this specification shall be solely dictated by the Owner.
- C. The PM, A/E and the Contractor shall meet within seven (7) calendar days of receipt of the Contractor's response for joint review, correction or adjustment of the Contractor's proposed Project Schedule. Any area, in the opinion of the PM and/or A/E, conflicts with timely completion of the project, shall be subject to revision by the Contractor. In the event the Contractor fails to define any element of work, activity or logic and the Owner review does not detect this omission or error, when discovered it shall be corrected by the Contractor and amended to the Project Schedule as soon as possible.
- D. Within seven (7) calendar days after the joint review meeting, the Contractor shall incorporate revisions as directed by the PM and resubmit the proposed Project Schedule per the deliverable requirement as stated in paragraph 3.01, E. All further review by the PM shall be within seven (7) calendar days of receipt. The PM shall notify the Contractor in writing of final acceptance of the Contractor's Project Schedule.
- E. The process of approving Contractor's schedules and updates to Contractor's schedule shall not constitute a warranty by the Owner that any non-Contractor milestones or activities will occur as set out on Contractor's schedule.
- 3.03 Schedule Updates
 - A. After the Project Schedule is accepted by the PM and the Contractor, it shall be "baselined" and used as a comparison for future progress updates. The accepted Project Schedule shall be updated on a monthly basis, or as directed by the Owner, throughout the duration of the work until final completion is met. The Contractor shall meet with the PM each month at a Project Progress Meeting to review the work progress update and PM comments regarding the Project Schedule update. The Contractor shall submit a schedule update no later than three (3) working days before the Project Progress Meeting for the PM to review and comment.
 - B. The percentage of all work shall be calculated by estimating the actual remaining duration of each progressed activity. The data date of each

CSP 207459 August 16, 2024 schedule update shall be determined by the PM each month. Contractor prepared estimates of the percent completion of each scheduled activity and the necessary supporting data shall be submitted on or before the data date referenced above and shall include the following information:

- 1. One (1) original of the previous month's Schedule Update indicating actual activity start and/or finish dates to date, and revised (current) remaining durations.
- 2. A narrative report shall be included that indicates in writing those activities the Contractor plans to work on during the following update month and current or anticipated conditions that have delayed or may delay the work in order to discuss remedial action. The Contractor shall also explain, for work that reflects less than satisfactory progress, whether any uncompleted and/or upcoming work will (or will not) be affected in a like manner and the Contractors method of correction. Any additional written information necessary to support the updated schedule including explanations of revisions to activities: logic, durations, resources, etc.
- C. In case of disagreements at the project progress meeting concerning actual progress to date, the Owner's determination shall govern. Upon completion of the schedule update meeting, the Contractor shall revise the Schedule Update to reflect progress as of the date of the schedule update meeting and any approved revisions to the Schedule Update and carry out a computer produced calculation to determine the status of the Project Schedule.
- D. Each Schedule Update shall be forwarded to the PM within five (5) calendar days after the schedule update meeting and shall include two (2) copies of the narrative report with the following information:
 - 1. Activities that have been added in the month of this Project Schedule Update.
 - 2. Activities that have been deleted in the month of this Project Schedule Update.
 - 3. Activities that have "Actual Starts" prior to the month of this Project Schedule Update <u>and</u> remain unfinished.
 - 4. Activities that have "Actual Starts and Actual Finishes" in the month of this Project Schedule Update.
 - 5. A description of any approved revisions to the activity descriptions, schedule logic, or initial activity durations.
 - 6. One (1) print of the updated CPM Schedule Update indicating the progress made up to the date of the schedule update and indication of any revisions to the CPM Schedule Update.
 - 7. Two (2) prints of the written narrative as described in paragraph 3.03, B.3.

- 8. A list of all rain days occurring over the past month. Each rain day shall be incorporated into the Project Schedule Calendar.
- E. If the Contractor's monthly progress schedule update reflects, or PM determines, that the Contractor is at least ten percent (10%) or at least negative seven (-7) calendar days behind the "baselined" schedule, the Contractor shall provide a revised or recovery schedule. The Contractor's revised or recovery schedule must incorporate a proposed plan for bringing the work back on schedule and completing the work by the contract completion date at no additional expense to the PM or Owner. The revised or recovery schedule shall be in accordance to paragraph 2.08.

3.04 Revisions to the Project Schedule

- A. Revisions to the Schedule Update to reflect actual progress made up to the date of a schedule update shall not be considered as revisions to the Project Schedule. If as a result of the monthly schedule update, it appears the Project Schedule no longer represents the actual execution and progress of the work, PM will request, and the Contractor shall submit, a Revision to the schedule.
- B. The Contractor may also request revisions to the Project Schedule in the event the Contractor's planning for the work is revised. If the Contractor desires to make changes in the Project Schedule to reflect revisions in his method of operating and scheduling of the work, the Contractor shall notify PM in writing, stating the reason for the proposed revision. If revision to the schedule is contemplated, the Contractor or PM shall so advise the other in writing at least seven (7) calendar days prior to the next schedule update meeting, describing the revision and setting forth the reasons thereof.

Contractors must submit a three (3) week look-ahead schedule that will include all lifts, shutdowns, etc.

- 3.05 Project Float Time
 - A. Float time is not for the exclusive use or benefit of either the Contractor or the Owner. Contractor's work shall proceed according to early start dates, and the Owner shall have the right to reserve and apportion float time according to the needs of the Project. The Contractor acknowledges and agrees that actual delays, affecting paths of activities containing float time, will not have any affect upon contract completion times, providing that the actual delay does not exceed the float time associated with those activities.
- 3.06 Impact Analysis for: Change Orders, Delays, and Contractor Requests
 - A. When changes are initiated, delays are experienced, or the Contractor desires to revise the Project Schedule, the Contractor shall submit to the PM written time impact analysis illustrating the influence of each change, delay or Contractor request, on any milestone. Each time impact analysis shall include a fragmentary network (network analysis) demonstrating how the Contractor proposed to incorporate the change,

delay or Contractor request into the schedule. The time impact analysis shall demonstrate the time impact to each and every affected activity in the Project Schedule utilizing the most recent schedule update as the basis for the analysis. The date of the most recent schedule update shall be a date prior to the date the change is given to the Contractor, the date the delay occurred or the date the Contractor submits a request for a change. The event times used in the time impact analysis shall include the most recent schedule update or as adjusted by mutual agreement. The time impact analysis shall include a backup copy on CD which shall contain the detail of the change, including but not limited to, added, changed or deleted data for activities and logic restraints. If the Detailed CPM Schedule is revised subsequent to submittal of a time impact analysis but prior to its approval, the Contractor shall promptly indicate in writing to the PM the need for any modification to its time impact analysis.

- B. Activity delays shall not automatically mean that an extension of any milestones is warranted or due to the Contractor. A change or delay may not affect existing critical activities or cause non-critical activities to become critical. A change or delay may result in only absorbing a part of the available total float that may exist within an activity chain of the network, thereby not causing any effect on any milestone.
- C. A comprehensive narrative of each time impact analysis shall be submitted within seven (7) calendar days after the commencement of a delay or the notice for a change is given to the Contractor.
- D. Recommendation to the Owner for the acceptance or rejection of each time impact analysis by the PM and A/E shall be made within seven (7) calendar days after receipt unless subsequent meetings or negotiations are necessary. After a decision has been made by the Owner, a copy of the time impact analysis signed by the PM, A/E, Owner and the Contractor shall be returned to the Contractor and incorporated into the Project Schedule at the next monthly schedule update. The time impact analysis shall be incorporated into and attached to any relevant supplemental agreement (s).

END OF SECTION 01 32 16

SECTION 01 32 33 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Periodic construction photographs.
 - 3. Final completion construction photographs.
 - 4. Preconstruction video recordings.
 - 5. Periodic construction video recordings.
- B. Related Sections:
 - 1. Division 01 Section "Submittal Procedures" for submitting photographic documentation.
 - 2. Division 01 Section "Closeout Procedures" for submitting photographic documentation as project record documents at Project closeout.
 - 3. Division 01 Section "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph or video recording. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files in the quantities and at the intervals described in paragraph 3.1 of this section.
 - 1. Digital Camera: Minimum sensor resolution of at least 8 mega pixels.
 - 2. Format: Unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
 - 3. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Unique sequential identifier keyed to accompanying key plan.

- C. Construction Photographs: The project requires comprehensive documentation of construction progress and post inspection milestones. Submit prints of each photographic view in the quantities and at the intervals described in paragraph 3.1 of this Section.
 - 1. Format: 8-by-10-inch (203-by-254-mm) on photographic paper to allow a 1-inch- (25-mm-) wide margin and enclosed back to back in clear plastic sleeves that are punched for standard three-ring binder.
 - 2. Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date photograph was taken if not date stamped by camera.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Unique sequential identifier keyed to accompanying key plan.
 - 3. "Progression" photo sets are to be performed at pre-determined intervals throughout the duration of construction, as applicable to the scope and as follows:
 - a. Site survey (Pre-construction): A onetime shot that provides coverage of site and immediate and immediate surroundings.
 - b. Exterior progression shots: Taken from key perspectives along site perimeter and 360 degrees around building envelope, to be performed at monthly intervals.
 - c. Interior progression shots: Broadly track the improvements from logical perspectives, to be performed at monthly intervals and coordinated with pace of erection.
 - d. Pre-slab/Pre-Chase/Interior record shots: Underground or concealed utilities will be documented post inspection/pre-insulation and prior to pouring slabs, backfilling or closing chases/walls/ceilings.
- D. Video Recordings: Submit video recordings in accordance with paragraph 3.2 of this Section.
 - 1. Submit video recordings in digital video disc format.
 - 2. Identification: With each submittal, provide the following information:
 - a. Name of Project.
 - b. Name and address of photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date video recording was recorded.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Weather conditions at time of recording.
- E. Aerial Photography
 - 1. On new construction and addition projects, submit monthly aerial photographs of the project. The photos should be taken from 4 different angles and 4 sets of color 8"x10" prints should be submitted.

1.4 QUALITY ASSURANCE

A. Photographer Qualifications: An individual who has the basic skills necessary to record digital photographs and video recordings.

1.5 COORDINATION

A. Auxiliary Services: Provide auxiliary services necessary, including temporary lighting required to produce clear, well-lit photographs.

1.6 USAGE RIGHTS

A. Contractor will transfer copyright usage rights to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 mega pixels. Images shall not have their resolution reduced.
- B. Digital Video Recordings: Provide high-resolution, digital video disc.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
 - 2. Taking photographs or video recordings with students and schools staff included on the photograph is strictly prohibited.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in file name for each image.
 - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.
- C. Preconstruction / Pre-Demo / Pre-Site Clearing Photographs: Before starting demolition or construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, or as directed by Architect.

- 1. Take photographs as required to show existing conditions adjacent to property before starting the Work.
- 2. Take photographs as required of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
- 3. Reference Section 017300 Execution for details of documenting and reporting existing conditions.
- D. Periodic Construction Photographs: Take a photographs monthly and submit with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken. For renovation projects: The location and type of items to be photographed will be determined by the Architect and/or PM based on the specific project conditions not to exceed the number of progress photographs required above.
- E. Final Completion Construction Photographs: Take color photographs after date of Substantial Completion for submission as project record documents. Architect will inform photographer of desired vantage points.

3.2 CONSTRUCTION VIDEO RECORDINGS

- A. Preconstruction Video Recording: Before starting demolition or construction, record video of Project site and surrounding properties from different vantage points, as directed by Architect.
 - 1. Show existing conditions adjacent to Project site before starting the Work.
 - 2. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of demolition or construction].
 - 3. Show protection efforts by Contractor.
 - 4. Narrate all noted conditions on the video.
 - 5. On renovation projects with crawlspace work, record video of these areas before, during and after work is completed.
- B. Periodic Construction Video Recordings: Record video monthly and submit with each Application for Payment. Select vantage points to show status of construction and progress since last video recordings were recorded. Minimum recording time shall be 15 minutes and shall include narration of actual conditions and progress made since last recording.
- C. Owner's Training: Record video during the manufacturer's training session at substantial completion. Minimum recording time shall be 30 minutes per session. Deliver the recordings with the PDF Electronic File of the O&M Manual at Substantial Completion. Video shall be clear with easily understandable audio.
- D. Submit videos in DVD format.

END OF SECTION 01 32 33

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Sections:
 - 1. Division 01 Section "Payment Procedures" for submitting Applications for Payment.
 - 2. Division 01 Section "Schedule of Values" for submitting the schedule of values.
 - 3. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 4. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 5. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 6. Division 01 Section "Demonstration and Training" for submitting video recordings of equipment demonstration and training of Owner's personnel.
- C. Refer to other Division 1 Sections and other Contract Documents for Specifications on administrative submittals. Such submittals include, but are not limited to the following:
 - 1. Permits.
 - 2. Payment Applications.
 - 3. Inspection and Test Reports.
 - 4. Schedule of Values
 - 5. Progress Reports.
 - 6. Listing of Subcontractors
- D. Shop Drawings are technical drawings and data that have been specially prepared for this Project, including but not limited to the following items:
 - 1. Fabrication and installation drawings.
 - 2. Setting diagrams.
 - 3. Shopwork manufacturing instructions.
 - 4. Templates.
 - 5. Patterns.
 - 6. Coordination drawings (for use on-site).
 - 7. Schedules.
 - 8. Design mix formulas.
 - 9. Contractor's engineering calculations.

Standard information prepared with specific reference to a Project is not considered to be shop drawings.

E. Product Data includes standard printed information on manufactured products that has not been specially prepared for this Project, including but not limited to the following items:

- 1. Manufacturer's product specifications and installation instructions.
- 2. Standard color charts.
- 3. Catalog cuts.
- 4. Rough-in diagram and templates.
- 5. Standard wiring diagrams.
- 6. Printed performance curves.
- 7. Operational range diagrams.
- 8. Mill reports.
- 9. Standard product operating and maintenance manuals. Modify standard product data, drawings and diagrams to delete information not applicable to the project, and / or supplement standard information to provide specific data that is applicable to the work.
- F. Samples are physical examples of Work, including but not limited to the following items:
 - 1. Partial sections of manufactured or fabricated work.
 - 2. Small cuts or container of materials.
 - 3. Complete units of repetitively used materials.
 - 4. Swatches showing color, texture and pattern.
 - 5. Color range sets.
 - 6. Units of work to be used for independent inspection and testing.
- G. Miscellaneous Submittals are work-related, non-administrative submittals that do not fit in the three previous categories, including but not limited to the following:
 - 1. Specially prepared and standard printed warranties.
 - 2. Maintenance agreements.
 - 3. Workmanship bonds.
 - 4. Survey data and reports.
 - 5. Project photographs.
 - 6. Testing and certification reports.
 - 7. Record Drawings.
 - 8. Field measurement data.
 - 9. Operating and maintenance manuals.
 - 10. Keys and other security protection devices.
 - 11. Maintenance tools and spare parts.
 - 12. Overrun stock.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as action submittals.
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as informational submittals.
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the Architect and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 - 2. Initial Submittal: Submit concurrently with start-up construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - 3. Monthly submittal log. Submit at the weekly progress meeting, an updated submittal log indicating status of all project submittals.
 - 4. Final Submittal: Submit concurrently with the first complete submittal of Project schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
 - 5. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action, informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's final release or approval.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 - 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 - 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

- 1. Initial Review: Allow 14 calendar days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
- 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
- 3. Resubmittal Review: Allow 10 calendars days for review of each resubmittal.
- 4. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 14 calendar days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
- C. Identification and Information: Place a permanent label or title block on each paper copy submittal item for identification.
 - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 - 2. Include the following information for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Name of subcontractor.
 - f. Name of supplier.
 - g. Name of manufacturer.
 - h. Submittal number or other unique identifier, including revision identifier.
 - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
 - i. Number and title of appropriate Specification Section.
 - j. Drawing number and detail references, as appropriate.
 - k. Location(s) where product is to be installed, as appropriate.
 - I. Other necessary identification.
- D. Identification and Information: Identify and incorporate information in each electronic submittal file as follows:
 - 1. Assemble complete submittal package into a single indexed file with links enabling navigation to each item.
 - 2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
 - 3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
 - 4. Include the following information on an inserted cover sheet:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name of Contractor.
 - e. Name of firm or entity that prepared submittal.
 - f. Name of subcontractor.
 - g. Name of supplier.
 - h. Name of manufacturer.

- i. Number and title of appropriate Specification Section.
- j. Drawing number and detail references, as appropriate.
- k. Location(s) where product is to be installed, as appropriate.
- I. Related physical samples submitted directly.
- m. Other necessary identification.
- 5. Include the following information as keywords in the electronic file metadata:
 - a. Project name.
 - b. Number and title of appropriate Specification Section.
 - c. Manufacturer name.
 - d. Product name.
- E. Options: Identify options requiring selection by the Architect.
- F. Deviations: Identify deviations from the Contract Documents on submittals and the transmittal sheet. Failure to note deviation may void action taken on submittal.
- G. Transmittal: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review received from sources other than Contractor.
 - 1. Transmittal Form: Provide locations on form for the following information:
 - a. Project name.
 - b. Date.
 - c. Destination (To:).
 - d. Source (From:).
 - e. Names of subcontractor, manufacturer, and supplier.
 - f. Category and type of submittal.
 - g. Submittal purpose and description.
 - h. Specification Section number and title.
 - i. Indication of full or partial submittal.
 - j. Drawing number and detail references, as appropriate.
 - k. Transmittal number, numbered consecutively.
 - I. Submittal and transmittal distribution record.
 - m. Remarks.
 - n. Signature of transmitter.
 - 2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Use only final submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 - 1. Post electronic submittals as PDF electronic files directly to the appropriate location. Defined at the pre-construction meeting.
 - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 - 2. Submit electronic submittals as PDF electronic files.
 - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 - 3. Action Submittals: Submit three paper copies of each submittal, unless otherwise indicated. Architect will return two copies.
 - 4. Informational Submittals: Submit two paper copies of each submittal, unless otherwise indicated. Architect will not return copies.
 - 5. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
 - 6. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - 7. Test and Inspection Reports Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable. Cross out all inapplicable data and information.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 - 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.

- d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
- 5. Submit Product Data before or concurrent with Samples.
- 6. Submit Product Data in the following format:
 - a. PDF electronic file.
 - b. Three paper copies of Product Data, unless otherwise indicated. Architect will return two copies.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based upon Architect's digital data drawing files is otherwise permitted.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination and accessibility (maintenance and service) requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 - 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches.
 - 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
 - b. Three opaque copies of each submittal. Architect will retain two copies; remainder will be returned.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 - 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 - 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 - 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 - 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 - 5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and

physically identical with material or product proposed for use, and that show full range of color and texture variations expected.

- a. Number of Samples: Submit three sets of Samples. Architect will retain one Sample sets; remainder will be returned.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 - 1. Type of product. Include unique identifier for each product indicated in the Contract Documents.
 - 2. Manufacturer and product name, and model number if applicable.
 - 3. Number and name of room or space.
 - 4. Location within room or space.
 - 5. Submit product schedule in the following format:
 - a. PDF electronic file.
 - b. Three paper copies of product schedule or list, unless otherwise indicated. Architect will return two copies.
- F. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."
- G. Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."
- H. Schedule of Values: Comply with requirements specified in Division 01 Section "Schedule of Values."
- I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.
 - 4. Submit subcontract list in the following format:
 - a. PDF electronic file.
- J. Coordination Drawings: Comply with requirements specified in Division 01 Section "Project Management and Coordination."
- K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

- L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on American Welding Society (AWS) forms. Include names of firms and personnel certified.
- M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- N. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- R. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- T. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "Quality Requirements."
- U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- V. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- W. Field Test Reports: Submit reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

- X. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- Y. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect, no later than 30 days after notice to proceed.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Project Closeout and Maintenance/Material Submittals: Refer to requirements in Division 01 Section "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT/ENGINEER'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
 - 1. Action Stamp: The Architect/Engineer will stamp each submittal to be returned with a uniform, self explanatory stamp, appropriately marked and executed to indicate whether the submittal returned is for unrestricted use, final-but-restricted use (as marked), must be revised and resubmitted (use not permitted) or without action (as explained on the transmittal form).
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- E. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- F. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01 33 00



MEMORANDUM

 To:
 All General Contractors working on Elementary Schools (and other facilities occupied by children under the age of 6) built before 1978 for Dallas ISD Construction Services Department

 From:
 DISD Executive Director Construction Services

 Date:
 June 14, 2010

RE: EPA Lead-Based Paint Renovation, Repair, and Painting Program

In April of 2008, the EPA introduced its new Lead-Based Paint Renovation, Repair, and Painting Program Rule, hereafter referred to as the RRP. This new rule requires renovation firms to be EPA-certified. Furthermore, the rule requires workers to be trained to use lead-safe work practices when they disturb painted surfaces in buildings built prior to 1978 and which are occupied by children under age 6. These requirements became fully effective on April 22, 2010.

In addition, pre-renovation education requirements are in effect. These require contractors and others who perform renovations for compensation and that may disturb lead-base paint in child occupied facilities built before 1978 to distribute a lead pamphlet to the users of the facility. The RRP defines renovation broadly to include any activity that disturbs painted surfaces greater than 6 square feet per room on the interior and greater than 20 square feet on the exterior of a facility.

It is the understanding and expectation of Dallas ISD that renovation contractors should be fully aware of and in compliance with this new EPA rule.

IF YOUR FIRM IS CURRENTLY PERFORMING RENOVATION WORK ON A CAPITAL IMPROVEMENT PROGRAM PROJECT, AND YOUR FIRM IS NOT IN FULL COMPLIANCE WITH THE NEW RULE, YOU MUST CEASE ACTIVITIES IMMEDIATELY ON ANY WORK THAT MAY DISTURB MORE THAN 6 SF (20 SF ON EXTERIOR) OF PAINTED SURFACES, OR WINDOW REPLACEMENT IN BUILDINGS BUILT PRIOR TO 1978 AND WHICH ARE OCCUPIED BY CHILDREN UNDER AGE 6.

If you must cease work on any portion of the project as a result of this rule, please contact your Project Manager immediately to discuss the appropriate course of action.

If you are in full compliance with the rule, as should be the case, please submit the following at your earliest convenience:

- EPA firm certification (In the absence of prime's firm certification, the certification from the appropriate sub-contractor and the prime's application for certification will suffice for now)
- o Identify who is the certified staff on site
- Evidence of worker training by the certified staff
- Summary of lead-safe work practices to be implemented

In addition, please prepare to attend a meeting with the School Principal, Dallas ISD PM and PM to inform her/him about the rule, share the RRP pamphlet and Notices. Your PM will notify you of date and time of the meeting.

If the scope of work planned or in progress does not require compliance with the training and lead-safe work practices of the RRP, then you may continue on with the construction activities and there is no need for any further action on your part. At the same time, the Owner understands that contractors are responsible for compliance with the rule. Therefore, the Owner's expectation is that you will bring to the PM's attention immediately, any scope of work that may trigger compliance with this rule.

Cc: Dallas ISD PM Program Director, PM Firm Construction Manager, PM Firm Project Manager, PM Firm PM Firm Document Control

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. Owner will employ and pay for the service of an Independent Testing Laboratory to perform specified testing and laboratory services.
 - 1. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 2. Contractor shall cooperate with the Laboratory to facilitate the execution of its required services.
 - 3. Contractor shall pay for additional samples and tests required for Contractor's convenience or when initial tests indicate work does not comply with Contract Documents.
 - 4. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 5. Specified tests, inspections, and related actions do not limit Contractor's other qualityassurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 6. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Commissioning Authority, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections:
 - 1. Division 01 Section "Allowances" for testing and inspecting allowances.
 - 2. Division 01 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
 - 3. Division 01 Section "Execution" for cutting and patching.
 - 4. Divisions 02 through 49 Sections for specific test and inspection requirements.
 - 5. Division 01 Section "Testing, Adjusting, and Balancing for HVAC" (FOR INFORMATION ONLY TAB SERVICES PROVIDED BY OWNER)

1.3 DEFINITIONS

A. Quality Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

- **B.** Quality Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or Construction Manager.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Laboratory Mockups: Full-size physical assemblies constructed at testing facility to verify performance characteristics.

2. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.

3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.

- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged by the Owner to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade or trades.
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with

the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.
- C. Conflicts between the specifications and the construction documents. The most stringent requirement will govern.
- D. Conflicts on specification requirements. The most stringent requirement will govern.

1.5 ACTION SUBMITTALS

- A. Shop Drawings: For [integrated exterior] [laboratory] mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
 - 1. Indicate manufacturer and model number of individual components
 - 2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following, as applicable:
 - 1. Specification Section number and title.
 - 2. Entity responsible for performing tests and inspections.
 - 3. Description of test and inspection.
 - 4. Identification of applicable standards.
 - 5. Identification of test and inspection methods.
 - 6. Number of tests and inspections required.
 - 7. Time schedule or time span for tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.

1.7 CONTRACTOR'S QUALITY CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice of Award, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
 - 1. Project quality-control manager [may also serve as Project superintendent] [shall not have other Project responsibilities].
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
 - 1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
 - 2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
 - 3. Owner-performed tests and inspections indicated in the Contract Documents [, including tests and inspections indicated to be performed by the Commissioning Authority].
- E. E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following as applicable:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and reinspecting.

- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address, and telephone number of technical representative making report.
 - 2. Statement on condition of substrates and their acceptability for installation of product.
 - 3. Statement that products at Project site comply with requirements.
 - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 6. Statement whether conditions, products, and installation will affect warranty.
 - 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address, and telephone number of factory-authorized service representative making report.
 - 2. Statement that equipment complies with requirements.
 - 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 4. Statement whether conditions, products, and installation will affect warranty.
 - 5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.9 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.

- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329, 'Standards of Recommended Practices for Inspection and Testing Agencies for Concrete and Steel as Used in Construction'; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect [or Construction Manager].

2. Notify Architect [and Construction Manager] seven days in advance of dates and times when mockups will be constructed.

3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.

4. Demonstrate the proposed range of aesthetic effects and workmanship.

5. Obtain Architect's [and Construction Manager's] approval of mockups before starting work, fabrication, or construction.

a. Allow seven days for initial review and each re-review of each mockup.

6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

7. Demolish and remove mockups when directed unless otherwise indicated.

- K. Integrated Exterior Mockups: Construct integrated exterior mockup [according to approved Shop Drawings] [as indicated on Drawings]. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials.
- L. Room Mockups: Construct room mockups incorporating required materials and assemblies, finished according to requirements. Provide required lighting and additional lighting where required to enable Architect to evaluate quality of the Work. Provide room mockups of the following rooms:
 - 1. List or rooms requiring mockups.

1.10 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
 - 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 - 2. GC/Contractor will have a quality control program in place to review the installation and serviceability of all field devices and valves.
 - 3. For tests and inspections performed by the Owner's Testing Laboratories:
 - a. Cooperate with Laboratory personnel; provide access to Work and to manufacturer's operations.
 - b. Secure and deliver to the Laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.
 - c. Furnish to the Laboratory proposed concrete design mixes, and other material mixes which require evaluation by the Testing Laboratory, a minimum of fourteen (14) days prior to use on the Project.
 - d. Furnish incidental labor and facilities
 - 1) To provide access to Work to be tested.
 - 2) To obtain and handle samples at the Project site or at the source product to be tested.
 - 3) To facilitate inspections and tests.
 - 4) For safe storage and curing of test samples.
 - 5) Notify Laboratory, PM and Architect sufficiently in advance of operations to allow for Laboratory assignment of personnel and scheduling of tests.
 - a) When test or inspections cannot be performed after such notice, reimburse Laboratory for personnel and travel expenses incurred due to Contractor's negligence.
 - 6) Make arrangements with Laboratory and pay for additional samples, tests, or inspections as required for the Contractor's convenience.
 - 7) Make arrangements with Laboratory and pay for additional samples and tests required when initial test indicate non-compliance with Contract Documents, including load test.
 - 4. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
 - a. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 - b. Retain first subparagraph below if some Specification Sections require an independent testing agency to perform certain tests and inspections.
 - c. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - d. Retain first subparagraph below to assure validity of agencies' reports.

- e. Notify testing agencies at least twenty-four (24) hours in advance of time when Work that requires testing or inspecting will be performed.
- f. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
- 5. Testing and inspecting requested by Contractor and not required by the Contract Documents is Contractor's responsibility.
- 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Testing Agency Responsibilities: Cooperate with Architect, Commissioning Authority, Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 1. Notify Architect, Commissioning Authority, Construction Manager, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 - 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality control service through Contractor.
 - 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 - 6. Do not perform any duties of Contractor.
- G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 - 1. Access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 - 4. Facilities for storage and field curing of test samples.
 - 5. Delivery of samples to testing agencies.
 - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 - 7. Security and protection for samples and for testing and inspecting equipment at Project site.

- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar qualitycontrol services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
 - 1. Distribution: Distribute schedule to Owner, PM, Architect, Commissioning Authority, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections. Include the following:
 - 1. Date test or inspection was conducted.
 - 2. Description of the Work tested or inspected.
 - 3. Date test or inspection results were transmitted to Architect.
 - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's, Construction Manager's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK REQUIREMENTS

- A. General: This Section specifies procedural and administrative requirements for compliance with governing regulations and codes and standards imposed upon the Work. These requirements include the obtaining of permits, licenses, inspections, releases, and similar statements, as well as payments, associated with regulations, codes, and standards.
- B. "Regulations" is defined to include laws, statutes, ordinances, and lawful orders issued by governing authorities, as well as those rules, conventions and agreements within the construction industry which effectively control the performance of the Work regardless of whether they are lawfully imposed by governing authority or not.
- C. Governing Regulations: Refer to General and Supplementary Conditions for requirements related to compliance with governing regulations.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference. Individual Specification Sections indicate which codes and standards the Contractor must keep available at the project site for reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Conflicting Requirements: Where compliance with two or more standards is specified, and where these standards establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced, unless the Contract Documents specifically indicate a less stringent requirement. Refer requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent to the Architect/Engineer for a decision before proceeding.
- D. Minimum Quantities or Quality Levels: In every instance the quantity or quality level shown or specified is intended to be the minimum for the work to be provided or performed. Unless otherwise indicated, the actual work may either comply exactly, within specified tolerances, with the minimum quantity or quality specified, or may exceed that minimum within reasonable limits. In complying with these requirements, the indicated numeric values are either minimum or maximum values, as noted, or as appropriate for context of the requirements. Refer instances of uncertainty to the Architect/Engineer for decision before proceeding.

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the trade association, standards-producing organization, authorities having jurisdiction or other entity applicable to the context of the text provision.
- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the.
- C. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations

1.06 SUBMITTALS

A. Permits, Licenses and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00
SECTION 01 45 23

HVAC TESTING, ADJUSTING, AND BALANCING

PART 1-GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Owner will employ and pay for the service of an Independent Testing Agency for Testing, Adjusting and Balancing (TAB) of HVAC systems.
 - The Testing, Adjusting and Balancing of air conditioning systems will be performed by an impartial Independent Technical Firm whose operations are primarily engaged in the field of professional TAB. TAB work shall be done under direct supervision of a professional engineer, licensed in the State of Texas, a Test and Balance Engineer (TBE, AABC) or TAB Certified Professional (TAB CP, NEBB), or other experienced/certified TAB professional deemed appropriate by the Owner. All personnel performing TAB work shall be fulltime, regular employees of the TAB firm.
 - 2. The Contractor shall cooperate with the Owner provided TAB firm; provide necessary data on design and proper application of system components; furnish labor and materials required to eliminate any deficiencies or mal-performance.
- 1.2 RELATED WORK
 - A. Drawings and General Provisions of the Contract, including General, Supplementary and Other Conditions and Division 1 Specifications Sections, apply to work of this Section.
 - B. Refer to Division 23 and Division 26 for testing in conjunction with Mechanical and Electrical work.
- 1.3 QUALIFICATION OF HVAC TESTING, ADJUSTING AND BALANCING FIRM A. Minimum Qualification of HVAC Testing, Adjusting and Balancing Firm:
 - 1. General:
 - a. Each professional firm desiring to submit proposals for testing and balancing HVAC systems for Project shall submit necessary brochures describing history of firm and qualifications of personnel to Architect.
 - b. Each professional firm shall have a minimum of five years of experience.
 - c. Each submittal shall contain a listing of similar projects.
 - d. Each professional firm submitting such information on its qualifications and personnel shall keep information current by submitting supplemental data a minimum of once every six (6) months or when professional or technical personnel who shall perform the work may change.
 - e. Each professional firm warrants by submittal of its personnel qualifications that such personnel shall be used in the performance of the work. In the event of personnel change, professional firm submitting proposal shall submit complete qualifications and experience of new personnel. Owner, upon acceptance of proposal, expects work to be performed by the personnel whose experience is so described.

- 2. Qualifications of Firm:
 - a. Firm shall be one which is licensed to perform professional services of this specified type and as a minimum have one professional engineer (PE), TBE or TAB CP (or equivalent) with current registration/certification to perform such professional services.
 - b. Firm shall be capable of performing services at location of facility described within time specified, preparing and submitting the detailed report of actual field work as may be required.
 - c. Firm shall be a member in good standing of Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB), or other experienced/certified TAB governing body deemed appropriate by the Owner, and listed in its current relevant directory.

1.4 TAB FIRM DUTIES AND RESPONSIBILITIES

A. HVAC Testing and Balancing:

- 1. TAB firm shall act as liaison between Owner, Architect, and Contractor and inspect installation of mechanical piping systems, sheet metal work, temperature controls, and other component parts of Heating, Air- Conditioning and Ventilating systems. Inspection of work shall cover that part relating to proper arrangement and adequate provisions for Testing and Balancing.
- 2. TAB firm, within sixty (60) days of its employment, shall review Drawings and Specifications to identify potential Testing/Balancing problems and to determine if there are adequate provisions for Testing and Balancing systems. Report any problem to Architect or Architect's representative and Program/Project Manager.
- 3. Upon completion of installation, start-up, and Controls Contractor point to point verification review on mechanical equipment, check, adjust and balance system components to obtain design conditions in each conditioned space in building. Prepare and submit to Owner, or Owner's delegated representative, complete reports on the Test/Balance and operation of systems.
- 4. Permanent employed technicians or engineers of firm must do measurements and recorded readings of air, water and electricity that appear in reports.
- 5. Make a total of three (3) inspections within ninety (90) days after occupancy of building to insure that satisfactory conditions are being maintained throughout and to satisfy any unusual conditions.
- 6. Make an inspection in building during opposite season in which initial adjustments were made, and at that time make any necessary modifications to initial adjustment required to produce optimum operation of system components to produce proper conditions in each conditioned space. At time of opposite season checkout, Owner's representative shall be timely notified before any readings or adjustments.

1.5 CONTRACTOR'S RESPONSIBILITIES

Dallas ISD Construction Services 01 45 23 Revised 10/14/2020

Page 2 of 8

- A. HVAC Testing, Adjusting and Balancing
 - Contractor shall add TAB activities to the Project schedule to allow TAB completion prior to the scheduled Substantial Completion date. TAB completion requires fully functioning HVAC, Lighting and Domestic Hot Water Systems, including all necessary controls. The Owner may occupy the completed areas of the site and existing building prior to Substantial Completion. Cooperate with the Owner during TAB operations to minimize conflicts with Owner's operations
 - 2. Have all systems complete in operational readiness prior to notifying TAB firm that Project is ready for their services. Include scheduled testing dates and times requested allowing a minimum of 7 days prior notification and so certify in writing to Owner that such a condition exists.
 - 3. Make any changes in sheaves, belts and dampers or the addition of dampers required for correct balance as required by TAB firm, at no additional cost to the Owner or TAB Firm.
 - 3. Provide and coordinate services of qualified, responsible subcontractors, suppliers and personnel as required to correct, repair or replace any and all deficient items or conditions found during the Testing, Adjusting and Balancing period.
 - 4. In order that systems may be properly Tested, Adjusted and Balanced as required by these specifications and industry standards, operate said systems for length of time necessary to properly verify that the equipment is free from defects and meets the operational requirements outlined in this Specification and the construction documents. Indicate the completion and readiness for TAB and pay costs of operations during TAB period. Contractor's failure to complete the TAB work by the scheduled date of Substantial Completion will not be a reason to extend the Substantial Completion date, the Final Completion date, or for the Contractor to receive additional monies.
 - 5. The costs for the TAB Firm to re-evaluate functionality of systems due to open issues shall be bore by the Contractor.
 - 6. The TAB Firm will be available for two attempts of Testing, Adjusting and Balancing the Systems with minimal follow-up where necessary (due to deficiencies, systems not ready, incomplete work, etc.) in an effort to accomplish the TAB requirements. When additional work or project site visits are required because Systems are not ready or because they do not successfully meet industry standard installation and functionality requirements, the Contractor will be charged for the TAB Firm's additional reasonable re-testing costs. Charges include a flat fee of \$300 plus an hourly fee at the TAB Firm's standard rates per employee that mobilized to the project site for each visit. Additional fees will be paid to the TAB Firm by the Owner and shall be reimbursed to the Owner by the Contractor.
 - 7. Complete operational readiness, prior to commencement to TAB services shall include the following:
 - a. Construction status of building permits closing of doors, windows and ceilings installed to obtain projected operational conditions.
 - b. All Volume damper handles shall be clearly identified with red/orange/yellow vinyl tape to identify locations.

- c. A clean/new set of Final Filters shall be installed prior to the commencement of TAB services.
- 8. Air Distribution Systems:
 - a. Verify installation for conformity to design. Supply, return and exhaust ducts terminated and pressure tested for leakage as required by Specifications.
 - b. Volume and fire dampers properly located and functional. All dampers shall be left in the fully open position. Dampers serving requirements of minimum and maximum outside air, return and relief, shall provide tight closure and smooth operation.
 - c. Supply, return, exhaust and transfer grills, registers, diffusers and terminal units installed, connected and fully functional.
 - d. Air handling systems, units and associated apparatus, such as filter sections and access doors, shall be blanked or sealed to eliminate excessive bypass or air leakage.
 - e. Fans (supply, return, and exhaust) operating and verified for freedom from vibration, proper fan rotation and belt tension; heater elements shall be proper size and rating; all VFDs shall be fully functional and programmed; record motor amperage and voltage and verify name plate ratings are not exceeded.
- 9. Water Circulating Systems:
 - a. Check and verify pump alignment and rotation.
 - b. Position and valves pertinent to system design and require operation to permit full flow of water through system components. Operate hydronic systems under full flow conditions until circulating water is clean. Strainers shall be removed and cleaned as required during this cycle of operation.
 - c. Record each pump motor amperage and voltage. Readings shall not exceed nameplate rating.
 - d. Verify electrical heater elements to be of proper size and rating or VFD programming complete.
 - e. Water circulating systems shall be full of water and free of air, expansion tanks set for proper water level and air vents installed at high points of systems and operating freely. Verify that the Make-up water pressure is set properly. All manual flow control valves shall be left in the fully open position.
 - f. Check and set operating temperature of heat exchangers to design requirements.
 - g. Submit digital copies of the recorded findings on the above mentioned items to the TAB firm.

- 10. Automatic Controls:
 - a. Verify that control components are installed in accordance with Project requirements and functional, including electrical interlocks, damper sequences, freeze-stats and smoke detectors.
 - b. Controlling instruments shall be functional and set for designed operating conditions. Factory pre-calibration of thermostats will not be acceptable.
- 11. TAB firm will not instruct/direct Contractor in any of the work, but will make such reports as are necessary direct to Owner.
- 12. For design document required plans and miscellaneous adjustment devices for purpose of adjustment to obtain design conditions; install these devices in a manner that will leave them readily accessible, provide access as required by TAB firm.
- 13. Provide Plans, Plan Revisions, Architectural Specifications, and Change Orders to TAB firm at least 21 days prior to commencement of TAB work.
- 14. Provide approved Submittal data on equipment installed and related changes required to accomplish test procedures outlined in this Section of the Specification to the TAB firm at least 21 days prior to commencement of TAB work.
- 15. Transmit one (1) copy of the following 'Record for Owner' to TAB firm for review and comments at least 21 days before commencement of TAB work:
 - a. 'As installed' drawings.
 - b. Approved Fixture Brochure.
 - c. Approved Wiring Diagrams.
 - d. Approved Control Diagrams.
 - e. Approved, Implemented and Verified Sequences of Operations
 - f. Shop Drawings.
 - g. Approved Submittals.

1.6 HVAC TESTING, ADJUSTING AND BALANCING

A. Testing and Balancing Air Systems:

- 1. Test and adjust air systems to conditions set forth in Plans and Specifications. Air systems include:
 - a. Supply Air Systems.
 - b. Return Air Systems.
 - c. Exhaust Air Systems.

- 2. In fan systems, air quantities indicated on Plans may be varied as required to secure a maximum temperature variation of two (2) degrees within each controlled space, but total air quantity indicated for each zone must be obtained.
- 3. Test and Adjust blowers and fan to deliver CFM required by systems with concurrent recording of RPM, supply voltage and full load amperes. Report any changes of belts and sheaves required.
- 4. Make Pitot tube traverses of main supply, return and exhaust ducts and adjust fans and dampers to achieve specified air volumes. Patch and cover the Pitot tube holes after air balancing is complete. For Equipment exposed to the sun, metal grommets shall be used.
- 5. Test and Adjust fresh air intake and return air dampers and louvers to conditions scheduled or required.
- 6. Test and record static pressure on entering and leaving side of each supply fan, exhaust fan filter, coil and balancing dampers and other components of the system.
- 7. Test and adjust supply air diffusers, grilles, and return air registers to Specification requirements and as shown on Drawings. Adjust supply diffuser pattern blades for proper air distribution in each room or space.
- 8. A test and balance report shall be completed and submitted to the Owner that includes air flow, temperature and pressure test results for all HVAC equipment/systems included in the project. The systems shall include unit testing that verifies control system correct operation.
- B. Testing and Adjusting of Water System:
 - 1. Flow of water through water coils shall be adjusted by adjusting valves until rated pressure drop across each coil is obtained and water flow verified by Venturi readings. On those with three-way valves, rated pressure drop shall first be adjusted though coils in each of several systems and the temperature differential between inlet and outlet shall be determined to be in accordance with its rating. Bypass valves shall then be adjusted on each coil until an equal pressure drop between supply and return connections is obtained with three-way valves set to bypass all coils in each of the several systems.
 - 2. Geothermal Heat Pumps TAB shall be performed with a single unit per well field operating. This single unit balancing shall include both the air side, particularly the outside air, and the water side.
- C. Testing and Adjusting of Automatic Controls:
 - Test automatic controls, controlled devices, interlocks, safety devices associated with HVAC system for proper operation and sequence during heating, cooling, intermediate and smoke removal modes of operation. Adjust automatic controls to deliver required quantities of air at temperatures specified or scheduled on Plans and to maintain proper conditions in each room of the building.
 - 2. Report deficiencies or malfunctions to Owner in the form of a formal, written Deficiency Report.

- D. Equipment Settings:
 - 1. Before final acceptance of reports is made, TAB firm shall furnish Owner the following data:
 - a. Summary of main supply, return and exhaust duct Pitot tube traverses and fan settings indicating minimum value required to achieve specified air volumes.
 - b. A tabulated record of temperature in all spaces on each separately controlled zone, together with outside temperature at time of measurement.
 - c. A list of measured air quantities at each outlet corresponding to temperature tabulation specified above.
 - d. Air quantities at each return and exhaust air-handling devices.
 - e. Supply pressure readings entering and leaving each supply fan, exhaust fan, filter, balancing dampers and other components of ventilation equipment and systems. These readings shall be quantified using fan curves in terms of CFM handled.
 - f. Motor current readings per phase at each equipment motor. Voltage at time of reading shall be listed.
 - g. Water pressure reading at gauge connections. Pressure readings at coils and pumps shall be quantified using coil and pump curves in terms of GPM flow through metering stations at each coil if applicable.
 - h. Water temperature readings entering and leaving each coil and heat exchanger under maximum load conditions in each case.
 - i. Unless specified otherwise in Specification 23 05 93, set HVAC system airflow and water flow rates within the following tolerances:
 - A. Supply, Return, Exhaust Fans and Equipment with Fans:
 - 1. +/- 10 % of Design conditions.
 - B. Air Devices
 - 1. +/-10 % of Design conditions.
 - C. Hydronic Flow Rates
 - 1. +/- 10 % of Design conditions.
 - 2. The final report shall certify test methods and instrumentation used, final velocity reading obtained, air quantities at each outlet supply, return, exhaust, temperature, pressure drops, RPM of equipment, amperage of motors, air balancing problems encountered, recommendations and uncompleted punch list items.
 - 3. A summary of actual operating conditions shall be included on each system outlining normal and/or ventilation cycles of operation. The intent of final report will provide a reference of actual operating conditions for Owner's operating personnel

- 4. Certificate of Substantial Completion will not be signed by the Owner unless an acceptable TAB deficiency report has been provided and accepted by the Owner. An acceptable deficiency report shall indicate that the TAB work is completed except for deficiencies that can be resolved within 14 days.
- 5. Ensure that all systems are balanced at the proper time in the opposite season.

PART 2 – PRODUCTS (Not Applicable)

PART 3-EXECUTION (Not Applicable)

END OF SECTION 01 45 23

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Sections:
 - 1. Division 01 Section "Summary" for work restrictions and limitations on utility interruptions.
 - 2. Division 32 Section "Concrete Paving" for construction and maintenance of cement concrete pavement for temporary roads and paved areas.

1.3 DESCRIPTION OF REQUIREMENTS.

- A. Connections for temporary and permanent utilities and payment for temporary utilities services required for the Work, whether the Work is new construction or renovation of an existing facility, are the responsibility of the Contractor. Cost or use charges for temporary services or facilities will not be accepted as a basis of claims for a Change Order. Temporary utilities services required for use at the project site include but are not limited to the following:
 - 1. Water service and sewer.
 - 2. Temporary electric power and light.
 - 3. Telephone service and internet.
 - 4. Provide adequate utility capacity at each stage of construction.
 - 5. Prior to availability of temporary utilities at the site, provide trucked-in-services for start-up of construction operations.
- B. Temporary construction and support facilities required for the Project include but are not limited to the following:
 - 1. Temporary heat.
 - 2. Field offices and storage sheds.
 - 3. Sanitary facilities, including drinking water.
 - 4. Dewatering facilities and drains.
 - 5. Temporary enclosures.
 - 6. First aid station.
 - 7. Project identification, bulletin boards and signs.
 - 8. Waste disposal services.
 - 9. Rodent and pest control.
 - 10. Construction aids and miscellaneous general services and facilities.
 - 11. Alternate temporary services and facilities, equivalent to those specified, may be used, subject to acceptance by the Architect/Engineer and Program Manager.
- C. Security and protection facilities and services required for Project include but are not limited to the following:

Dallas ISD Construction Services 01 50 00 Issued 1/11/2018

- 1. Temporary protected interior walkway between occupied building areas.
- 2. Dust barricade between occupied building areas and work areas.
- 3. Temporary fire protection.
- 4. Barricades, warning signs, lights.
- 5. Sidewalk bridge or enclosure fence for the site.
- 6. Environmental protection.
- 7. Alternate security and protection methods or facilities, equivalent to those specified, may be used, subject to acceptance by the Architect/Engineer.
- 8. The Contractor shall provide a temporary barrier whenever a certain area of the school is sealed off for remodeling work for phasing purposes. The barrier shall be made of 3/4" plywood or drywall, and it shall extend from floor to ceiling, wall to wall. The temporary barrier shall have a door which can be locked. This barrier will remain until work in the specified area is completely finished. The barrier may subsequently be moved to a different location, provided that it still meets the requirements. Proper signage should be displayed near the temporary barrier, according to safety regulations. Any temporary barriers will need to be coordinated with the emergency egress plan of the building.
- 9. Barrier requirements for minor renovation work will be discussed and agreed upon at weekly progress meetings.

1.4 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to Owner, Program Manager, Architect, testing agencies, and authorities having jurisdiction.

1.5 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas (including dumpster, construction trailer, temporary fencing, silt fence, storage units and portable toilets), and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of relevant Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- C. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage, including delivery, handling, and storage provisions for materials subject to water absorption or water damage, discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water damaged Work.
 - 1. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- D. Dust-Control and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust-control and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
 - 1. Locations of dust-control partitions at each phase of the work.
 - 2. HVAC system isolation schematic drawing.
 - 3. Other dust-control measures.
 - 4. Waste management plan.

1.6 QUALITY ASSURANCE

- A. Regulations: Comply with requirements of local laws and regulations governing construction and local industry standards, in the installation and maintenance of temporary services and facilities, including but not limited to the following:
 - 1. Building Codes, including local requirements for permits, testing and inspections.
 - 2. Health and safety regulations.
 - 3. Utility company regulations and recommendations governing temporary utility services.
 - 4. Police and Fire Department rules and recommendations.
 - 5. Environmental protection regulations governing use of water and energy, and the control of dust, noise and other nuisances.
 - 6. In addition, comply with "Environmental Impact" commitments the Owner or previous Owners of the site may have made to secure approval to proceed with construction of the Project.
- B. Standards: Comply with the requirements of NFPA Code 241, "Safeguarding Construction, Alterations, and Demolition Operations", the ANSI A10.6 "Safety Requirements for Construction and Demolition", and the NECA National Joint Guideline NJG-6 "Temporary Job Utilities and Services".
- C. Inspections: Inspect and test each service before placing temporary utilities in use. Arrange for require inspections and tests by governing authorities, and obtain required certifications, and permits for use.
- D. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

1.7 PROJECT CONDITIONS

- A. General: Provide each temporary service and facility ready for use at each location when the service or facility is first needed to avoid delay in performance of the Work. Maintain, expand as required and modify temporary services or facilities as needed throughout the progress of the Work. Do not remove until services or facilities are no longer needed, or are replaced by the authorized use of completed permanent facilities.
- B. Conditions of Use: Operate temporary services and facilities in a safe and efficient manner. Do not overload temporary services of facilities, and do not permit them to interfere with the progress of the Work. Do not allow unsanitary conditions, public nuisances or hazardous conditions to develop or persist on the site.
- C. Temporary Utilities: Do not permit the freezing of pipes, flooding or the contamination of water sources.
- D. Security and Protection: Maintain site security and protection facilities in a safe, lawful and publicly acceptable manner. Take necessary measures to prevent erosion of the site.
- E. The roof removal and new roof installation shall proceed on a phased basis to minimize risk to the School's ongoing operations and its property. The GC shall be responsible for protection of interior spaces from damage during roofing work.
- F. Distribute material, debris, and equipment over the roof deck to avoid damage to the structural deck. Not more than two weeks supply of material shall be stored on a roof at any given time. Place materials and equipment to be stored on the roof as nearly direct over structural members as can be determined. Secure equipment, material, and debris on the roof to prevent

movement by wind or other elements. Contractor assumes full responsibility for loading on the structural deck or roofing materials during roof replacement operations.

- G. Consult with the A/E and the Construction Services PM regarding permission for the use of selected areas with the building. Coordination will also be held with the Principal and / or site staff.
- H. Temporary Use of Permanent Facilities: Engage installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.
- I. Areas utilized for temporary facilities, staging area, construction access and controls, shall be reestablished to its original condition at the time of substantial completion or demobilization, whichever comes first.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide new materials and equipment for temporary services and facilities; used materials and equipment that are undamaged and in serviceable condition may be used, if acceptable to the Architect/Engineer. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.
- B. Portable Chain-Link Fencing: Minimum 2-inch 0.148-inch- thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide galvanized steel bases for supporting posts.
- C. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10 mils minimum thickness, with flamespread rating of 15 or less per ASTM E 84.
- D. Dust Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60.

2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, PM, Architect, and construction personnel office activities and to accommodate project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
 - 1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases. Assign one desk for the Program Manager and/or Architect, with printer and scanner access.
 - 2. Conference room of sufficient size to accommodate meetings of 8 individuals (minimum). Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot-square tack and marker boards.
 - 3. Coffee maker and supplies.

- 4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
- 5. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
 - 1. These shall be weather tight, structurally sound, compliant with applicable codes and shall be secure
 - 2. Store combustible materials apart from building.
- D. Temporary Construction and Support Facilities: Provide facilities that can be maintained properly throughout their use at the Project site.
- E. Self-Contained Toilet Units:
 - 1. Sanitary facilities include temporary toilets, with facilities and drinking water fixtures. Comply with governing regulations including safety and health codes for type, number, location, operation, and maintenance of fixtures and facilities; provide not less than specified requirements. Install in locations that will best serve the Project's needs.
 - 2. Provide single-occupant self-contained toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar non-absorbent material. Provide at least one for every thirty (30) employees.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - 2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - 3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 - 1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary of Work."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 - 1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.
- C. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- F. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
 - 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed in accordance with approved coordination drawings.
 - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
 - b. Maintain negative air pressure within work area using HEPA-equipped air filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
 - 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dustproducing equipment. Isolate limited work within occupied areas using portable dust containment devices.
 - 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filterequipped vacuum equipment.
- G. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
 - 1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- H. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner. Electrical power service to the project office trailer and other elements and areas of the Contractor's office and staging area is to be provided by the Contractor by means of a temporary power service with a temporary account separate from the facility electrical power service.
- I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

- 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- J. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one telephone line(s) for each field office.
 - 1. Provide additional telephone lines for the following:
 - a. Provide a dedicated telephone line for each facsimile machine in each field office.
 - 2. At each telephone, post a list of important telephone numbers.
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.
 - d. Architect's office.
 - e. Engineers' offices.
 - f. Program Manager's office.
 - g. Principal subcontractors' field and home offices.
 - 3. Provide superintendent with cellular telephone.
- K. Electronic Communication Service: Provide a desktop computer in the primary field office adequate for use by Architect and Owner to access project electronic documents and maintain electronic communications. The computer should be equipped in a manner that provides effective access of project electronic documents and use of electronic communications (e-mail), printer and scanner. Wireless internet access optional.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
 - 1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
 - 2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Parking: Provide temporary parking areas for construction personnel.
- C. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
 - 1. Identification Signs: Provide Project identification signs as indicated in this section.
 - 2. Temporary Signs: Provide other signs as indicated and as required to informing the public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.
 - 3. Maintain and touchup signs so they are legible at all times.
 - 4. No other signs shall be allowed on site with the exception of those that are safety oriented. No signs serving as advertisement shall be allowed.
- D. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
 - 1. Do not load elevators beyond their rated weight capacity.
 - 2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

- E. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
 - 1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.
- F. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.
- G. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
- H. Covered Walkway: Erect protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction and requirements indicated on Drawings.
 - 1. Construct covered walkways using scaffold or shoring framing.
 - 2. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
 - 3. Paint and maintain appearance of walkway for duration of the Work.
- I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
- J. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate occupied areas fumes and noise.
 - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
 - 2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
 - 3. Insulate partitions to control noise transmission to occupied areas.
 - 4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
 - 5. Protect air-handling equipment.
 - 6. Provide walk-off mats at each entrance through temporary partition.
- K. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
 - 1. Prohibit smoking on school property per State Law.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.4 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
 - 1. Protect porous materials from water damage.
 - 2. Protect stored and installed material from flowing or standing water.
 - 3. Keep porous and organic materials from coming into prolonged contact with concrete.
 - 4. Remove standing water from decks.
 - 5. Keep deck openings covered or dammed.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

Ε. TEMPORARY CONSTRUCTION SIGN



- 5 PROGRAM MANAGER:
- PROGRAM MANAGEN: VERIFY TRUSTEE NAME AND ARCHITECT NAME WITH PROJECT MANAGER. SUBMIT SIGN LAYOUT FOR OWNER'S APPROVAL PRIOR TO PRINTING. BLUE FONT IS PANTONE 281C OBTAIN LOGO FROM PROJECT MANAGER. 6. 7. 8. 9.

3.6 GROUNDBREAKING CEREMONY (New Schools Only)

- A. At a time designated by the Owner after project award, the Owner will conduct a groundbreaking ceremony on the project site. The General Contractor will provide support and materials to the Owner for purposes of conducting that ceremony. This support will include providing, but may not be limited to, the following;
 - 1. Land movers to be on site as a backdrop to the groundbreaking.
 - 2. Sandpit at a location coordinated with the owner.
 - 3. Collection of shovels and hardhats from the Construction Services office and transport them to the groundbreaking ceremony.
 - 4. Cleaning and transportation of shovels and hardhats to the Construction Services office after the groundbreaking ceremony.
 - 5. Bottled water for participants.
 - 6. Temporary chairs and tables to seat up to one hundred attendees.
 - 7. All weather access to the site and sandpit.
- B. Contractor shall not be permitted to have advertising or marketing materials on site above and beyond what is provided by the Owner.

END OF SECTION 01 50 00

SECTION 01 52 14 - TEMPORARY FACILITIES FOR STUDENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 00 and 01 Specification Sections, apply to this section.

1.2 SUMMARY

- A. Section includes requirements for temporary facilities (Swing Space) for the purpose of relocating students to provide temporary classroom facilities during construction activities.
- B. Related Sections:
 - 1. Division 00 Section titled "Technical Proposal"
 - 2. Division 01 Section title "Temporary Facilities and Controls"

1.3 DESCRIPTION OF REQUIREMENTS

Since the school buildings will be in use during construction, the Work shall be conducted in phases as proposed in the phasing drawings. Contractor will provide temporary classroom buildings for swing space, per the requirements indicated in this section. District will provide moving services to relocate movable classroom furnishings, fixtures and/or equipment in/out of each phased zone. The number of temporary buildings and classrooms which will be made available during the project shall not exceed the numbers summarized below:

SWING SPACE TYPE	ORG #xxx [Name of School]	ORG #xxx [Name of School]	ORG #xxx [Name of School]	ORG #xxx [Name of School]
Maximum External Temporary Swing Space Classrooms (to be provided by Contractor)	# of classrooms (indicate # of double and # of single portables)			
Maximum Temporary Restrooms	x	x	x	x
Swing Space Classrooms Provided Within Existing Facilities	x	x	х	x

The Contractor can submit, as part of the proposal, alternate phasing plans that can potentially save the District time and money.

If no external or internal temporary swing space classrooms are indicated above, then Contractor will be required to schedule work during holidays, weekends, or hours other than regular school hours, and price its work accordingly. A Dallas ISD representative must be present at the school during times that the Contractor is working at the school site. Contractor will be responsible for overtime costs for Dallas ISD staff for presence at the school site outside normal hours of school operation, including holidays.

A. If students must be displaced from classroom areas due to the phasing and execution of Dallas ISD Construction Services CSP 207459 01 52 14 Page 1 of 6 August 16, 2024 Revised 10/14/2020 the work according to the Contractor's work plan, the Contractor shall be responsible for providing, on a turn-key basis, temporary facilities for those displaced students.

- B. If the Contractor elects to utilize Swing Space, they must include all costs associated with the removal, transportation, installation and dismantling, including, but not limited to:
 - 1. Equipment relocation
 - 2. Transport and setup
 - 3. Maintenance of the temporary facilities for the duration of their use (i.e. HVAC, electrical, and other building repair and maintenance needed, not custodial maintenance)
 - 4. Site work and utilities
 - 5. ADA/TAS Accessible ramps and sidewalks
 - 6. Stairs
 - 7. Skirting
 - 8. Interior finish-out
 - 9. Miscellaneous specialties (i.e. marker boards, tack boards, flag holders, map clips, fire extinguishers)
 - 10. Signage
 - 11. Wall Clock and bell to interface with the existing system at the school
 - 12. Coordination with movers for relocation of Furnishings, Fixtures, and Equipment (FF&E)
 - 13. Breakdown, removal, and transport of the Swing Space at the completion of its use
 - 14. Restoration of the site following removal of facilities
 - 15. P.A. to interface with the existing system at the school

1.4 SCOPE OF WORK

The intent of this scope item is for the Contractor to dismantle and remove the District's existing portable building at the site(s) identified in this section, and relocate to the campus requiring swing space as identified in Section 10.7. Contractor shall be responsible for a turnkey dismantling, transportation and setup of these portable buildings.

Schools with existing portables to be utilized for this project and the portable count are as follows:

Name of School	Portable Details (Include ID# and Single/Double)

Removal of Existing Portables from Other Schools. Contractor shall provide an advance notice of at least five (5) days to the School Principal and the Program Manager before the temporary buildings are expected to be dismantled and demobilized from any of the above sites. Scope may also involve demolition of sidewalks, canopies, electrical, technology pathways as identified in the contract documents. Again, the intent of this scope of work is for the contractor to provide turnkey dismantling, and removal of identified portables and associated infrastructure. Refurbish site(s) where portables / sidewalks are removed.

Removal of Existing Portables scheduled for Demolition in the footprint of Construction or Staging. If a portable needs to be demolished because it is in the footprint of construction or staging, any necessary Abatement will be the responsibility of the Contractor. After any necessary Abatement, the GC will be responsible for the demolition and removal/disposal of the debris remaining. Refurbish site(s) where portables / sidewalks are removed.

Removal of Existing Portables Not Scheduled for Demolition in the footprint of Construction or Staging. If it is necessary to remove a portable building due to construction or staging at a campus and it is not scheduled for demolition, the GC will be responsible to disassemble, disconnect the portable, and deliver it and set it on blocks at a location designated by Dallas ISD Maintenance (this could be another campus). This would only require that the GC set the building in the designated location, set on blocks, level, etc. Maintenance will be responsible for setting the portable up (Skirting, walkways, utilities, fire alarm hookup, etc.) at the new location and Maintenance will also be responsible for picking up the awnings, skirting and other related items that had to be disassembled at the original location. Maintenance will also be responsible for authorizing the disconnect and any re-connect of the utilities with their requested move of portables. Where portables were removed for staging, refurbish site(s) to match existent surrounding conditions.

Portables designated to be relocated into another Dallas ISD Location If there is a Dallas ISD portable that is designated to be moved from a Dallas ISD location to a campus needing Swing Space – The GC (with contract for the campus needing the swing space) would be responsible for the disconnecting of any utilities and cabling for fire and technology. The GC, who is to move the building for swing space, will be responsible for the removal of awnings, porches, skirting, etc. and be responsible for the removal of the debris. The General Contractor would then be responsible for re-grading the area. The General Contractor would then be responsible to pick up the completely disconnected portable(s) and transport it (them) to the campus they are assigned by Dallas ISD Construction Services office and then be responsible for the setup and complete reconnection of all utilities, fire alarm, technology, etc. that would match Dallas ISD requirements. At the point the work is complete and/or the swing space is no longer necessary, the GC would be responsible for the disconnect and moving to a location designated by the Dallas ISD and would have no requirement other than to secure the moving permit and to set the portable(s) securely in place. The General Contractor would have responsibility to remove any debris from that disconnect and removal. The General Contractor is responsible for all permitting required to install the portable buildings.

NOTE: In all cases involving swing space, the Campus Principal and Facilities must be appropriately and timely notified and aware of swing space issues, including determination and disposition of portable contents.

Transportation of Existing Portables from Other Schools to the Project. Contractor shall provide turnkey transportation services, including management of any required permits, for safe transportation of existing portables from any of the above site to the project. Any removal and replacement of any fencing, or other obstacles for relocation of such buildings shall be the responsibility of the Contractor.

Installation of Portables at the Project. Provide turnkey services for delivery, set-up, maintenance, removal, and restoration of the site for temporary classroom buildings to accommodate phased construction for the Dallas ISD Construction Services office

- A. Engineering: The Contractor will provide site engineered civil, utility, blocking plan/foundation plan, sidewalk design and deck/ramp design sufficient to receive a Building Permit from the City, for each site for the installation of all temporary classroom buildings. Existing canopies, sidewalks, foundation details, technology, fire alarm etc. at the schools may be used as a guide for the scope expectations also.
- B. Location: The locations of the temporary classrooms are as indicated on the site plan drawings.
- C. Permits: The Contractor will coordinate and obtain the permits as required by the City for placement of the classroom buildings at each site. This includes the permits required for the transportation of the classroom buildings.
- D. Temp. Facilities: Roll off dumpsters will be provided by the Contractor as required for cleanup during installation and removal of swing space.

- E. Clean up: Final broom sweep of the building(s) and removal of trash and debris from each site will be provided by the Contractor prior to occupancy of the swing space by the students and staff. Floor waxing or shampooing will be provided be the Contractor prior to occupancy by the students and staff. Provisions for site restoration upon completion of the delivery of the modules and/or completion of the scope of work will be provided by the Contractor. Upon the removal of the buildings all underground utilities and/or structures associated with the temporary classroom buildings will be removed and discarded. The concrete sidewalks will be removed and discarded. Rough grading will be performed and new sod will be placed to restore the area to its original condition.
- F. Site Preparation: Dallas ISD has made no provisions for any site preparation and/or demolition as may be required for the delivery and/or installation of the portable buildings. Any site preparation and/or demolition that might be required of for installation of the temporary classrooms will be included in the Contractor's scope.
- G. Construction Fencing: The contractor will maintain a clean and safe site environment within the limits of the temporary classroom construction area. Temporary chain link construction fencing 6' high will be installed around the perimeter of the limits of construction.
- H. Sodding: Upon the removal of the buildings, the Contractor will provide sod within the limits of construction associated with the temporary classroom scope of work. Any irrigation of the new sod will be provided by Dallas ISD.
- Site Utilities (if applicable): The Contractor will provide the site utility connections required for the temporary classroom buildings. The Contractor is responsible for consulting with the City regarding requirements for restrooms on school projects that are located in cities other than Dallas. If required by those cities, the Contractor must provide restroom services and utilities as required by local code.
- J. Storm: All storm water management and any sedimentation control will be the responsibility of the Contractor. Gutters and downspouts will be installed as needed by the Contractor.
- K. Sanitary (if applicable): The Contractor will install all fixtures, stub all sanitary lines below the floor and manifold to one location at the edge of the building(s). All final connections, utility company charges and impact fees that might be required will be included in the Contractor's scope of work. The Contractor is responsible for consulting with the City regarding requirements for restrooms on school projects that are located in cities other than Dallas. If required by those cities, the Contractor must provide restroom services and utilities as required by local code.
- L. Water (if applicable): The Contractor will install all fixtures and stub all water lines to one location at the edge of the building(s). All final connections, utility company charges and impact that might be required will be included in the Contractor's scope of work. The Contractor is responsible for consulting with the City regarding requirements for restrooms on school projects that are located in cities other than Dallas. If required by those cities, the Contractor must provide restroom services and utilities as required by local code.
- M. Natural Gas: No provisions for any gas service are anticipated at the present time.
- N. Life Safety: Building(s) will be approved and inspected by the Texas Department of Licensing and Regulation. Any provisions for fire suppression, fire sprinkler system or fire rated assemblies that might be required will be included in the Contractor's scope of work.

O. Fire Alarm: The contractor will provide and install fire detection systems as required by the Dallas ISD Construction Services CSP 207459 01 52 14 Page 4 of 6 August 16, 2024 Revised 10/14/2020

building code and the City.

- P. Electrical: The contractor will provide and install electrical systems as required by the building code and the City. Installation and electricity consumption costs associated with the swing space will be the financial responsibility of the Contractor.
- Q. Mechanical: The Contractor will supply and install the standard end mount HVAC units. The condensate from both HVAC units of a classroom building will harnessed together and discharged into a 24" diameter by 36" deep french drain filled with gravel. All condensate piping will be PVC but will be protected where directly exposed to UV radiation.
- R. Internet Access: The Contractor will provide wireless internet access appropriate for the swing space. Portable technology connectivity shall be coordinated with the Technology Department.
- S. Skirting: After the modules are installed, the Contractor will install full perimeter skirting around the building(s) using the same material and finish as that of the building siding to provide a consistent finish down to grade. Sections of skirting will be perforated as required for proper crawl space ventilation. Access to the crawl space will be accomplished by removing sections of the skirting.
- T. Decks/Stairs: The Contractor will install landings at the exit doors of the building(s) within the limits of construction as required by code and the City. Landings will utilize pressure treated wood construction with slip resistant surface treatment and handrails.
- U. Ramps: The Contractor will install handicapped accessible ramps at the exit doors of the building(s) within the limits of construction as required by code and the Local City. Ramps will utilize pressure treated wood construction with slip resistant surface treatment and handrails.
- V. Sidewalks: The Contractor will install 4' wide, 4" thick, 3,000 psi concrete sidewalks to service the building(s) within the limits of construction. Sidewalks will receive a light broom finish and be poured on select fill and/or sand bed.
- W. Foundation and Anchorage: The swing space facilities should be securely anchored to a foundation system which utilizes some means of structural support, as determined by a certified structural engineer. Provide construction documents that depict the foundation system as designed and certified by a structural engineer.
- X. Hitch/Tires/Axles: Hitches will be removed and stored under building while tires and axles are to remain on the modules. Tires and axles will be removed only if necessary to complete the building installation due to site constraints and will also be placed under the modules.
- Y. Keys. Contractor shall coordinate with the District for re-keying of all swing space buildings. Provide 10 sets of keys for each building. Doors shall be provided with hardware to enable locking of the buildings from the inside also, and shall have vandal resistant hardware.

Dismantling / Removal of Temporary Buildings upon Completion of Work. Contractor shall demobilize/dismantle/ remove the temporary buildings from site only upon mutual agreement with the Program Manager and Dallas ISD. The temporary buildings shall not be removed from site unless the classrooms that are being renovated under the "Work" of the Contract have been substantially completed and all system upgrades/installation/repairs are completed to accommodate students. Under no circumstances shall the temporary buildings

be demobilized if it is deemed by the Program Manager and Dallas ISD that student safety is a potential issue or if the demobilization is likely to adversely impact the student instruction schedule. Contractor shall provide an advance notice of at least five (5) days to the School Principal and the Program Manager before the temporary buildings are expected to be dismantled and demobilized from the site.

Maintenance and Final Cleaning. Dallas ISD will be responsible for the day-to-day cleaning and janitorial services such as floor cleaning, floor vacuuming, trash removal, etc. Contractor shall be responsible for other maintenance of the temporary buildings, including vandalism. Maintenance of building structure and systems (HVAC, Plumbing, Electrical, Lighting, etc.), for the duration that the buildings are on the School site shall be the responsibility of the Contractor. Contractor shall be responsible for rendering the Project site to its original condition after removal of the temporary buildings, including cleaning and grading and ground cover, termination of the temporary facilities and connections per the requirements of the Owner, the City of Dallas and/or the relevant Government Agency or applicable code. Removal of foundations for the buildings, sidewalks, canopies, ramps etc. will be the responsibility of the Contractor.

Coordination with Project Schedule and Phasing Plan. Contractor shall provide a detailed schedule listing all relevant milestones for the installation and dismantling of swing space buildings as part of the overall project schedule. Activities may include, but are not limited to: 1. Texas Accessibility Standards (TAS) submittals, if required,

2. Procurement of permit to transport the prefabricated buildings from another school to the Project site,

3. Procurement and delivery of the prefabricated temporary buildings,

4. Coordination with the power, water, sanitary sewer and any other applicable utility companies to obtain permits and procure additional primary connections, if required.

5. Installation of canopies, sidewalks, fire alarm systems etc.

Lack of understanding of involved coordination and approval processes, and delays caused thereby shall not be grounds for claim(s) for any contract time extension(s). Contractor shall assume a reasonable time frame from the date of issuance of the Notice To Proceed for the installation of these swing space buildings, and coordinate the timing for the delivery and installation of the temporary classroom buildings with the Project schedule.

END OF SECTION 01 52 14

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Sections:
 - 1. Division 01 Section "Allowances" for products selected under an allowance.
 - 2. Division 01 Section "Alternates" for products selected under an alternate.
 - 3. Division 01 Section "Substitution Procedures" for requests for substitutions.
 - 4. Division 01 Section "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
 - Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."
 - b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
 - 1. Store products to allow for inspection and measurement of quantity or counting of units.
 - 2. Store materials in a manner that will not endanger Project structure.
 - 3. Store products that are subject to damage by the elements, under cover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.

- 4. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
- 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
- 6. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - 1. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 - 2. Refer to Divisions 02 through 49. Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 - 4. Where products are accompanied by the term "as selected," Architect will make selection.
 - 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
 - 6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
- B. Product Selection Procedures:

- 1. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
- 2. Products:
 - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered, unless otherwise indicated.
- 3. Manufacturers:
 - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered, unless otherwise indicated.
 - b. Non-restricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
- 4. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
 - 1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 - 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 3. Evidence that proposed product provides specified warranty.
 - 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 - 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

Dallas ISD Construction Services 01 60 00 Issued 10/31/2016

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Installation of the Work.
 - 3. Cutting and patching.
 - 4. Coordination of Owner-installed products.
 - 5. Progress cleaning.
 - 6. Starting and adjusting.
 - 7. Protection of installed construction.
 - 8. Correction of the Work.
- B. Related Sections:
 - 1. Division 01 Section "Submittal Procedures" for submitting surveys.
 - 2. Division 02 Section "Selective Structure Demolition" for demolition and removal of selected portions of the building.
 - 3. Division–07 Section "Penetration Firestopping" for patching penetrations in fire-rated construction.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 INFORMATIONAL SUBMITTALS

- A. Cutting and Patching Plan: Submit plan describing procedures at least 5 days prior to the time cutting and patching will be performed. Include the following information:
 - 1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.

- 3. Products: List products to be used for patching and firms or entities that will perform patching work.
- 4. Dates: Indicate when cutting and patching will be performed.
- 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate how long services and systems will be disrupted.

1.5 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from the Architect before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
 - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that will result in increased maintenance or decreased operational life or safety. Operational elements may include the following:
 - a. Primary operational systems and equipment.
 - b. Fire separation assemblies.
 - c. Air or smoke barriers.
 - d. Fire-suppression systems.
 - e. Mechanical systems piping and ducts.
 - f. Control systems.
 - g. Communication systems.
 - h. Conveying systems.
 - i. Electrical wiring systems.
 - j. Operating systems of special construction.
 - 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, reduce their capacity to perform as intended, or that will result in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
 - a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Exterior curtain-wall construction.
 - d. Equipment supports.
 - e. Piping, ductwork, vessels, and equipment.
 - f. Noise- and vibration-control elements and systems.
 - 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

- B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to the Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
 - 3. Contractor shall be responsible for locating all underground utility lines that may be affected by the Work, including but not limited to use of technologies such as Ground Penetrating Radar (GPR). Contractor shall provide a report showing location of existing utilities before pre-dig meeting and shall retain a hard color copy of the report on site at all times. Contractor shall maintain the site markings through the duration of the project. Contractor is responsible for protecting all utility lines (underground and above ground) while performing work. Any damaged utility lines will be replaced by the Contractor at no cost to the Owner.

- 4. Prior to starting work, Contractor shall review and provide a report that documents operations of existing systems, including but not limited to fire alarm, security, and PA. Contractor shall also record and provide screenshots of all existing mechanical equipment and controls, from the Owner's front end operating system.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility company that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."
- D. Surface and Substrate Preparation: Comply with manufacturer's recommendations for preparation of substrates to receive subsequent work.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a professional engineer to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location, level and plumb, of every major element as the Work progresses.

- 5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
- 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect and Program Manager. Submit log at project completion for project records.

3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of **96 inches** in occupied spaces and **90 inches** in unoccupied spaces.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Contractor shall provide filters for all mechanical equipment (new and existing) impacted by the Contractor's scope of work, at minimum, at the following stages of construction;
 - 1. Construction filters at the start of construction, and as needed through-out the project to maintain proper air flow
 - 2. MERV filters at the start of Test & Balance
 - 3. MERV filters at Substantial Completion (filters to be dated and provide photo documentation)
- D. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- E. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- F. Tools and Equipment: Do not use tools or equipment that produces harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
 - 2. Cut the work using methods that are least likely to damage work to be retained or adjoining work. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.
- B. Temporary Support: Provide temporary support of work to be cut.
- C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- D. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements of Division 01 Section "Summary."
- E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

- 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
- 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
- 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
- 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
- 6. Proceed with patching after construction operations requiring cutting are complete.
- G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 - 4. Ceilings: Patch, repair, or re-hang in-place ceilings as necessary to provide an evenplane surface of uniform appearance.
 - 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather-tight condition.
 - 6. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

3.6 OWNER-INSTALLED PRODUCTS

- A. Site Access: Provide access to Project site for Owner's construction personnel.
- B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.
 - 1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually
agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.

2. Pre-installation Conferences: Include Owner's construction personnel at pre-installation conferences covering portions of the Work that are to receive Owner's work. Attend pre-installation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.7 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Provide necessary daily cleaning during construction to maintain premises and adjoining public properties free from construction waste, debris and rubbish, and dust caused by operations.
 - 2. At completion of each day, remove waste materials and rubbish; store tools, equipment, machinery and surplus materials; and clean all sight exposed surfaces.
 - 3. If Contractor fails to clean up each day and at the completion of his Work, the Owner may do so and charge the cost thereof to the Contractor. At his next pay application a deductive change order will be processed and there is no appeal for back charges due to clean up.
 - 4. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 5. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 - 6. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Utilize containers intended for holding waste materials of type to be stored.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Cleaning Materials: Use only cleaning materials recommended by manufacturer of the surface to be cleaned. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.
- F. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- G. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- H. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.

- I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- K. Limiting Exposures: Supervise construction operations to assure that no part of the construction, whether completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
- L. During Construction:
 - 1. Oversee cleaning and ensure that building(s) and ground(s) are maintained free from accumulations of waste materials and rubbish.
 - 2. Sprinkle dusty debris with water.
 - 3. During progress of Work, clean-up site and access and dispose off waste materials, rubbish and debris at least once every week.
 - 4. Provide dump containers and locate on site for collection of waste materials, rubbish and debris on a daily basis.
 - 5. Do not allow waste materials, rubbish and debris to accumulate and become an unsightly or hazardous condition.
 - 6. Remove waste materials, rubbish and debris from site and legally dispose off at public or private dumping area.
 - 7. Lower waste materials in controlled manner with as few handlings as possible; do not drop or throw materials from heights.
 - 8. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.

3.8 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Division 01 Section "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.
- 3.10 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 73 00

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion.
 - 2. Final completion.
 - 3. Warranties.
 - 4. Final cleaning.
- B. Related Sections:
 - 1. Division 01 Section "Execution" for progress cleaning of Project site.
 - 2. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 3. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 4. Division 01 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
 - 5. Divisions 02 through 49 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of item on the list, and reasons why the Work is not complete.
 - 2. Advise the Owner of pending insurance changeover requirement.
 - 3. Grant the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits and similar releases.
 - 4. Complete startup testing of systems.
 - 5. Complete Owner's Training. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
 - 6. Complete final cleaning requirements, including touch-up painting.
 - 7. Submit specific warranties 14 days after Substantial Completion.
 - 8. Submit sign-in sheets from training sessions
 - 9. Submit one (1) electronic copy of Operation & Maintenance (O&M) Manuals

1.4 FINAL COMPLETION – Please refer to Attached "General Contractor Close out and Hazmat Abatement Close Out checklist" at the end of this section.

- A. Preliminary Procedures: Before requesting final inspection for determining final completion, the items listed in 1.3 of this section must be complete. The Contractor must also complete the following:
 - 1. Submit final certifications, and similar close-out documents.
 - 2. Prepare and submit Project Record Documents, including construction photographs, damage or settlement surveys, property surveys, and similar record information.
 - 3. Submit test/adjust/balance report records.
 - 4. Terminate and remove temporary facilities from project site, along with mockups, construction tools, and similar elements.
 - 5. Complete final cleaning and repair of all areas, including touch-up painting.
 - 6. Submit final close-out submittals.
 - 7. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
 - 8. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
- B. Close-out submittals include, but are not necessarily limited to, as applicable:
 - 1. Project Record Documents described in Section 01 78 39.
 - 2. Certification of Substantial Completion (AIA Form G704)
 - 3. Certificate of Final Completion (Exhibit D Form of Final Completion Notice)
 - 4. Certificate of Final Acceptance by the Architect (Exhibit H of the A/E Agreement Form of Final Completion Certification with punch list sign-off)
 - 5. Certificate of Final Completion by the Program Manager (Exhibit C of the PM Agreement Form of Final Completion Certificate)
 - 6. TEA Certificate of Project Compliance.
 - 7. Final Change Order.
 - 8. Final Acceptance for Payment to include acceptance of Final Change Order and therefore no work or retainage outstanding
 - 9. Consent of Surety to Final Payment
 - 10. City's Certificate of Occupancy
 - 11. Contractor's Final Affidavit of Release of Liens
 - 12. Contractor's Guarantee
 - 13. Letter from Contractor listing all subcontractors and suppliers with contact information.
 - 14. Transmittal listing Keys: Contractor shall prepare an itemized key list in complete detail ending in a statement that the keys were turned over, the Contractor's signature, a line stating that the keys were received and the receiver's signature. Copies of this list should be retained by the Contractor and receiver and a copy sent to the Architect, PM and Owner. Keys should be identified with tags corresponding to the approved room number designation.
 - 15. Operating, Instruction and Maintenance Manuals for Equipment. For records, provide one (1) paper copy of all O&M manuals at final closeout.
 - 16. Verification of training conducted: Provide copy of sign-in sheet. For records, provide one (1) DVD copy of all training sessions at final closeout.
 - 17. Final approved submittals for HVAC Controls System, Data Cabling System, and Fire Alarm System, and Security System.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - 1. Organize list of spaces in sequential order.
 - 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 - 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Contractor.
 - d. Page number.
 - 4. Submit list of incomplete items in the following format:
 - a. PDF electronic file.

1.6 WARRANTIES

- A. Submittal Time: All warranties shall commence on the date of substantial completion and copies of the Warranties be submitted no later than 14 days after substantial completion.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 - 4. Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide table of contents at beginning of document. Coordinate paragraph below if Division 01 Section "Operation and Maintenance Data" is used.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.
- D. Refer to attached checklist of warranties and close out customized by the Architect for each campus.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - f. Sweep concrete floors broom clean in unoccupied spaces.
 - g. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - i. Remove labels that are not permanent.
 - j. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.
 - k. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - I. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - m. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - n. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter upon inspection.
 - 1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report upon completion of cleaning.

- o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
- p. Leave Project clean and ready for occupancy.
- C. Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls."

GC CLOSEOUT CHECKLIST

		General Contractor Close-out Checklist								
	To	To: < <name>> Project Manager, Dallas ISD Date:</name>							1	
	GC:	Consider the power langer, balastop Other the power langer, balastop Date: Consider the power langer, balastop A/E Firm: Consider the power langer, balastop A/E Firm:					1			
	Org#:	xxx			PM:		< <name of="" pi<="" th=""><th>MEirm</th><th>>></th><th>1</th></name>	MEirm	>>	1
	School Name	School Name								1
	Project Type:		Addition			Ren	novations		New Constructio	0 0
	Primare									
Item #	Doc	Responsibili t	Tab #	Check-0	Dff			Remark	5	
I.	FINANCIAL RECONCILIATI	ON / FINAL PAYMENT REQUIREMENTS								
a.	Copies of Reconciliation to Dallas ISD Financial System and Copy of Final Payment						PM will collec	t for cl	ose-out	i I
b.	Certificate(s) of Insurance includin	^a PM				PM will collect for close-out				
c.	Insurance Requirements at Final C	PM				PM will collect for close-out			1	
d.	Copy of Final Change Order	PM				PM will collect for close-out			 	
e.	Copies of all executed Change Or	ders	PM				PM will collect for close-out			
f.	Copies of all executed CAEAs and	d CAELs	PM				PM will collect for close-out with back-up			up information
g.	Copies of all executed AERAs		PM				PM will collect for close-out with back-up informatio			p information
h.	Copies of all executed custodian o	overtime authorizations (Summary Recap (Hrs.)	PM				PM will collect for close-out. Include as deductive CAEA			deductive CAEA
i.	Confirmation of back charge for F	PM				PM will collect for close-out. Include as deductive CAEA			deductive CAEA	
į.	Confirmation of back charge for te	PM				PM will collec	t for cl	ose-out. Include as	deductive CAEA	
k.	M/VBE Contract Closeout Evaluation Form						PIM will collect report	t for cl	ose-out. Include hr	ial MPWBE payment status
II.	PAYMENT AND PERFORM	IANCE BONDS								
a.	Attorney is attached to form 1	inal Payment"; AIA G707 (Confirm that Power of	GC							1
III.	EVIDENCE OF PAYMENT C	OF DEBTS AND CLAIMS								
a.	"Contractor's Affidavit of Paymer	nt of Debts and Claims" AIA G706	GC							1
IV.	SUBSTANTIAL COMPLETIO	DN	·							
a.	AIA G704 - Certificate of Substant	tial Completion			ļ					
Ь.	Punchlist - Issued at substantial co	ompletion	GC							
с.	Exhibit G - Form of Substantial Completion Certification						This is an Exhi	ibit in tl	he A/E Agreement	1
٧.	FINAL COMPLETION									
a.	Exhibit H - Form of Final Competion	on Certification - with signed off punchlist	A/E				This is an Exhi	ibit in tl	he A/E Agreement	
b.	TDLR - RAS report approved or A	VE Letter	A/E				confirm/explain.and/or.iustifu.contections.			e Are will have to I IA
c.	Attachment C - Form of Program	Manager's Final Completion Certificate	PM		ļ		This is an Exhi	ibit in tl	he PM Agreement	
d.	Exhibit D - Form of Contractor's F	inal Completion Notice	GC							
e.	TEA - Certification of Project Cor	npliance	Dallas ISD PM				PM will coord	linate ti	he sign-off on this c	bournent.
¥I.	. OPERATIONS AND MAINTENANCE MANUALS AND EVIDENCE OF TRAINING									
a.	A/E's O&M Manuals confirmation) letter.	GC				************			
b.	O&M Manuals submitted by GC to	> A/E	GC				Manual neces	scueve Igb.sol	inclife to be split, but G	Preved by Arc, and FIVI. One SI Divisions
C.	Training Matrix, Sign-In sheet(s) an	nd DVDs	GC				heen nrovided	to ind	icate the nerson tit	and date of completion of the
¥II.	ATTIC STOCK / SPARE MA	ATERIAL / KEY TRANSFER	1				Prouided by L	l'and	received by Princip	al or L'ampus Escilitu Supervisor
a.	Signed off Transmittal Attic stock	.& spare material	GC				or Maintenan	្រុមភ្លូន្ត/	noticable	and Campus Facility Supervisor
b.	, Signed off Transmittal Key transfer (Accessory keys) GC Supervisor as annlinable						aron Campus nacilities			
¥III.	. VARRANTIES - By SYSTEM (MEP, Fire alarm, Fire sprinkler, Roofing, Security, etc.)									
a.	Exhibit B - Form of Contractor's G	âuarantee	GC	.ļ						
b.	Exhibit B-2- Certification of Comp	liance with Contract Documents.	GC				D can state "	1 377 564	ac" manual associat	l Ae projuded for gueresteer
C.	Manufacturer's Warranty(ies)		GC		ļ		warranties.etc	, an ant 3	ies manual snould	pe provided for guarantees,
d.	List of Subcontractors and Supplie	ers	GC							

IX.	LOCAL AGENCIES APPROVALS	(as applicable)							
a.	City of Dallas - Certificate of Occupancy		GC						
Ь.	City of Dallas - Final Inspections (Building	GC			Green tags colored o	opies	 		
с.	Storm Water Prevention Polution Plan, S ¹	GC							
d.	Elevator Inspection Certificate	GC							
е.	Boiler Inspection Certificate		GC						
	Health Department Inspection Certificate		20					l	
Y.	BECORD DOCUMENTS (DRAVIN		1 40	I					
<u>n.</u>	Becord Documents transmittal from GC to A/E					GC is to update red-l	ined record drawi	ngs on a monthly basis. Final red-	
a. 	record Locuments (ransmitta) from GL to A/L					line.record.set.to.be.r A/E is to provide a le	trovided to A/F.	it all record documents have been	
		1				nrovided huthe G.C.			
AI.						Need Course sets 14		4	
a.			GC			Need Govermental A	gency approved	accuments.	
b.	Security drawings		GC			Need Govermental A	aqcuments.		
C.	HVAC Controls drawings		GC			Need Govermental Agency approved documents.			
d.	Fire Sprinkler System drawings		GC			Need Govermental Agency approved decuments.			
е.	Data Cabling drawings		GC			Need Govermental Agency approved decuments.			
XII.	CERTIFICATIONS								
a.	Certification of Asbestos Free Project: Le	etter from GC as per AIA A20113.11.1	GC						
b.	Certification of Lead-Free Potable Waters 13.12.1	System: Letter from GC as per AIA A201	GC						
XIII.	FINAL SYSTEM REPORTS								
a.	Final Test & Balance Report		Τ&B						
Ь.	Final Roof Inspection Report		Roof Inspector						
с.	Final HVAC Controls - CMCS Report		Dallas ISD						
XIV.	VARBANTY INSPECTIONS		: Facilities						
a.	6 month inspection shall be conducted no	later than: < <date>></date>	1						
ь.	11 month inspecton shall be conducted no	later than: < <date>></date>							
X¥.	ACKNOVLEDGE STATEMENT		:						
	Project Completion Acknowledgement - 9	Signed and dated by School Principal	PM						
ь.	Project Completion Notification to Dallas	ISD Facilities	Dallas ISD						
			Project						
Thave	submitted the close-out documentation in o	compliance with applicable contract:							
G.C.F	irm	Print Name			Signature		Date		
l have	reviewed and acknowledge receipt of the clo	ose-out documentation submitted by the Gen	eral Contractor and	d found it c	omplete and in	compliance with appli	cable		
- sonde								1	
6/E E3	rm	Print Name			Signature		Date		
Arc Fi		Finchame			oignature		Date		
l have applic	reviewed and acknowledge receipt of the clo able contracts:	ose-out documentation submitted by the Gen	eral Contractor and	d the A/E a	nd found it corr	plete and in complian	ice with		
-								1	
Progr	am Manager	Print Name			Signature		Date		
l have applic	reviewed and acknowledge receipt of the clo able contracts:	ose-out documentation submitted by the Gen	eral Contractor, Ał	E and PM	and found it co	mplete and in complia	ince with		
Dallar	Independent Solvool Dictrict							1	
Owner	independent concorrelation	Print Name			Signature		Date	1	

	HAZMAT CONTRACTOR CLOSE-OUT CHECKLIST							
DALAS INC.	то:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX						
	CONTRACTOR	PMF:						
BOND2020	PROJECT ID / ORG:	EXTENT OF COMPLETE SPOT OTHER						
	CAMPUS:							
	PURCHASE ORDER(S):							
	PROJECT TYPE:	Abatement of Exist. Bidgs in Acquired Land Abatement for Renovation Projects						

ITEM/ TAB	DOCUMENT DESCRIPTION	PRIMARY RESP	RECEIVED	REMARKS			
L.	PROJECT DOCUMENTATION and/or EVIDENCE OF COMPLIANCE						
a.	OSHA Sampling						
ь.	Waste Manifest						
۵.	Daily work logs						
d.	Daily sign-in sheets						
e.	Asbestos Licensing						
£.,	Respirator fit tests						
8-	Accident Report(s)						
h.	Notifications						
L.	Medical Records						
- Ja	Confirmation of Receipt - Letter of Completion Document	ENVIR DEPT					

I have submitted the close-out documentation in compliance with applicable contract:

•			
JOC HAZMAT CONSTRUCTION FIRM	PRINT NAME	SIGNATURE	DATE

I have reviewed and acknowledge receipt of the close-out documentation submitted by the General Contractor and found it complete and in compliance with applicable contracts:

-

JOC HAZMAT CONSULTANT FIRM

PRINT NAME

DATE

SIGNATURE

END OF SECTION 01 77 00

DALLAS ISD CONSTRUCTION SERVICES

4/12/2023

PAGE10F1

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Operation manuals for systems, subsystems, and equipment.
 - 3. Product maintenance manuals.
 - 4. Systems and equipment maintenance manuals.
- B. Related Sections:
 - 1. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
 - 2. Division 02 Section "Demonstration and Training" for instructing Owner's personnel in the maintenance of the products and in the operation of equipment and systems.
 - 3. Divisions 02 through 49 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual specification sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Where applicable, clarify and update reviewed manual content to correspond to modifications and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
 - 1. PDF electronic file. Assemble each manual into a composite electronically-indexed file. Submit on digital media acceptable to Architect and Program Manager.

- a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically-linked operation and maintenance directory.
- b. Enable inserted reviewer comments on draft submittals.
- 2. For Facilities use, provide one (1) PDF Electronic File of all O&M manuals at substantial completion. For Permanent Records, provide one (1) paper copy of all O&M manuals at final closeout.
 - 3. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves for paper copy. Architect will return PDF Electronic File and paper copy.
- C. Initial Manual Submittal: Submit draft PDF copy of each manual at least 30 calendar days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form as a PDF prior to requesting inspection for Substantial Completion and at least 10 calendar days before commencing demonstration and training. Architect will return copy with comments.
 - 1. Correct or modify each manual to comply with Architect and Program Manager's Comments. Submit copy of each corrected manual within 10 days of receipt of Comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Organization: Include a section in the directory for each of the following:
 - 1. List of documents.
 - 2. List of systems.
 - 3. List of equipment.
 - 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for Architect.
 - 7. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 - 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 - 2. File Names and Bookmarks: Enable bookmarking of individual documents based upon file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel upon opening file.
- F. Manuals, Paper Copy: Submit manual in the form of hard copy, bound and labeled volumes.
 - 1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-

reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.

- b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of content. Indicate volume number for each of the three required multiple-volume sets.
- 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
- 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
- 4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
- 5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 - 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 - 2. Performance and design criteria if Contractor is delegated design responsibility.
 - 3. Operating standards.
 - 4. Operating procedures.
 - 5. Operating logs.
 - 6. Wiring diagrams.
 - 7. Control diagrams.
 - 8. Piped system diagrams.
 - 9. Precautions against improper use.
 - 10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
 - 1. Product name and model number. Use designations for products indicated on Contract Documents.
 - 2. Manufacturer's name.
 - 3. Equipment identification with serial number of each component.
 - 4. Equipment function.
 - 5. Operating characteristics.
 - 6. Limiting conditions.
 - 7. Performance curves.
 - 8. Engineering data and tests.
 - 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:

- 1. Startup procedures.
- 2. Equipment or system break-in procedures.
- 3. Routine and normal operating instructions.
- 4. Regulation and control procedures.
- 5. Instructions on stopping.
- 6. Normal shutdown instructions.
- 7. Seasonal and weekend operating instructions.
- 8. Required sequences for electric or electronic systems.
- 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in the manual, identify them by product name, and arrange to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in the manual, identify by product name and arrange to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.
 - 6. Demonstration and training video recording, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 - 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- C. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- D. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of operation and maintenance manuals.
 - 2. Comply with requirements of newly prepared record Drawings in Division 01 Section "Project Record Documents."
- E. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 78 23

SECTION 01 78 39 - PROJECT AS-BUILTS & RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous record submittals.

B. Related Sections:

- 1. Division 01 Section "Execution" for final property survey.
- 2. Division 01 Section "Closeout Procedures" for general closeout procedures.
- 3. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
- 4. Divisions 02 through 49 Sections for specific requirements for project record documents of the Work in those Sections.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one set(s) of marked-up record prints.
 - 2. Number of Copies: Submit copies of record Drawings as follows:
 - a. Initial Submittal: Submit two paper copies set as well as PDF electronic files of marked-up record prints and two sets of plots from corrected record digital data files. Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal: Submit two paper copies set as well as PDF electronic files of marked-up record prints. Print each Drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit two paper copies as well as PDF electronic files of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one paper copy set as well as PDF electronic files of each submittal.
 - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

- D. Miscellaneous Record Submittals: Refer to other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one paper copy set as well as PDF electronic files of each submittal.
- E. Reports: Submit written report weekly indicating items incorporated in Project record documents concurrent with progress of the Work, including modifications, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 As-Built Drawings

- A. As-Built Drawings: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings.
 - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding archive photographic documentation.
 - 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Architect's written orders.
 - I. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
 - 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints.
 - 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 - 5. Mark important additional information that was either shown schematically or omitted from original Drawings.

- 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up as-built prints with Architect. When authorized, submit markedup to Architect. The Architect will then prepare a full set of corrected digital data files of the Contract Drawings, as follows:
 - 1. Format: Annotated PDF electronic file.
 - 2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 - 3. Refer instances of uncertainty to Architect for resolution.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 - 1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 - 2. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 - 4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
 - 5. Note related Change Orders and record Drawings where applicable.
- B. Format: Submit record Specifications as a paper copy as well as in scanned PDF electronic file(s) of marked up paper copy.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

- 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
- 3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B. Format: Submit record Product Data as a paper copy as well as scanned PDF electronic file(s) of marked up paper copy.
 - 1. Include record Product Data directory organized by specification section number and title, electronically linked to each item of record Product Data.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and modifications to project record documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 01 78 39

SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training video recordings.
- B. Related Sections:
 - 1. Divisions 02 through 49 Sections for specific requirements for demonstration and training for products in those Sections.

1.3 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. Indicate proposed training modules utilizing manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.
- B. Qualification Data: For instructor.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.

1.4 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module. Needs to match section on Final Completion.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name and address of videographer.
 - c. Name of Architect.

- d. Name of Contractor.
- e. Date of video recording.
- 2. At completion of training, submit complete training manual(s) for Owner's use.

1.5 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

1.6 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.

- d. Project record documents.
- e. Identification systems.
- f. Warranties and bonds.
- g. Maintenance service agreements and similar continuing commitments.
- 3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
- 4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - I. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
- 5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
- 6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
- 7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
- 8. Repairs: Include the following:
 - a. Diagnosis instructions.

- b. Repair instructions.
- c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
- d. Instructions for identifying parts and components.
- e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Division 01 Section "Operations and Maintenance Data."
- B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Owner will furnish an instructor to describe Owner's operational philosophy.
 - 2. Owner will furnish Contractor with names and positions of participants.
- B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner through Program Manager with at least 7 days advance notice.
- C. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. General: Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
- B. Video Recording Format: Provide high-quality color video recordings with menu navigation in format acceptable to Architect.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.

END OF SECTION 01 79 00

SECTION 01 91 00 – GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. The Owner will perform the Commissioning activities or has retained an independent Commissioning Authority (CxA) to coordinate Commissioning activities for this project. The objective of the Commissioning process is to verify and document that the performance of facilities, systems, and assemblies installed as part of this project meet the project's defined objectives and criteria.
- B. This section outlines the general roles and responsibilities of the CxA, Owner, and General Contractor. Divisions 21, 22, 23, and 26 sections define roles and responsibilities applicable to Division 21, 22, 23, and 26 work.
- C. The CxA is an independent contractor retained directly by the Owner and will coordinate all Commissioning activities with the Owner's representative.
- D. Commissioning requires support from the contractors. The Commissioning Process does not relieve any contractor from their obligation to complete all portions of work in a satisfactory manner. Post contract/construction award, the Contractor shall not use any Commissioning responsibilities/obligations as justification for construction delays or requests for additional monies.
- E. The General Contractor is responsible for coordinating all Commissioning activities with their Sub-Contractors.

1.2 RELATED SECTIONS

- A. Division 21 Section 21 0800 Commissioning of Fire Suppression
- B. Division 22 Section 22 0800 Commissioning of Plumbing Systems
- C. Division 23 Section 23 0800 Commissioning of HVAC Systems
- D. Division 26 Section 26 0800 Commissioning of Electrical Systems
- E. Individual Division 21, 22, 23, and 26 sections contain requirements related to the Commissioning process, if applicable for that Division.

1.3 DEFINITIONS

- A. *Acceptance:* A formal action, taken by a person with appropriate authority (which may/may not be contractually defined) to declare that some aspect of the project meets defined requirements, thus permitting subsequent activities to proceed. The Owner's Representative shall be responsible for evaluating acceptable criteria.
- B. Commissioning Process or Commissioning (Cx): A quality focused process for enhancing the delivery of a project. The process focuses on verifying and documenting that the facility and all of

its systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the Owner's Requirements.

- C. Commissioning Process Activity: A component of the Commissioning Process.
- D. *Commissioning Authority (CxA):* An entity identified by the Owner who plans, schedules, and coordinates the Commissioning team to implement the Commissioning Process.
- E. *Commissioning Field Report:* A written document that identifies the Commissioning activities completed during a visit to the project site. The report identifies significant findings, results, comments and questions that resulted from the visit. This is typically produced by the CxA per site visit.
- F. *Commissioning Photo Log:* A log of photographs that support the items identified in the Commissioning Issues Log. The photo log numbering corresponds to the issue numbers listed in the Cx issues log.
- G. *Commissioning Plan:* A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the Commissioning Process. The Cx Plan will be developed by the CxA.
- H. Commissioning Process Activities: Components of the Commissioning Process.
- I. Commissioning Progress Report: A written document that details activities completed as part of the Commissioning Process and significant findings from those activities, and is continuously updated during the course of a project.
- J. *Commissioning Request for Information (RFI):* Form used by the Commissioning Authority to request information from the design or construction team.
- K. *Commissioning Team:* The individuals and agencies who, through coordinated actions, are responsible for implementing the Commissioning Process. The Cx Team shall consist of: CxA, GC, MC, EC, TAB Contractor, Controls Contractor, Owner's Representative, A/E Representatives and equipment suppliers (as needed).
- L. *Commissioning Testing*: The evaluation and documentation of the equipment, assemblies, any building/equipment controls, and systems delivery and condition, installation, proper function according to the manufacturer's specifications and project documentation to meet the design criteria.
- M. *Construction Team:* The General Contractor, related sub-contractors, and other contractors working for the Owner during the Construction Phase.
- N. Construction Documents: This includes a wide range of documents, which will vary from project to project, and with the Owner's needs and regulations, laws, and jurisdictional requirements. Construction documents usually include the project manual (specifications), plans (drawings), and general terms and conditions of the contract.
- O. *Contract Documents*: This includes a wide range of documents, which will vary from project to project and with the owner's needs, regulations, laws, and jurisdictional requirements. Contract documents frequently include price agreements; construction management process; subcontractor agreements or requirements; requirements and procedures for submittals, changes, and other construction requirements; timeline for completion; and the construction documents.

- P. Commissioning Issues Log: A formal document, created and maintained by the CxA, and ongoing record of problems or concerns identified through/during the construction phases which deviate from the project's construction documents, applicable codes and/or normal construction industry practices and their resolution. Items on this issues log should be reviewed by the GC and corrected in a timely manner by the applicable trades and contractors.
- Q. *Coordination Drawings:* Drawings showing the work of all trades to illustrate that equipment can be installed in the space allocated without compromising equipment function or access for maintenance and replacement. These drawings graphically illustrate and dimension manufacturers' recommended maintenance clearances.
- R. *Design Review (Peer)*: An independent and objective technical review of the design of the project or a part thereof, conducted at specified stages of design completion by one or more qualified professionals, for the purpose of enhancing the quality of the design and to determine compliance with regulations, codes, or other standards administered by the Authority having Jurisdiction. The CxA may perform a Design Review during the early stages of design.
- S. *Design Review (Commissioning)*: A review of the design documents to determine compliance with the Owner's Requirements and/or Basis of Design, including coordination between systems and assemblies being Commissioned, features and access for testing, Commissioning and maintenance, and other reviews required by the Owner.
- T. *Facility Guide*: A basic building systems description and operating plan with general procedures and confirmed facility operating conditions, set points, schedules, and operating procedures for use by facility operations to properly operate the facility.
- U. *Final Commissioning Report*: A document that records the activities and results of the Commissioning Process and is developed from the final Commissioning Plan with all of its attached appendices.
- V. *Functional Performance Test (FPT):* A written protocol that defines methods, personnel, and expectations, for tests conducted on components, equipment, assembles, systems, and interfaces among systems. These documents shall be developed and provided by the CxA and shall require pre- approval by the Owner's Representative.
- W. Pre-Functional Checklist (PFC): A form used by the installing contractors to verify that appropriate components are on-site, ready for installation, correctly installed, started up, tested and balanced, in compliance with the owner's project requirements, and is ready for Functional Performance Testing. These documents shall be developed and provided by the CxA and shall require pre-approval by the Owner's Representative.
- X. *Submittal Review*: A Commissioning review of the equipment submittals for relevant mechanical, electrical, plumbing and energy consuming equipment and systems.
- Y. *Test Procedure*: A written protocol that defines methods, personnel, and expectations for tests conducted on components, equipment, assemblies, systems, and interfaces among systems to verify compliance with the Owner's Project Requirements.

1.4 ROLES AND RESPONSIBILITIES

- A. Commissioning Authority (CxA)
 - 1. Develop a Commissioning Plan outlining the organization, schedule, and documentation requirements of the Commissioning Process.

- 2. Coordinate and direct the Commissioning activities in a logical, sequential and efficient manner using consistent protocols and forms, centralized documentation, clear and regular communications with the Cx team, and frequently update project timelines and schedules for Cx activities.
- 3. The CxA is not responsible for the design concept, design criteria, compliance with codes, site safety, construction means and methods, review or approval of change orders, design or general construction scheduling, cost estimating, or construction management.
- 4. Review contract documents for completeness and quality.
- 5. Perform focused reviews of the design, drawings and specifications at various stages of development (during schematic design, design development and contract document phases).
- 6. Develop full Commissioning specifications for all Commissioned equipment (Owner may provide the specifications). Coordinate them with, and integrate into, the specifications of the architect and engineers.
 - a. The Commissioning specification will include:
 - 1) a detailed description of the responsibilities of all parties
 - 2) details of the Commissioning process
 - 3) reporting and documentation requirements, including formats
 - 4) alerts to coordination issues, deficiency resolution
 - 5) construction checklist and startup requirements
 - 6) subcontractors' Pre-Functional Checklists (PFC) Forms and responsibilities
 - 7) the Functional Performance Testing (FPT) Forms and process
 - 8) specific Functional Performance Test requirements, including testing conditions and acceptance criteria for each piece of equipment to be Commissioned
- 7. The CxA may assist with problem solving, non-conformance or deficiencies, but ultimately that responsibility resides with the General Contractor (GC) and the Architect/Engineer (A/E). The primary role of the CxA is to oversee the Commissioning process. This includes site observations of installation of Commissioned systems and equipment, development and coordination of the execution of a PFC and FPT testing plan and observation and documentation of performance that systems are functioning in accordance with the Owner's Requirements, design intent and in accordance with the Contract Documents. The Contractors will provide all tools and personnel to start, check-out and test equipment and systems, except as noted in this section.
- 8. Coordinate the Commissioning work and work with the GC to incorporate Commissioning activities into the master project schedule maintained by the GC.
- 9. Update and revise the Commissioning Plan as required.
- 10. Plan and conduct a Commissioning scoping meeting and other Commissioning meetings with the Cx team. The CxA will record meeting minutes for Cx meetings facilitated by the CxA and distribute them to all Cx Team members.
- 11. Request and review additional information required to perform Commissioning tasks, including installation, operations and maintenance (IOM) manuals and materials, contractor start-up and checkout procedures. Document results and incorporate into the Commissioning plan.
- 12. Review Contractor submittals applicable to systems being Commissioned, for compliance with the Owner's requirements and for coordination with the Commissioning Process. The CxA review provides information to the Design Team but is not a review for acceptance or rejection of the submitted equipment or system; acceptance or rejection of any submittal remains the responsibility of the Design Team.
- 13. Conduct periodic construction observations to verify that systems and equipment are installed consistently with Project's requirements. Document deficiencies and distribute to Cx Team members in a timely manner.
- 14. Attend selected planning and job-site meetings to obtain information on construction progress.

- 15. With necessary assistance and review from installing contractors, write and distribute the Pre-Functional Checklists and Functional Performance Test procedures for systems and equipment.
- 16. Approve Pre-Functional Checklists completed by GC by selected site observation visits and spot checking to confirm that systems and equipment are ready for Functional Performance Tests.
- 17. Review start-up and TAB reports to confirm included systems are ready for Functional Performance Testing.
- 18. Coordinate, witness and document Functional Performance Testing by installing contractors. Coordinate retesting as necessary until satisfactory performance is achieved per design specifications.
- 19. Coordinate, witness and document required seasonal or deferred Functional Performance Testing and any deficiency corrections required.
- 20. Review equipment warranties and confirm that they are project specific and clearly define the Owner's responsibilities if any.
- 21. Oversee and review the training of the Owner's operating personnel.
- 22. Review O&M manuals submitted by the GC.
- 23. Provide a final Commissioning report for review and acceptance by the Owner's Representative.
- 24. The CxA is not responsible for construction means and methods or for site safety and security.
- 25. The CxA will not authorize or approve construction cost amendments, changes to the construction schedule, or changes to the contract documents.
- 26. Participate in the TAB Field verification process using a sampling method. Document the verification using TAB FPTs.
- B. General Contractor (GC) and Sub-Contractors
 - 1. The GC is responsible for coordinating all Commissioning activities of the sub-contractors. Commissioning activities may be completed by the Mechanical Contractor (MC), Electrical Contractor (EC), Controls Contractor (CC), or Test and Balance (TAB) contractor, but the GC is ultimately responsible for completion of all Cx related tasks.
 - 2. Facilitate the coordination of the Commissioning work by the CxA and incorporate Commissioning activities into the master schedule.
 - 3. Furnish a copy of all construction documents, addenda, change orders, Requests for Information (RFIs), approved submittals, shop drawings, Architect's Supplemental Instructions (ASIs), and IOMs, related to Commissioned systems and equipment to the CxA.
 - 4. In each purchase order or written subcontract, include any requirements for Commissioning.
 - 5. Ensure that all sub-contractors execute their Commissioning responsibilities according to the Contract Documents, responsibilities and schedule.
 - 6. The GC shall designate a staff member who will be knowledgeable and responsible for the construction of the Commissioned systems (typically the site superintendent) to be their active representative on the Commissioning team. This person shall attend the Commissioning scoping meeting and other necessary meetings scheduled by the CxA to facilitate the Commissioning process.
 - 7. Each sub-contractor shall designate a staff member who will be knowledgeable and responsible for the construction of the Commissioned systems (typically the trade superintendent) to be their active representative on the Commissioning team. This person shall attend the Commissioning scoping meeting and other necessary meetings scheduled by the CxA to facilitate the Commissioning process.
 - 8. Coordinate and share the issues identified on the Cx Issues Log with the appropriate trade sub-contractors. Respond in writing to the CxA and Owner's Representative with the contractor's response, appropriate trade responsible for the corrective action and anticipated completion date for the corrective action.

- 9. Follow up with the subcontractors as to the status of the corrective actions to the items on the Cx Issues Log, and update the CxA.
- 10. The GC's designated Cx team staff member shall personally examine, witness and verify that all issues are corrected and complete when the sub-contractor states they have "corrected" an item on the Cx Issues Log.
- 11. Notify the CxA one week in advance of all equipment start-ups and tests required by the Contract Documents.
- 12. Submit test results for tests required by the Contract Documents, including (but not limited to) duct leakage tests, hydronic system pressure tests, generator tests, etc. as applicable to the Commissioning scope.
- 13. Receive the Pre-Functional Checklist forms from the CxA. Create a "master" Pre-Functional Checklist document binder containing all checklists for the project that shall remain at the project site.
- 14. Coordinate and distribute copies of the Pre-Functional Checklists to all relevant subcontractors.
- 15. Notify the CxA when Pre-Functional Checklists are completed.
- 16. Remedy any deficiencies identified in the Pre-Functional Checklists and notify the CxA (in writing) that deficiencies have been addressed.
- 17. Notify the CxA when TAB activities will be taking place and have been completed. Provide the CxA with TAB report(s).
- 18. Participate in TAB verification, which may include repeating selected measurements contained in the TAB report(s).
- 19. Coordinate with subcontractors to ensure qualified technicians are available for performing the Functional Performance Test procedures under direction of the CxA.
- 20. Coordinate the training of Owner personnel.
- 21. Verify that subcontractors prepare and submit O&M manuals, according to the Contract Documents, including clarifying and updating the original sequences of operation to asbuilt conditions.
- 22. Ensure that subcontractors execute seasonal or deferred Functional Performance Testing, witnessed by the CxA, according to the specifications.
- 23. Ensure that subcontractors correct deficiencies and make necessary adjustments to O&M manuals and as-built drawings for applicable issues identified in any seasonal testing.
- 24. Gather and submit all project closeout documentation, including submittals, O&M manuals, as-built drawings, warranties, etc. to CxA for review.

C. Owner

- 1. Arrange for facility operating and maintenance personnel to attend various field Commissioning activities and field training sessions according to the Commissioning (Cx) Plan.
- 2. Provide final approval for the completion of the Commissioning requirements.
- 3. Coordinate site visits and meetings with the CxA.
- 4. Review and comment on Commissioning documentation such as the Cx plan, field reports, PFC & FPT Forms, and Cx Issue Logs.
- 5. Provide interpretations and clarifications of the Owner's Requirements.
- 6. Provide input and direction on Commissioning-related recommendations that arise from the Commissioning process which may enhance the operation of the building but are not included in the project documents and may be an additional project cost. If the Owner is in agreement with Commissioning recommendations, they are to direct the Design Team to review and issue the appropriate directive to add that scope and maintain the Design Team's responsibility for all construction documents.
- D. Design Team (Architect/Engineer)
 - 1. Perform normal submittal review, construction observation, as-built drawing preparation, O&M manual preparation, etc., as contracted with Owner.
 - 2. Fulfill all obligations specified in the contract documents, including reviewing and approving submittals, conducting construction observation, issuing addenda and clarifications,

responding to RFIs, issuing punchlists, and conducting substantial and final completion walkthroughs. Review and provide comments on all recommendations.

- 3. Provide any design narrative documentation requested by the CxA.
- 4. Prepare and submit final as-built design intent documentation for inclusion in the Systems Manual.
- 5. Review and approve the O&M manuals.
- 6. Coordinate resolution of design non-conformance and design deficiencies identified during the project.
- 7. Assist (along with the contractors) in clarifying the operation and control of Commissioned equipment in areas where the specifications, control drawings or equipment documentation is not sufficient for writing detailed testing procedures.
- 8. Participate in the resolution of system deficiencies identified during Commissioning.
- 9. Notify the CxA of substantive changes to the Contract Documents.
- 10. Provide clarifications to Contract Documents as required.
- 11. Review the Design Team Commissioning Issues Log and respond to all items in a timely manner. Update contract documents as required to address Commissioning items identified.
- 12. Review Commissioning suggestions identified on the Design Team Commissioning Issues Log for impact to the design intent. If the design team is in agreement with the suggestion, they are to assist in reviewing the suggestion with the owner for their review and decision if it should be added to the project.
- 13. The design team shall review all shop drawing and submittal comments from the CxA.

1.5 SCOPE OF WORK

- A. Refer to Section 21 08 00 for listing of fire suppression systems to be Commissioned and requirements.
- B. Refer to Section 22 08 00 for listing of plumbing systems to be Commissioned and requirements.
- C. Refer to Section 23 08 00 for listing of HVAC systems to be Commissioned and requirements.
- D. Refer to Section 26 08 00 for listing of Electrical Systems to be Commissioned and requirements.

1.6 COMMISSIONING DOCUMENTATION

- A. General
 - 1. Timely and accurate documentation of Commissioning activities is essential for the Commissioning process to be effective. To this end, all Commissioning activities conducted by the contractors shall be documented as outlined below and in Part 3 Execution of this specification.
 - 2. Contractor Commissioning responsibilities on Project Management Software include the following items:
 - a. Commissioning Schedule
 - b. Construction Issues
 - c. Pre-Functional Checklists
 - d. Functional Performance Test Forms
 - 3. The Architect, Engineers, GC, subcontractors, and owner will be responsible for responding within five business days of an inquiry being assigned to them.
 - a. The owner(s) or their designated responsible party will be one of the final designated personnel in the approval process that will sign off before an item can be closed out.
 - b. All of the aforementioned entities will be responsible for the same response time in the identified field punch software.

- c. The punch list and open Commissioning items will be tied to identified retention dollars that will not be paid until all open issues are resolved.
- d. Owner-Insite will be the designated software that will be used by all Cx agents and used for MEP items identified by the Cx agent and Owner.
- 4. The Pre-Functional Checklists shall be completed by each respective trade contractor involved with the installation of any Commissioned systems and equipment.
- 5. The Functional Performance Tests will be completed by the CxA as they witness the test(s) conducted by the contractors.
- 6. All Contractor Commissioning Documents prepared by the contractors will be fully completed in a neat and workmanlike manner so as to be fully legible. Documentation which, at the CxA's discretion, is incomplete or less than fully legible shall be deemed unacceptable.
- 7. Commissioning procedures and tests, which are rejected by the CxA due to incomplete, or illegible contractor documentation shall be repeated by the contractor and new Contractor Commissioning Documents shall be prepared to the Commissioning Team's satisfaction at no additional cost to the Owner.
- 8. Procedures deemed unacceptable by the Commissioning Team after being repeated due to inadequate documentation may be subject to completion by the CxA, at a cost to the contactor as outlined in item Section 3.8 "Cost of Re-Evaluation" below.
- 9. All Contractor Commissioning Documents shall be completed on the job-site concurrent with the activities being documented. Remedial documentation of Commissioning activities either off-site or after the procedures have been completed is unacceptable.
- 10. All Contractor Commissioning Documents will be submitted to the CxA for review and acceptance upon completion.
- B. Contractor Commissioning Process Status Tracking
 - 1. Contractors shall be responsible for monitoring the progress of their Commissioning activities. The contractor will update the status of meetings, issues, re-scheduling, checklists and tests.
 - 2. The contractors shall regularly update and upload drawings or pictures as Commissioning activities are completed so as to provide a readily available report to CxA regarding current status of the contractors Commissioning activities.
- C. Record Drawings
 - 1. Contractors shall regularly update a 'redlined' set of record drawings showing Commissioned systems as work is being installed so that the drawings remain current with the field work, and as required in Division 01, 21, 22, 23, and 26 of the project specifications.
 - 2. Redlining record drawings at the end of construction shall not be acceptable.
 - 3. The Contractors up-to-date, in-progress redlines shall be kept on-site in the Contractor's field office and available for review by the Cx Team.
- D. Access to Contractor Documentation
 - 1. Contractors shall provide the CxA with access to shop drawings, coordination drawings, equipment cut-sheets, schematics, in-progress record drawings, manufacturers installation-operation-maintenance manuals, startup reports, etc. to assist the CxA in execution of the Cx process.

1.7 COORDINATION

- A. The CxA shall receive a copy of all construction documents, project schedules, addenda, change orders, and appropriate approved submittals and shop drawings directly from the GC.
- B. The CxA shall disseminate written information and documents to all responsible parties relative to the nature and extent of the Cx communication.

- C. The CxA is primarily responsible to the Owner and, as such, shall regularly apprise the GC and the Owner of progress, pending problems and/or disputes, and shall provide regular status reports on progress with each system. Any potential change in the contractual and/or financial obligations of the owner (credits, change orders, schedule changes, etc.) shall be identified and quantified as soon as possible.
- D. The CxA shall coordinate the schedule of Commissioning activities with the construction schedule. It is possible that some procedures will be completed before the entire system is completed.

1.8 SCHEDULE

- A. Commissioning of systems shall proceed per the criteria established in the specific sections that follow, with activities to be performed on a timely basis. The CxA shall be available to respond promptly to avoid construction delays.
- B. Start-up and testing of systems may proceed prior to final completion of systems to expedite progress. However, testing and checkout services that are the primary responsibility of the contractor / vendor will not proceed in advance of their testing and checkout.
- C. Problems observed shall be addressed immediately, responsible parties notified, and actions to correct deficiencies coordinated in a timely manner.
- D. Contractor schedules and scheduling is the responsibility of the GC. The CxA shall provide Commissioning scheduling information to the GC for review and planning activities.

1.9 REFERENCE STANDARDS

- A. Industry standards and guidelines are a guide to the Commissioning process and are hereby incorporated and will be applied as appropriate. Reference standards and guidelines include, but are not limited, to the following:
- B. References:
 - 1. ASHRAE Standard 202-2013: Commissioning Process for Buildings and Systems
 - 2. ASHRAE Guideline 0-2005: The Commissioning Process
 - 3. ASHRAE Guideline 1.1-2007: HVAC&R Technical Requirements for The Commissioning Process
 - 4. ACG Commissioning Guideline (current version)
 - 5. NEBB Commissioning Standard (current version)
 - 6. BCxA Building Commissioning Handbook (current version)

2.0 SUBSTANTIAL COMPLETION

A. "Certificate of Substantial Completion" will not be signed by the Dallas ISD unless the CxA and the Owner's Representative are in agreement that all Equipment and Systems to be Commissioned are installed and operational, and any open Cx Issues Log items have been identified as minor. Any open Cx Issues Log items shall be resolvable within 21 days.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT

- A. All industry standard test equipment required for performing the specified tests shall be provided by the applicable contractor (as specified) and shall be approved by the CxA. Any necessary proprietary vendor specific test equipment shall be provided by that vendor or manufacturer.
- B. Any portable or hand-held setup / calibration devices required to initialize the control system shall be made available by the control vendor to the CxA (at no additional cost to the Owner or CxA).
- C. The instrumentation used in the Commissioning process shall meet the following standards:
 - 1. Be of sufficient quality and accuracy to test and/or measure system performance within the tolerances required.
 - 2. Be calibrated at the manufacturer's recommended intervals (typically within the previous 12 months) with calibration tags permanently affixed to the instrument
 - 3. Be maintained in good repair and operating condition throughout the duration of use on this project.
 - 4. Be immediately re-calibrated or repaired if dropped and/or damaged in any way during use on this project.

PART 3 - EXECUTION

3.1 COMMISSIONING PLAN AND SCHEDULE

A. The CxA shall generate a project specific Commissioning plan which identifies Cx tasks, roles and responsibilities for the Cx process. The CxA will submit a Cx schedule for the Commissioning process which shall be integrated into the construction schedule by the GC.

3.2 CONSTRUCTION OBSERVATION

A. This is an additional and separate activity from that provided by the design team. Construction observation is required as part of the Commissioning and coordination process to be provided by the CxA. Field Observation reports will be maintained and distributed by the CxA to all Cx Team members.

3.3 COMMISSIONING ISSUES LOGS

- A. As part of the Commissioning process, all issues will be recorded on the Project Management Software. The PM Software will divide the issues as follows.
 - 1. Construction Commissioning Issues
 - a. This log is also a part of the Web-Based Project Management Software. It is a formal and ongoing record of problems or concerns pertaining to the installation of the Commissioned systems and equipment which identifies where the contractors have deviated from the OPR, contract documents, applicable codes or normal industry construction practices. It is the GC's responsibility to regularly login and retrieve this log from the Web-Based Project Management Software, follow up and review each item on the list with the appropriate trades, and respond to the CxA with feedback within 5 business days from the issuance of the log from the CxA.
 - b. Team members will be given access through the Web Based Project Management Software to comment on issues. This is where the GC should provide feedback which includes the following sections:
 - 1) Response/Action: This is the contractor's response to the issue identified by the CxA.
- 2) Trade: This identifies the specific contractor responsible for the correction of the issue. The issue will be assigned to that contractor or subcontractor.
- 3) Expected Completion Date: This is the date which the GC and subcontractor agree the issue will be resolved by. This provides information back to the CxA as to when items should be corrected by for spot checking the correction of issues.
- c. The GC shall provide feedback and updates to the construction Cx issues log to the CxA within 5 business days from its issuance from the CxA.
- d. The CxA will maintain the master cx long on the Web Based Project Management Software.

3.4 PRE-FUNCTIONAL CHECKLISTS

- A. The Commissioning Authority shall develop the Pre-Functional Checklists (PFCs) and distribute them to the GC for use by the sub-contractors.
- B. The sub-contractors shall complete the checklists and submit them to the GC as they are completed or uploaded to the Web Based Project Management Software.
- C. PFCs consist of a series of field observations and verification checks conducted by the contractors during the installation of Commissioned equipment to verify the following:
 - 1. Installed equipment matches the specifications and approved submittals
 - 2. Equipment is installed per the specifications, drawings and manufacturer's recommendations.
 - 3. Utility connections to equipment, such as electrical, steam, chilled water, etc. have been successfully completed.
 - 4. Equipment is ready for start-up per manufacturer's guidelines.
- D. Contractors should expect to complete one (1) PFC for each piece of equipment covered by the Commissioning process such as pumps, fans, air handling units, terminal units, control panels, and lighting control panels.
- E. PFCs for mechanical equipment will include verification of the safety devices intended to stop and/or prevent equipment operation unless minimum safety standards or conditions are met. These may include adequate oil pressure, proof-of-flow, non-freezing conditions, maximum static pressure, maximum head pressure, etc. The CxA shall observe the actual performance of safety shutoffs in a real or closely simulated condition of failure.
- F. Systems may include safety devices and components that control a variety of equipment operating as a system. Interlocks may be hard-wired or operate from software. Operation of these interlocks shall be verified by the CxA.
- G. Additional checklists will be required to verify installation of distribution systems such as piping, ductwork, electrical wire and conduit, etc. The number of required PFCs will vary from system to system, but will typically be limited to one form per system per floor or zone.
- H. The PFC used for this project will be finalized by the CxA after receipt of equipment Installation, Operation & Maintenance (IOM) Manuals from the Contractors.
- I. PFCs shall be completed by the contractor and maintained on-site per the requirements of this specification, Section 1.6 "Commissioning Documentation".

3.5 CONTRACTOR STARTUP TESTING

- A. The contractors shall conduct all startup testing as required by the specifications, equipment manufacturer, the manufacturer's installation, operations and maintenance manual or as necessary to verify all equipment is properly installed and fully operational.
- B. Startup testing shall be documented. Appropriate documentation shall be by the contractor and/or the manufacturer's representative or entity specified in the construction documents.
- C. The startup testing shall be documented using the contractors or manufacturer's standard forms and an electronic copy of the form shall be provided to the CxA or uploaded to the Web Based Project Management Software under the appropriate PFC.

3.6 TESTING AND BALANCING

- A. Testing, Adjusting, and Balance Contractor (TAB) Requirements
 - 1. Air and water balance shall be accomplished by an independent test and balance firm. The test and balance firm shall come back after the final balancing report is approved to work with the CxA and spot check this work to verify accuracy of results. Refer to Division 23 for acceptance criteria.
 - 2. Test and Balance contractor to provide the final balancing report to the CxA.
 - 3. The TAB contractor shall be responsible for successful completion and documentation of all TAB activities specified in the Division 23.
 - 4. Prior to the start of TAB activities, the TAB contractor shall submit a proposed TAB plan, procedures and documentation to the CxA and A/E for review. TAB procedures shall be submitted to allow sufficient time for CxA review and approval prior to the start of TAB activities.
 - 5. After this review, and prior to start of field work, the TAB contractor will attend one or more planning meetings as required with the Commissioning Team to review and discuss outstanding issues relating to TAB procedures and forms, discuss resolution of issues identified during the TAB contractor's plan review and field inspections, and to coordinate field work.
 - 6. Prior to the start of fieldwork, the TAB contractor shall issue a final set of TAB procedures and TAB forms which incorporate any comments received during the Commissioning Team review.
 - 7. The TAB contractor shall have at least one certified field technician on site whenever TAB work is being performed. The certified technician shall be responsible for the quality of the work of any non-certified technicians.
 - 8. The TAB contractor is responsible to notify the GC, who in turn shall notify the Commissioning Team, a minimum of two (2) weeks in advance of the time for start of TAB work to allow the CxA and A/E time to assess system readiness.
 - 9. The TAB contractor will work cooperatively with the CxA.
 - 10. The TAB contractor shall coordinate with the controls contractor to ensure that changes made to the control system during TAB (flow coefficients, duct areas, etc.) are archived and become the default or initial values for these parameters.
 - 11. The TAB contractor shall provide daily lists of issues and/or problems identified during TAB work to the GC, CxA and A/E for follow-up & resolution with the appropriate contractors.
 - 12. Participate in verification of the TAB report, which will consist of repeating any selected measurement contained in the TAB report where required by the CxA for verification or diagnostic purposes.
 - 13. A TAB Final Acceptance Inspection shall be conducted by the A/E, Owner's Representative and CxA and will include a field verification of at least 5% of the TAB contractor's field readings.
 - 14. The TAB contractor will provide technicians, equipment and instrumentation to support the field verification.
 - 15. Instruments used for the field verification shall be the same instruments (by model and serial number) that were used for the original TAB work.

16. The TAB Contractor shall provide test equipment calibration certifications to the Owner's Representative or the CxA upon request.

3.7 FUNCTIONAL PERFORMANCE TEST PROCEDURES

- A. Scope
 - 1. Functional Performance Test (FPT) procedures are executed after Commissioned equipment and systems have been installed, started-up, balanced and are fully operational. The goal of these procedures is to conclusively verify that Commissioned equipment, sub-systems and major systems operate and perform per the design intent, and the project specifications.
 - 2. Equipment-level FPTs will be used to verify operation and capacity of selected equipment such as boilers, chillers cooling towers, pumps, exhaust fans, air handling units, etc.
 - 3. System-level FPTs will verify the following aspects of system operation.
 - a. System operation under both normal and alternate operating conditions and modes.
 - b. Interactions between equipment and sub-systems.
 - c. Operation of safeties and interlocks.
 - d. Control system operation, response time, stability and tuning.
 - e. System response to abnormal and/or emergency conditions such as fire, equipment failure and power outages, and associated Alarms.
 - f. All control sequence of operation strategies, alarm generation and reporting shall also be reviewed and proper operation verified by the CxA.
 - g. The central work station graphics, point assignments, alarm messages, and logging functions shall be verified.
- B. Functional Performance Test Forms
 - 1. The FPTs used for this project will be created, utilized and finalized by the CxA after receipt of approved contractor submittals.
- C. Contractor Requirements
 - 1. The Cx team will, in a joint effort, coordinate and schedule FPT activities.
 - 2. Scheduling of FPTs shall be contingent on notification from the affected contractor(s) to the GC and CxA that equipment and systems are ready for checkout.
 - 3. Other prerequisites for execution of FPTs shall include the following:
 - a. All Contractor Startup Procedures and Cx Pre-Functional Checklists have been completed and documented.
 - b. TAB has been completed.
 - c. All Cx Issues Log items identified as affecting equipment or system performance or operations have been resolved.
 - 4. Prior to claiming readiness for FPT, the Controls Contractor shall ensure that the following items are completed and documented:
 - a. Point-to-point checkouts have been verified and documentation has been submitted to the CxA.
 - b. Verify that network communication between all devices and systems is established
 - c. Sequence of Operation checkouts are completed.
 - d. Printed and annotated trend logs and alarm histories establishing acceptable operation including
 - 1) Stable control
 - 2) Recovery from upset/changes (e.g., from setback)
 - 3) Special and/or seasonal modes
 - 4) Emergency and alarm modes including loss/restoration of power
 - 5. Execution of the FPTs will be conducted by the contractors providing and installing the equipment and systems being Commissioned and shall be witnessed by the CxA. The Controls Contractor shall verify/validate the BAS Sequences of Operations to the satisfaction of the CxA.

- 6. Typical activities during FPT execution will include the following:
 - a. Starting/stopping equipment
 - b. Energizing/de-energizing electrical distribution gear
 - c. Opening/closing valves and dampers
 - d. Manipulating BAS inputs, outputs and set points
 - e. Setup, collection and downloading of BAS trend data
 - f. Test all modes of operation (normal, failure, backup, emergency, etc.)
 - g. Confirmation of required alarms sent to BA
 - h. Written verification of equipment set-points (temperatures, flow rates, etc.)
- 7. The Contractor(s) shall maintain full responsibility for the facility, equipment and systems operated during the FPTs, maintain all guarantees and warranties, and shall repair any damage to the facility caused during the FPTs.
- 8. Contractors shall conduct seasonal FPTs as necessary. This includes performing FPTs on equipment during the season it is intended to operate (i.e. test cooling equipment during the peak cooling season and test heating equipment during the peak heating season, etc.). All seasonal FPTs shall be witnessed by the CxA.
- 9. Tools, test equipment and instrumentation required for completion of the FPTs shall be provided by the contractor. All instruments shall meet the requirements of Part 2 of this specification.
- 10. FPT acceptance shall confirm the performance of systems to the extent of the design intent. When a system is accepted, the Owner shall be assured that the system is complete, works as intended, is correctly documented, and operator training has been performed.

3.8 COST OF RE-EVALUATION

- A. The cost for Contractors to re-evaluate any Commissioning Procedures due to open issues shall be bore by the contractors.
- B. The CxA will be available for two attempts of the Functional Performance Tests (one initial and one re-try) with minimal follow-up where necessary (due to deficiencies, systems not ready, incomplete work, etc.) to try to accomplish each test as part of the contract. When additional work is required because systems are not ready or because they do not successfully pass the FPT after they have been indicated as ready, the contractor will be charged for the CxA's additional reasonable re-testing costs. Additional fees will be paid to the CxA by the Owner and shall be reimbursed by the Contractor.
- C. Any required re-testing by any contractor shall not be allowed as a justified reason for a claim of delay or for a time extension by the contractor or for a request for additional monies.

3.9 SOFTWARE DOCUMENTATION REVIEW

A. Review detailed software documentation for all DDC control systems. This includes review of vendor documentation, their programming approach, and the specific software routines applied to this project. Discrepancies in programming approaches and/or sequences shall be reported and coordinated in order to provide the Owner with the most appropriate, simple, and straightforward approach to software routines.

3.10 OPERATING AND MAINTENANCE (O&M) MANUALS

A. The CxA shall review the draft form of the O&M manuals provided by the Division 21, 22, 23, and 26 contractors. The review process shall verify that O&M instructions meet specifications and are included for all equipment furnished by the contractor, and that the instructions and wiring

diagrams are project specific (edited where necessary) to the actual equipment provided for this project.

- 1. Published literature shall be specifically oriented to the provided equipment indicating required operation and maintenance procedures, parts lists, assembly/disassembly diagrams, and related information.
- 2. The contractor shall incorporate the standard technical literature into system specific formats for this facility as designed and as actually installed. The resulting O&M information shall be project and system specific, concise, to the point, and tailored specifically to this facility. The Commissioning Authority shall review and edit these documents as necessary for final corrections by the contractor.
- B. The O&M manual review, and coordination efforts MUST be completed prior to Owner training sessions, as these documents are to be utilized in the training sessions.
- C. In addition to the O&M manual requirements within specification Division 21, 22, 23, and 26, O&M manuals shall include at a minimum the following:
 - 1. An equipment data sheet with the equipment name tag, model number, serial number and any other relevant information for the equipment.
 - 2. A copy of the approved submittal, indicating the exact make and model of the equipment installed.
 - 3. A copy of the manufacturer's IOM manual
 - 4. A copy of all warranty's
 - a. If not included on warranty certificate, provide the start/end dates of warranty period, descriptions of what is and isn't covered and contact information for warranty claims.

3.11 RECORD DRAWINGS

A. The Commissioning Authority shall review the as-built contract documents to verify incorporation of both design changes and as-built construction details. Discrepancies noted shall be corrected by the appropriate party.

3.12 EXCLUSIONS

- A. Responsibility for construction means and methods: The CxA is not responsible for construction means, methods, job safety, or any construction management functions on the job site.
- B. Hands-on work by the CxA: The contractors shall provide all services requiring tools or the use of tools to start-up, test, adjust, or otherwise bring equipment and systems into a fully operational state. The CxA shall coordinate and observe these procedures (and may make minor adjustments), but shall not perform construction or technician services other than verification of testing, adjusting, balancing, and control functions.

END OF SECTION 01 9100

Path-of-Construction Asbestos Survey Report

Mark Twain School for the Gifted and Talented

724 Green Cove Lane

Dallas, Texas

April 1, 2024 | Project Number: 94237079

Prepared for:



Dallas Independent School District (DISD) 9400 North Central Expressway, Suite 800 Dallas, Texas 75231

8901 John Carpenter Freeway, Suite 100 Dallas, Texas 75247 P (214) 630-1010 F (214) 630-7070





Facilities
Environmental
Geotechnical
Materials



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April 1, 2024

Dallas Independent School District (DISD) 9400 North Central Expressway, Suite 800 Dallas, TX 75231

- Attn: Mr. Chris Leija, AIA, NCARB Project Manager P: (214) 223-2420 E: <u>C101272@dallasisd.org</u>
- RE: Path-of-Construction Asbestos Survey Report Mark Twain School for the Gifted and Talented 724 Green Cove Lane Dallas, Texas Terracon Project No. 94237079

Mr. Leija:

The purpose of this report is to present the results of an asbestos survey conducted at the referenced project site. Terracon Consultants (Terracon) performed this survey December 18, 2023 in general accordance with the Professional Services Contract between DISD and Terracon dated July 1, 2021 and Purchase Order No. 915517 dated April 12, 2023.

Terracon appreciates the opportunity to partner with you on this project. If you have any questions regarding this report, please contact the undersigned at (214) 630-1010.

Sincerely, **Terracon**

C/ X La

David A. Acosta Assistant Project Manager TDSHS License No. 10-5740

· Agabaha J

Roger Beahm Jr., REM, AIC Principal Asbestos Department Manager TDSHS License No. 10-5675



Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079

TABLE OF CONTENTS

1.0	INTR	ODUCTION	.1
	1.1	Project Objective	. 2
2.0	BUIL	DING DESCRIPTION	.2
3.0	FIEL	D ACTIVITIES	.3
	3.1	Visual Assessment	. 3
	3.2	Physical Assessment	.4
	3.3	Sample Collection	.4
	3.4	Sample Analysis	. 5
4.0	REG	ILATORY OVERVIEW	.5
5.0	FIND	INGS AND RECOMMENDATIONS	.6
6.0	GENI	RAL COMMENTS	L O

APPENDICES

APPENDIX A	CONFIRMED ASBESTOS-CONTAINING MATERIALS

- APPENDIX B ASBESTOS SURVEY SAMPLE SUMMARY
- APPENDIX C ASBESTOS ANALYTICAL LABORATORY REPORT
- APPENDIX D BENAS ENVIRONMENTAL SERVICES REPORTS & AHERA 3-YEAR REINSPECTION
- APPENDIX E SITE PLAN/CLIENT-PROVIDED PRE-DESIGN (STB)
- APPENDIX F LICENSES



Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) conducted a path-of-construction asbestos survey in the proposed renovation areas at the Mark Twain School for the Gifted and Talented located at 724 Green Cove Lane in Dallas, Texas. A team of Texas Department of State Health Services (TDSHS) licensed asbestos inspectors conducted the survey December 18, 2023. The survey was conducted in general accordance with the Professional Services Contract between DISD and Terracon dated July 1, 2021 and Purchase Order No. 915517 dated April 12, 2023. Terracon surveyed interior and exterior components associated with the proposed renovations and visually identified and documented homogeneous areas of suspect asbestos-containing material (ACM). Although reasonable effort was made to survey accessible suspect materials, additional suspect but unsampled materials could be in walls, voids or other concealed areas.

Surveys were previously conducted in the subject areas proposed for renovation:

- A comprehensive asbestos investigation report prepared by BENAS Environmental Services, Inc., of Coppell, Texas, dated October 10, 2018 (Appendix D), was provided by Mr. Gregory Shortes of DISD. According to the BENAS Environmental Services, Inc. report, no new ACM was identified.
- An AHERA 3-Year Reinspection report dated February 15, 2021 (Appendix D), was provided by Mr. Gregory Shortes of DISD.
- The Pre-Design (STB) dated July 25, 2023, provided by Mr. Robert Spicer of McKissack and McKissack.

During the survey, Terracon confirmed the ACM identified in the DISD 2021 AHERA Three Year Inspection report. According to the report, the following ACBM's exist within the school:

- Residual sprayed-on acoustical and surfacing materials (Assumed ACM)
- 9" x 9" Floor tile and mastic
- Crawl space pipes
- Crawl space elbows
- Crawl space risers (vertical piping)
- Gymnasium riser (vertical piping)
- Auditorium and mechanical room fire doors (Assumed ACM)
- Exterior window caulk (Assumed ACM)

Although reasonable effort was made to survey accessible suspect materials, additional suspect but unsampled materials could be in walls, voids or other concealed areas.



Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079

1.1 Project Objective

The objective of the survey was to identify the presence and location of accessible friable and nonfriable asbestos-containing material (ACM) present in the proposed renovation areas of the school. The Client provided a site plan at the time of the survey; the referenced drawing is attached in Appendix E. According to the Pre-Design (STB) provided by Ms. Filkins of McKissack and McKissack, the scope of the renovations includes the following:

- Security updates including cameras and card readers
- Security Vestibule (front office and vestibule to be remodeled)
- Replace Exterior waterproofing/sealant Joints
- New Fire Alarm
- New exterior LED lighting and controls
- Flooring replacement and base throughout the campus corridors
- Replace teaching surfaces in classrooms
- New exterior doors
- New Marquee Sign
- Replace all outdated windows
- New concrete sidewalks and pavement
- New interior LED lighting and controls throughout the campus
- HVAC Improvements new split system units, replacing steam condensate pump and piping, new steam boiler
- Replace IDF/MDF air conditioning
- Plumbing improvements

The Texas Asbestos Health Protection Rules (TAHPR) and EPA regulation 40 CFR 61, Subpart M, the National Emission Standards for Hazardous Air Pollutants (NESHAP) require that an asbestos survey be performed prior to renovation or demolition activities.

The Occupational Safety and Health Administration (OSHA) Asbestos standard for the construction industry (29 CFR 1926.1101) regulates workplace exposure to asbestos, classifies construction and maintenance activities which could disturb ACM and specifies work practices and precautions which employers must follow when engaging in each class of regulated work.

2.0 BUILDING DESCRIPTION

Building Description and Information			
Building	One-story building constructed on a pier and beam foundation.		
Structure Type	Education building.		

Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079

Building Description and Information				
Total Area	57,638 square feet (SF).			
Building Use	Education build-out with classrooms, offices, restrooms, lobbies, gym, cafeteria, kitchen, auditorium, hallways, storage rooms/closets, and mechanical rooms.			
Roof	Built-up and modified roofing materials			
Exterior	Unfinished brick.			
Interior Walls	Textured drywall, textured plaster, textured brick veneer, concrete masonry unit (CMU) block, and multi-sized ceramic tiles.			
Interior Ceilings	2' x 2' lay-in ceiling tile system suspended from the metal deck, texture drywall, and exposed metal deck.			
Interior Floors	12" x 12" vinyl floor tile and multi-sized ceramic tile.			
Inaccessible Areas/Materials	Areas/materials behind mirrors in the restrooms were not assessed due to the destructive nature of sampling. Areas and materials not scheduled to be impacted by the proposed renovations were excluded from the scope of the survey.			
Additional Information	Spray-on fireproofing was not observed on the metal deck.			

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3.0 FIELD ACTIVITIES

Terracon mobilized Mr. David Acosta, a TDSHS licensed asbestos consultant (License No. 60-2152) and Mr. Michael Mendoza, a TDSHS licensed asbestos inspector (License No. 60-0350), to conduct the asbestos survey in general accordance with the sample collection protocols established in EPA regulation 40 CFR 763, the Asbestos Hazard Emergency Response Act (AHERA). Copies of licenses are attached in Appendix F. The following sections present a summary of survey activities.

3.1 Visual Assessment

Our survey activities began with visual observation in the proposed renovation areas of the school to identify homogeneous areas of suspect ACM. A homogeneous area (HA) consists of building materials that appear similar throughout in terms of color, texture and date of application; building materials identified as concrete, glass, wood, masonry, metal or rubber were not considered suspect ACM. The assessment was conducted throughout visually accessible areas of the building.

Terracon assessed multiple areas above the drywall and lay-in ceiling systems, where possible, but did not observe additional suspect materials. Access to areas above the ceiling was limited and the potential exists for additional suspect ACM to be present in these inaccessible areas.

Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079



Terracon lifted floor coverings in several areas in the building but did not observe additional floor coverings/layers except; as Terracon could not assess beneath all floor coverings in all areas, there may be isolated areas of additional suspect material present beneath existing covering.

Terracon observed mirrors in the restrooms. The mirrors in the restrooms appeared to be affixed with adhesive mastic but was unable to access this mastic without forcibly removing the mirror panels, potentially damaging the panels and creating a safety hazard for building occupants. Pending sampling and laboratory analysis to rebut the presence of asbestos, this mastic must be assumed ACM pending sampling and laboratory analysis to rebut the presence of asbestos.

Terracon observed multiple ceramic and porcelain tiles with grout throughout the renovation areas that appeared to be affixed with thinset but was unable to access this thinset without forcibly removing the ceramic tile, potentially damaging the tile and creating a safety hazard for building occupants. The suspect thinset must be assumed ACM pending sampling and laboratory analysis to rebut the presence of asbestos.

Terracon observed additional suspect materials present within the renovation areas which were not scheduled to be impacted by the renovations; therefore, those materials were not included in the scope of this survey. If the scope of the renovation expands to include additional materials than are identified in Appendix A, these materials must be assumed ACM, pending sampling and laboratory analysis to rebut the presence of asbestos.

3.2 Physical Assessment

Terracon conducted a physical assessment of each HA of suspect ACM to assess the friability and condition of the materials. EPA defines a friable material as a material which, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. Terracon assessed friability by physically touching suspect ACM.

3.3 Sample Collection

Based on results of the visual observation, Terracon collected random bulk samples from each HA of suspect ACM observed in general accordance with AHERA sampling protocols. Sample team members collected bulk samples using wet methods as applicable to reduce the potential for fiber release. Samples were placed in sealable containers and labeled with unique sample numbers using an indelible marker.

Terracon collected 52 bulk samples from 12 HAs of suspect ACM. Appendix B presents a summary of suspect ACM samples collected.



Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079

3.4 Sample Analysis

Terracon delivered suspect ACM samples under proper chain of custody to Cates Laboratories of Dallas, Texas, a National Voluntary Laboratory Accreditation Program accredited (Lab No. 200569-0) and TDSHS licensed (License No. 30-0287) laboratory, for analysis by Polarized Light Microscopy (PLM) with dispersion staining techniques per EPA Method 600/R-93/116. The percentage of asbestos where applicable, was determined by microscopic visual estimation.

4.0 REGULATORY OVERVIEW

Title 25, Part 1, Chapter 296, the TAHPR, regulates asbestos fiber emission and asbestos waste disposal practices for public buildings. The TAHPR also require the identification and classification of existing asbestos-containing building materials prior to demolition or renovation activity. Under TAHPR, asbestos containing building materials are classified as either friable or nonfriable ACM containing 1% or more asbestos. Friable materials are those that, when dry, may be crumbled, pulverized or reduced to powder by hand pressure.

The TAHPR require that any asbestos-related activity be performed by TDSHS licensed individuals. An asbestos related activity consists of the disturbance (whether intentional or unintentional), removal, encapsulation, or enclosure of asbestos, including preparations or final clearance activities, the performance of asbestos surveys, the development of management plans and response actions, asbestos project design, the collection or analysis of asbestos samples, monitoring for airborne asbestos, bidding for a contract for any of these activities, or any other activity required to be licensed under TAHPR.

The TAHPR require abatement in public buildings be performed by a TDSHS licensed asbestos abatement contractor in accordance with a project design prepared by a TDSHS licensed asbestos consultant. In addition, a TDSHS licensed asbestos consultant agency must perform third party air monitoring during the abatement activities.

The TAHPR require that written notification be submitted before beginning renovation projects which include the disturbance of any quantity of ACM in a public or commercial building or facility, and before the demolition of a building or facility, even when no asbestos is present. This written notification must be provided to the TDSHS at least 10 working days prior to the commencement of asbestos abatement or demolition activities.

40 CFR Part 61 Subpart M, the asbestos NESHAP, regulates asbestos fiber emission and asbestos waste disposal practices for commercial buildings and facilities. The NESHAP requires the identification and classification of existing asbestos containing building materials prior to demolition or renovation activity. Under NESHAP, building materials containing >1% asbestos are classified as either friable, Category I nonfriable or Category II nonfriable ACM.

Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079



Friable materials are those that, when dry, may be crumbled, pulverized or reduced to powder by hand pressure. Category I nonfriable ACM includes packing, gaskets, resilient floor coverings and asphalt roofing products. Category II nonfriable ACM are any nonfriable materials other than those classified as Category I materials.

Friable ACM, Category I and II nonfriable ACM in poor condition, that have become friable, or which will be subject to drilling, sanding, grinding, cutting, or abrading and which could be crushed or pulverized during anticipated renovation or demolition activities are considered regulated ACM (RACM).

The NESHAP requires that written notification be submitted before beginning renovation projects which include the disturbance of greater than 160 square feet, 260 linear feet, or 35 cubic feet of RACM in any building or facility, or before the demolition of any building or facility, even when no asbestos is present. This written notification must be provided to the TDSHS at least 10 working days prior to the commencement of asbestos abatement or demolition activities.

29 CFR 1926.1101, the Occupational Safety and Health Administration (OSHA) Asbestos standard for the construction industry, regulates workplace exposure to asbestos. The OSHA standard classifies construction and maintenance activities which could disturb ACM and specifies work practices and precautions employers must follow when engaging in each class of regulated work. The OSHA standard also requires employee exposure to airborne asbestos fibers be maintained below the Permissible Exposure Limit (PEL) of 0.1 asbestos fibers per cubic centimeter (f/cc) of air as an 8-hour Time Weighted Average (TWA).

5.0 FINDINGS AND RECOMMENDATIONS

According to the DISD 2021 AHERA 3-Year Reinspection report, previously identified ACM exist within the 2020 Bond Renovation's proposed areas of renovation. The AHERA 3-Year Reinspection report identified the following ACM materials:

- Residual sprayed-on acoustical ceiling and surfacing materials (Assumed ACM)
- 9" x 9" Floor tile and mastic
- Crawlspace pipes
- Crawlspace elbows
- Crawlspace risers (vertical piping)
- Gymnasium risers (vertical piping)
- Auditorium and mechanical room fire doors (Assumed ACM)
- Exterior window caulk (Assumed ACM)

Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079

The identified residual sprayed-on acoustical ceiling and surfacing material is assumed ACM. The material was assessed to be friable and in good condition at the time of the AHERA 3-Year Reinspection. Based on our review of asbestos related documents and our field observations, the BOND 2020 planned renovations, in accordance with JMA Johnson, LLC, Pre-Design (STB) for Mark Twain School for the Gifted and Talented may impact the assumed ACM ceiling material. If the material is going to be impacted by the proposed renovations, they must be abated prior to renovation activities.

The identified asbestos-containing 9" x 9" floor tile with mastic was assessed to be nonfriable and in good condition at the time of the AHERA 3-Year Reinspection. Based on our review of asbestos related documents and our field observations, the BOND 2020 planned renovations, in accordance with JMA Johnson, LLC, Pre-Design (STB) for Mark Twain School for the Gifted and Talented will not impact the identified ACM floor tile and mastic. If the project scope changes and the identified ACM floor tile and mastic will be impacted, the materials must be abated prior to renovation activities if those activities will disturb the identified ACM.

The identified asbestos-containing crawlspace pipe insulation was assessed to be friable and in good condition at the time of the AHERA 3-Year Reinspection. Based on our review of asbestos related documents and our field observations, the BOND 2020 planned renovations, in accordance with JMA Johnson, LLC, Pre-Design (STB) for Mark Twain School for the Gifted and Talented will not impact the ACM pipe insulation material. If the project scope changes and work is to be performed within the crawl space this material must be abated prior to renovation activities if those activities will disturb the identified ACM.

The identified asbestos-containing crawlspace elbow insulation was assessed to be friable and in good condition at the time of the AHERA 3-Year Reinspection. Based on our review of asbestos related documents and our field observations, the BOND 2020 planned renovations, in accordance with JMA Johnson, LLC, Pre-Design (STB) for Mark Twain School for the Gifted and Talented will not impact the ACM elbow insulation material. If the project scope changes and work is to be performed within the crawl space this material must be abated prior to renovation activities if those activities will disturb the identified ACM.

The identified asbestos-containing crawlspace vertical riser insulation was assessed to be friable and in good condition at the time of the AHERA 3-Year Reinspection. Based on our review of asbestos related documents and our field observations, the BOND 2020 planned renovations, in accordance with JMA Johnson, LLC, Pre-Design (STB) for Mark Twain School for the Gifted and Talented will not impact the ACM vertical riser insulation material. If the project scope changes and work is to be performed within the crawl space this material must be abated prior to renovation activities if those activities will disturb the identified ACM.

The identified asbestos-containing gymnasium vertical riser insulation was assessed to be friable and in good condition at the time of the AHERA 3-Year Reinspection. Based on our review of asbestos related documents and our field observations, the BOND 2020 planned

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Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079



renovations, in accordance with JMA Johnson, LLC, Pre-Design (STB) for Mark Twain School for the Gifted and Talented will not impact the ACM vertical riser insulation material. If the project scope changes and work is to be performed within the crawl space this material must be abated prior to renovation activities if those activities will disturb the identified ACM.

The fire doors associated with the Auditorium and mechanical rooms were assumed to be ACM. The material was assessed to be nonfriable and in good condition at the time of the AHERA 3-Year Reinspection. Based on our review of asbestos related documents and our field observations, the BOND 2020 planned renovations, in accordance with JMA Johnson, LLC, Pre-Design (STB) for Mark Twain School for the Gifted and Talented will not impact the assumed ACM fire doors. However, if the scope of work changes and the assumed ACM fire door insulation material must be abated prior to renovation activities.

The exterior window caulking was assumed to be ACM. The caulking material was assessed to be nonfriable and in good condition at the time of the AHERA 3-Year Reinspection. Based on our review of asbestos related documents and our field observations, the BOND 2020 planned renovations, in accordance with JMA Johnson, LLC, Pre-Design (STB) for Mark Twain School for the Gifted and Talented will impact the assumed ACM window caulking material. According to the AHERA 3-Year Reinspection report, if the assumed caulking material is going to be impacted by renovation activity, it must be sampled or assumed o determine if it contains a regulated amount of asbestos. If the material is found to be ACM, the material must be abated prior to renovation activities if those activities will disturb identified ACM.

Terracon performed a prerenovation asbestos survey for the BOND 2020 planned renovations, in accordance with JMA Johnson, LLC, Pre-Design (STB) for Mark Twain School for the Gifted and Talented. Laboratory analysis indicated asbestos was not detected in the samples collected by Terracon.

Based on the results of laboratory analyses, no asbestos was identified in samples 40 through 46 collected from the assumed ACM residual sprayed-on acoustical ceiling and surfacing material identified in the 2021, AHERA 3-Year Reinspection Report provided by DISD. According to information provided by DISD personnel, the assumed ceiling material was previously abated. However, documentation stating that the assumed ACM ceiling materials have been removed was not included in the information provided. Although the laboratory results for Terracon's sampling of the ceiling material indicated samples are not asbestos-containing, Terracon must assume that the original assumed ACM ceiling material still exists and will be impacted by the proposed renovations. Therefore, the ACM ceiling material must be abated prior to proposed renovations which may impact the ceiling material.

At the time of Terracon's asbestos survey, the windows were covered with security screens. The security screens did not allow for Terracon to sample the assumed ACM window caulk and/or window glazing. Terracon understands the building surveyed is scheduled for renovation. Therefore, all suspect ACM materials associated with the windows must be





considered asbestos containing. These materials must be sampled prior to the proposed window renovations and if found to contain asbestos must be abated prior to renovation activities.

The remaining asbestos containing materials identified in the 2021, AHERA 3 Year Reinspection Report were assessed to be nonfriable and in good condition on the day of the survey. Terracon understands the building surveyed is scheduled for renovation. Therefore, the identified asbestos-containing material must be abated prior to renovation activities if those activities will potentially disturb the identified asbestos-containing materials.

Appendix A provides additional information pertaining to the confirmed asbestos-containing materials; Appendix B presents a summary of suspect materials sampled; and the laboratory analytical reports are included as Appendix C.

Terracon assessed multiple areas above the drywall and lay-in ceiling systems, where possible, but did not observe additional suspect materials. Access to areas above the ceiling was limited and the potential exists for additional suspect ACM to be present in these inaccessible areas.

Terracon lifted floor coverings in several areas in the building but did not observe additional floor coverings/layers except; as Terracon could not assess beneath all floor coverings in all areas, there may be isolated areas of additional suspect material present beneath existing covering.

Terracon observed mirrors restrooms throughout the campus. The restroom mirrors appeared to be affixed mechanically and/or with adhesive mastic, but Terracon was unable to access these mastics without forcibly removing the mirror panels, potentially damaging the panels, and creating a safety hazard for building occupants. Pending sampling and laboratory analysis to rebut the presence of asbestos, the mirror mastics must be assumed ACM.

Terracon observed multiple ceramic and porcelain tiles with grout throughout the renovation areas that appeared to be affixed with thinset but was unable to access this thinset without forcibly removing the ceramic tile, potentially damaging the tile and creating a safety hazard for building occupants. The suspect thinset must be assumed ACM pending sampling and laboratory analysis to rebut the presence of asbestos.

Terracon observed additional suspect materials present within the renovation areas which were not scheduled to be impacted by the renovations; therefore, those materials were not included in the scope of this survey. If the scope of the renovation expands to include additional materials than are identified in Appendix A, these materials must be assumed ACM, pending sampling and laboratory analysis to rebut the presence of asbestos.

If scheduled to be impacted, the TAHPR requires identified ACM to be removed by a TDSHS

Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079



licensed asbestos abatement contractor in accordance with a project design prepared by a TDSHS licensed asbestos consultant prior to demolition of the structure. In addition, a TDSHS licensed asbestos consultant agency must perform third party air monitoring during the abatement activities.

The TAHPR and NESHAP require that written notification be submitted before beginning renovation or demolition projects which include the disturbance of any RACM in a building or facility, or before the demolition of a building or facility, even when no asbestos is present. This written notification must be provided to the TDSHS at least 10 working days prior to the commencement of asbestos abatement or demolition activities. These activities must be performed in accordance with the current TDSHS, EPA, and OSHA guidelines.

OSHA 29 CFR 1926.1101 regulates workplace exposure to asbestos, classifies construction and maintenance activities which could disturb ACM, and specifies work practices and precautions employers must follow when engaging in each class of regulated work. The OSHA standard also requires employee exposure to airborne asbestos fibers be maintained below the PEL of 0.1 f/cc of air as an 8-hour TWA.

6.0 GENERAL COMMENTS

Terracon conduced this asbestos survey in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. The results, findings, conclusions, and recommendations expressed in this report are based on conditions observed during our inspection of the subject property. The information contained in this report is relevant to the dates on which this inspection was performed and should not be relied upon to represent conditions later.

This report has been prepared on behalf of and exclusively for use by Client for specific application to their project as discussed. This report is not a bidding document. Contractors, consultants or others reviewing this report must draw their own conclusions regarding further investigation or remediation deemed necessary. Terracon does not warrant the work of regulatory agencies, laboratories or other third parties supplying information which may have been used in the preparation of this report. No warranty, express or implied is made.

APPENDIX A

CONFIRMED MATERIALS CONTAINING ASBESTOS

Mark Twain School for the Gifted & Talented 724 Green Cove Lane, Dallas, Texas

Terracon Project No. 94237079

2021 DISD AHERA 3-Year Reinspection Report						
Homog. Area	Material Location (Area)		Friability	Assessed Condition	Estimated Quantity	
1C	Sprayed-On Acoustical Ceiling Material (residual)(Assumed ACM)	In classrooms throughout the facility	Category II Friable	Good	Approximately 25,000 Square Feet	
2В	9" x 9" Floor tile with mastic	Classrooms 113B, 112-120, 123-125, 127, 128, 822, and 824A	Category I Nonfriable	Good	Approximately 10, 500 Square Feet	
4	Pipe Insulation	Crawlspace	Category II Nonfriable	Good	Approximately 220 Linear Feet	
4	Pipe Elbow Insulation	Crawlspace	Category II Nonfriable	Good	Included w/ Pipe Quantity	
4	Riser Pipe Insulation	Crawlspace	Category II Nonfriable	Good	Included w/ Pipe Quantity	
10B	Miscellaneous risers & TSI	Gymnasium	Category II Nonfriable	Good	Approximately 10 Linear Feet	
10C	Fire Doors (Assumed ACM)	Auditorium, Mechanical Room, and Main Office Vault	Category II Nonfriable	Good	Approximately 72 Square Feet	
13	Exterior Window Caulk (Assumed ACM)	All original exterior windows	Category II Nonfriable	Good	Unkonwn	

APPENDIX A CONFIRMED MATERIALS CONTAINING ASBESTOS

Mark Twain School for the Gifted & Talented

724 Green Cove Lane, Dallas, Texas

Terracon Project No. 94237079

Terracon – Bond 2020 Asbestos Survey							
Homog. Area	Material	Location (Area)	Friability	Assessed Condition	Estimated Quantity		
C4	Spray applied sound/fire proofing on plaster ceiling ¹	Classrooms, offices, and conference rooms	Category II Nonfriable	Good	Approximately 25,000 Square Feet		
M2	Exterior window caulk and glazing materials (Assumed ACM)	All original exterior windows	Category II Nonfriable	Good	Approximately 1,000 Linear Feet		
M3	Mirror mastic (Assumed ACM)	Restrooms throughout the campus	Category II Nonfriable	Good	Approximately 75 Square Feet		
M4	Ceramic & Porcelain wall and floor tiles with associated grout and thinset (Assumed ACM)	Kitchen, Restrooms, and water fountain areas	Category II Nonfriable	Good	Approximately 6,500 Square Feet		

Note 1: Although the material was sampled and no asbestos was detected, previous documentation indicates that the ACM material was abated, however closeout documents were never presented to DISD following the abatement. Therefore, the ACM material are considered to still be present until which time that documentation for the abatement can be presented or the materials are abated in their entirety.

APPENDIX B ASBESTOS SURVEY SAMPLE SUMMARY

Mark Twain School for the Gifted & Talented

724 Green Cove Lane, Dallas, Texas

Terracon Project No. 94237079

Sample Number	Material	Material Location	Asbestos Containing
1, 2, 3, 4, 5, 6, 7	Gypsum board with painted orange peel texture and joint compound	Classrooms & corridors	No
8, 9, 10, 11, 12, 13, 14	Plaster wall with painted orange peel texture	Classrooms, offices, restrooms, and corridors	No
15, 16, 17, 18, 19, 20, 21	Plaster ceiling with painted gritty texture	Common areas and corridors	No
22, 23, 24	2' x 2' Ceiling Tile (pinhole)	Common areas and corridors	No
25, 26, 27	2' x 2' Ceiling Tile (pinhole & small fissures)	Classrooms and Offices	No
28, 29, 30	Yellow brick with painted texture & associated mortar	Corridors	No
31, 32, 33	Red brick with painted texture & associated mortar	Classrooms	No
34,35, 36	HVAC pipe insulation mastic (black)	Mechanical room and Corridor	No
37, 38, 39	CMU block wall with painted texture and associated mortar	Gymnasium	No
40, 41, 42, 43, 44, 45, 46	Spray applied sound/fire proofing on plaster ceiling	Classrooms, offices, and conference rooms	No
47, 48, 49	Carpet square mastic	Main office and library	No
01,02,03	Roof system	Roof over administrative offices and at AHU's 3 & 4	No

Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079



APPENDIX C ASBESTOS ANALYTICAL LABORATORY REPORT

Cates Laboratories 1339 Motor Circle Dallas, Texas 75207 (214) 920-5006

NVLAP Lab No. 200569-0 TDSHS License No. 30-0287

Client:	Terracon	Lab Job No.:	PLM-35784
Project (Line 1)	DISD Mark Twain LVA - 2020 Bond Renovation Project	Set No.:	51236
Project (Line 2)	724 Green Cove Ln., Dallas, TX	Report Date:	12/29/2023
Project No:	94237079	Sample Date:	12/18/2023
Identification:	Asbestos, Bulk Sample Analysis	Version:	R1
Test Method:	Polarized Light Microscopy/Dispersion Staining (PLM/DS)		Page 1 of 6

On 12/21/2023, forty-nine (49) bulk samples were submitted by Mr. David Acosta of Terracon for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content			
CL1214021	01	Gypsum Board Wall w/Painted Orange Peel Texture & Joint Compound - CR 138 Northwest Corner	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material			
CL1214022	02	Gypsum Board Wall w/Painted Orange Peel Texture & Joint Compound - CR 131 Southwest Corner	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material			
CL1214023	03	Gypsum Board Wall w/Painted Orange Peel Texture & Joint Compound - CR 136 Northwest Corner	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material			
CL1214024	04	Gypsum Board Wall w/Painted Orange Peel Texture & Joint Compound - CR 133 Southeast Corner	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material			
CL1214025	05	Gypsum Board Wall w/Painted Orange Peel Texture & Joint Compound - CR 135 Southeast Corner	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material			
CL1214026	06	Gypsum Board Wall w/Painted Orange Peel Texture & Joint Compound - East West Hall Southeast Corner	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material			
These samples v only if it contain	These samples were analyzed by layers. The overall percent asbestos for the sample is reported when relevant. The EPA considers a material to be asbestos containing only if it contains greater than one percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also indicate that Regulated Asbestos Containing					
Materials (RACM) - materials that are friable or may become friable - be further analyzed by point counting when the results indicate less than ten percent asbestos by						

CVAE. CatesLab utilizes CVAE on a routine basis and does not include point counting unless specifically requested by the client. The results may not be reproduced except in full.

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NVLAP Lab No. 200569-0 TDSHS License No. 30-0287

Client:	Terracon	Lab Job No.:	PLM-35784
Project (Line 1):	DISD Mark Twain LVA - 2020 Bond Renovation Project	Set No.:	51236
Project (Line 2):	724 Green Cove Ln., Dallas, TX	Report Date:	12/29/2023
Project No:	94237079	Sample Date:	12/18/2023
Identification:	Asbestos, Bulk Sample Analysis	Version:	R1
Test Method:	Polarized Light Microscopy/Dispersion Staining (PLM/DS)		
	EPA Method 600/R-93/116		Page 2 of 6

On 12/21/2023, forty-nine (49) bulk samples were submitted by Mr. David Acosta of Terracon for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content
CL1214027	07	Gypsum Board Wall w/Painted Orange Peel Texture & Joint Compound - East West Hall Northwest Corner	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material
CL1214028	08	Plaster Wall w/Painted Orange Peel Texture - East West Hall North Side by Girl's Restroom	None Detected - Paint Layer None Detected - Plaster
CL1214029	09	Plaster Wall w/Painted Orange Peel Texture - North South West Wall by CR's 116 & 117	None Detected - Paint Layer None Detected - Plaster
CL1214030	10	Plaster Wall w/Painted Orange Peel Texture - CR 114 Southeast Corner	None Detected - Paint Layer None Detected - Plaster
CL1214031	11	Plaster Wall w/Painted Orange Peel Texture - Main Office Northwest Corner	None Detected - Paint Layer None Detected - Plaster
CL1214032	12	Plaster Wall w/Painted Orange Peel Texture - CR 129 Southwest Corner	None Detected - Paint Layer None Detected - Plaster
CL1214033	13	Plaster Wall w/Painted Orange Peel Texture - CR 110 Southeast Corner	None Detected - Paint Layer None Detected - Plaster
CL1214034	14	Plaster Wall w/Painted Orange Peel Texture - North South Hall East Wall by CR 109	None Detected - Paint Layer None Detected - Plaster Topcoat None Detected - Plaster
CL1214035	15	Plaster Ceiling w/Painted Gritty Texture - East West Hall at Intersection w/North South Hall by MDF Room	None Detected - Paint Texture None Detected - Plaster
CL1214036	16	Plaster Ceiling w/Painted Gritty Texture - North South Hall Outside of Cafeteria	None Detected - Paint Texture None Detected - Plaster
CL1214037	17	Plaster Ceiling w/Painted Gritty Texture - North End of the Common Area Outside of Administrative Offices & Front Vestibule	None Detected - Paint Texture None Detected - Plaster
CL1214038	18	Plaster Ceiling w/Painted Gritty Texture - North South Hall South End at Exit	None Detected - Paint Texture None Detected - Plaster
	1		

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NVLAP Lab No. 200569-0 TDSHS License No. 30-0287

Client:	Terracon	Lab Job No.:	PLM-35784
Project (Line 1):	DISD Mark Twain LVA - 2020 Bond Renovation Project	Set No.:	51236
Project (Line 2):	724 Green Cove Ln., Dallas, TX	Report Date:	12/29/2023
Project No:	94237079	Sample Date:	12/18/2023
Identification:	Asbestos, Bulk Sample Analysis	Version:	R1
Test Method:	Polarized Light Microscopy/Dispersion Staining (PLM/DS) EPA Method 600/R-93/116		Page 3 of 6

On 12/21/2023, forty-nine (49) bulk samples were submitted by Mr. David Acosta of Terracon for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content
CL1214039	19	Plaster Ceiling w/Painted Gritty Texture - South End of the Common Area Outside of Administrative Offices & Front Vestibule	None Detected - Paint Texture None Detected - Plaster
CL1214040	20	Plaster Ceiling w/Painted Gritty Texture - North South Hall at Bookroom	None Detected - Paint Texture None Detected - Plaster
CL1214041	21	Plaster Ceiling w/Painted Gritty Texture - North End of North South Hall at Girl's Restroom	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material
CL1214042	22	2' X 2' Lay-in Acoustic Ceiling Tile w/Pin Holes - East West Hall Outside Copy Room	None Detected
CL1214043	23	2' X 2' Lay-in Acoustic Ceiling Tile w/Pin Holes - East West Hall Outside CR 131	None Detected
CL1214044	24	2' X 2' Lay-in Acoustic Ceiling Tile w/Pin Holes	None Detected
CL1214045	25	2' X 2' Lay-in Acoustic Ceiling Tile w/Pin Holes & Small Fissures - East Wall Hall Outside Copy Room	None Detected
CL1214046	26	2' X 2' Lay-in Acoustic Ceiling Tile w/Pin Holes & Small Fissures - East Wall Hall Outside CR 131	None Detected
CL1214047	27	2' X 2' Lay-in Acoustic Ceiling Tile w/Pin Holes & Small Fissures - East Wall Hall Outside CR 136	None Detected
CL1214048	28	Yellow Brick w/Painted Texture & associated Mortar - East West Hall South Wall Outside of Gymnasium	None Detected - Paint Layer None Detected - Brick None Detected - Mortar
CL1214049	29	Yellow Brick w/Painted Texture & associated Mortar - East West Hall North Wall Outside of Gymnasium	None Detected - Paint Layer None Detected - Brick None Detected - Mortar
CL1214050	30	Yellow Brick w/Painted Texture & associated Mortar - East West Hall South Wall Outside of Gymnasium	None Detected - Paint Layer None Detected - Brick None Detected - Mortar
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NVLAP Lab No. 200569-0 TDSHS License No. 30-0287

Client:	Terracon	Lab Job No.:	PLM-35784
Project (Line 1):	DISD Mark Twain LVA - 2020 Bond Renovation Project	Set No.:	51236
Project (Line 2):	724 Green Cove Ln., Dallas, TX	Report Date:	12/29/2023
Project No:	94237079	Sample Date:	12/18/2023
Identification:	Asbestos, Bulk Sample Analysis	Version:	R1
Test Method:	Polarized Light Microscopy/Dispersion Staining (PLM/DS) EPA Method 600/R-93/116		Page 4 of 6

On 12/21/2023, forty-nine (49) bulk samples were submitted by Mr. David Acosta of Terracon for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content
CL1214051	31	Red Brick w/Painted Texture & associated Mortar - Gymnasium Northeast Corner at Door	None Detected - Paint Layer None Detected - Brick None Detected - Mortar
CL1214052	32	Red Brick w/Painted Texture & associated Mortar - Gymnasium North Wall	None Detected - Paint Layer None Detected - Brick None Detected - Mortar
CL1214053	33	Red Brick w/Painted Texture & associated Mortar - Gymnasium Southeast Corner	None Detected - Paint Layer None Detected - Brick None Detected - Mortar
CL1214054	34	HVAC Pipe Insulation w/Black Mastic - East West above Ceiling Grid Outside Copy Room	None Detected - Black Mastic None Detected - Wrap None Detected - Insulation
CL1214055	35	HVAC Pipe Insulation w/Black Mastic - East West above Ceiling Grid Outside CR 131	None Detected - Black Mastic None Detected - Wrap None Detected - Insulation
CL1214056	36	HVAC Pipe Insulation w/Black Mastic - East West above Ceiling Grid Outside CR 136	None Detected - Black Mastic None Detected - Wrap None Detected - Insulation
CL1214057	37	CMU Block w/Painted Texture - Gymnasium Southeast Corner of North Wall at Window	None Detected - Filler/Texture None Detected - CMU Block None Detected - Mortar
CL1214058	38	CMU Block w/Painted Texture - Gymnasium South Wall at Window	None Detected - Filler/Texture None Detected - CMU Block None Detected - Mortar
CL1214059	39	CMU Block w/Painted Texture - Gymnasium Northeast Corner of West Wall at Window	None Detected - Filler/Texture None Detected - CMU Block None Detected - Mortar
CL1214060	40	Spray applied Sound/Fire Proofing on Plaster Ceiling - CR 129	None Detected - Fireproofing None Detected - Plaster

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NVLAP Lab No. 200569-0 TDSHS License No. 30-0287

Client:	Terracon	Lab Job No.:	PLM-35784
Project (Line 1)	DISD Mark Twain LVA - 2020 Bond Renovation Project	Set No.:	51236
Project (Line 2)	724 Green Cove Ln., Dallas, TX	Report Date:	12/29/2023
Project No:	94237079	Sample Date:	12/18/2023
Identification:	Asbestos, Bulk Sample Analysis	Version:	R1
Test Method:	Polarized Light Microscopy/Dispersion Staining (PLM/DS) EPA Method 600/R-93/116		Page 5 of 6

On 12/21/2023, forty-nine (49) bulk samples were submitted by Mr. David Acosta of Terracon for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content
CL1214061	41	Spray applied Sound/Fire Proofing on Plaster Ceiling - Main Office	None Detected - Fireproofing None Detected - Plaster
CL1214062	42	Spray applied Sound/Fire Proofing on Plaster Ceiling - CR 111	None Detected - Fireproofing None Detected - Plaster
CL1214063	43	Spray applied Sound/Fire Proofing on Plaster Ceiling - Conference Room 101	None Detected - Fireproofing None Detected - Plaster
CL1214064	44	Spray applied Sound/Fire Proofing on Plaster Ceiling - Custodian's Office 124	None Detected - Fireproofing None Detected - Plaster
CL1214065	45	Spray applied Sound/Fire Proofing on Plaster Ceiling - CR 114	None Detected - Fireproofing None Detected - Plaster
CL1214066	46	Spray applied Sound/Fire Proofing on Plaster Ceiling - CR 119	None Detected - Fireproofing None Detected - Plaster
CL1214067	47	Carpet Square Mastic - North End of Library	None Detected
CL1214068	48	Carpet Square Mastic - South End of Library	None Detected
CL1214069	49	Carpet Square Mastic - Northeast Corner of Main Office	None Detected
These samples were analyzed by layers. The overall percent asbestos for the sample is reported when relevant. The EPA considers a material to be asbestos containing only if it contains greater than one percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also indicate that Regulated Asbestos Containing Materials (RACM) – materials that are friable or may become friable – be further analyzed by point counting when the results indicate less than ten percent asbestos by CVAE on a routine basis and does not include point counting unless specifically requested by the client. The results may not be reproduced			

except in full.

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Client:	Terracon Lab Job No.: PLM-35784			
Project (Line 1):	DISD Mark Twain LVA - 2020 Bond Renovation Project	Set No.:	51236	
Project (Line 2):	724 Green Cove Ln., Dallas, TX	Report Date:	12/29/2023	
Project No:	94237079	Sample Date:	12/18/2023	
Identification:	Asbestos, Bulk Sample Analysis Version:	Version:	R1	
Test Method:	Polarized Light Microscopy/Dispersion Staining (PLM/DS) EPA Method 600/R-93/116		Page 6 of 6	

On 12/21/2023, forty-nine (49) bulk samples were submitted by Mr. David Acosta of Terracon for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein.

STATEMENT OF LABORATORY ACCREDITATION

The samples were analyzed in general accordance with the procedures outlined in the U.S. EPA Interim Method for the Determination of Asbestos in Bulk Insulation Samples as found in 40 CFR, Part 763, Subpart E, Appendix E (formerly Subpart F, Appendix A), or the current U.S. EPA method (EPA Method 600/R-93/116) for the analysis of asbestos in building materials, by polarized light microscopy. The results of each bulk sample relate only to the material tested and the results shall not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Specific questions concerning bulk sample results shall be directed to the Laboratory Director.

Analyst:

Darlene Dao

Jarland

Laboratory Director: John R. Cates, P.G.

Approved Signatory:

TESTING NVLAP LAB CODE 200569-0

Cates Laboratories

NVLAP Lab No. 200569-0 TDSHS License No. 30-0287

Dallas, Texas 75207 (214) 920-5006				
Client:	Terracon		Lab Job No.: PLM-35784	
Project (Line 1): Mark Twain Elementary School			Set No.: 52299	
Project (Line 2): 1200 Larkspur Drive, Richardson, TX			Report Date: 3/18/2024	
Project No:	94237079		Sample Date: 2/26/2024	
Identification	n: Asbestos, l	Bulk Sample Analysis		
Test Method:	Polarized L EPA Metho	ight Microscopy/Dispersion Staining (PLM/DS) od 600/R-93/116	Page 1 of 2	
On 3/11/2024, th Copies of the lab	nree (3) bulk samp b data sheets are at	les were submitted by Mr. Michael Mendoza of Terracon for asbestos analysis by P tached; additional information may be found therein. The results are summarized b	LM/DS. elow:	
Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content	
CL1237988	01	Roof System - over Admin Offices	None Detected - White Sealant None Detected - Roofing Membrane None Detected - Roofing Insulation None Detected - Roofing Foam	
CL1237989	02	Roof System - at AHU-3	None Detected - White Sealant None Detected - Roofing Membrane None Detected - Roofing Insulation None Detected - Roofing Foam	
CL1237990	03	Roof System - at AHU-4	None Detected - White Sealant None Detected - Roofing Membrane None Detected - Roofing Insulation None Detected - Roofing Foam	

Cates Laboratories
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Dallas, Texas 75207 (214) 920-5006

NVLAP Lab No. 200569-0 TDSHS License No. 30-0287

Client:	Terracon Lab Job No.: PLM-35784			
Project (Line 1):): Mark Twain Elementary School Set No.: 52299			
Project (Line 2):	2): 1200 Larkspur Drive, Richardson, TX Report Date: 3/18/2024			
Project No:	94237079	Sample Date:	2/26/2024	
Identification:	Asbestos, Bulk Sample Analysis			
Test Method:	Polarized Light Microscopy/Dispersion Staining (PLM/DS) EPA Method 600/R-93/116		Page 2 of 2	
On 3/11/2024, three (3) bulk samples were submitted by Mr. Michael Mendoza of Terracon for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein.				
STATEMENT OF LABORATORY ACCREDITATION				

The samples were analyzed in general accordance with the procedures outlined in the U.S. EPA Interim Method for the Determination of Asbestos in Bulk Insulation Samples as found in 40 CFR, Part 763, Subpart E, Appendix E (formerly Subpart F, Appendix A), or the current U.S. EPA method (EPA Method 600/R-93/116) for the analysis of asbestos in building materials, by polarized light microscopy. The results of each bulk sample relate only to the material tested and the results shall not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Specific questions concerning bulk sample results shall be directed to the Laboratory Director.

Analyst:

Kathy Schosek

In Schusek

Laboratory Director: John R. Cates, P.G.

Approved Signatory:

Jun to Cato



TESTING NVLAP LAB CODE 200569-0

Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079



APPENDIX D

BENAS Environmental Services, Inc Report & AHERA 3-Year Reinspection Report

Comprehensive Asbestos Investigation for the NEW RENOVATIONS TO THE EXISTING BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD FACILITY 724 Green Cove Lane Dallas, Texas 75232



BENAS Project No. BA-18-1415





CENTRONMENTAL SERVICES, INC Environmental Consultants and Engineers

Prepared for:

DALLAS INDEPENDENT SCHOOL DISTRICT (DISD) ENVIRONMENTAL SERVICES DMSJON

ASBESTOS PROGRAM BRANCH 3701 South Lamar Boulevard Dallas, Texas 75232

Attention: Mr. Daryl Daniels, Director

October 10, 2018





October 10, 2018

Mr. Daryl Daniels, Director ENVIRONMENTAL SERVICES DIVISION DALLAS INDEPENDENT SCHOOL DISTRICT (DISD) 3701 South Lamar Boulevard Dallas, Texas 75232

Subject: Comprehensive Asbestos Investigation for the **NEW RENOVATIONS TO THE EXISTING BUILDINGS AT THE MARK TWAIN LEADERSHIP VAN GUARD FACILITY** 724 Green Cove Lane Dallas, Texas 75232

BENAS Project No. BA-18-1415

Dear Mr. Daniels:

BENAS Environmental Services, Inc. (BENAS) has completed a Comprehensive Asbestos-Containing Building Materials (ACBM) Investigation for the New Renovations to the Existing Buildings at the Mark Twain Leadership Vanguard Facility. This facility is located at 724 Green Cove Lane in the City of Dallas, Dallas County, Texas. This report details the results of our findings from visual surveys, bulk sampling of suspect asbestos-containing building materials and laboratory analysis of collected bulk samples by Polarized Light Microscopy (PLM).

The findings of this study indicate that asbestos fibers are not present in any of the bulk samples of suspected ACBM collected and analyzed during this comprehensive investigation.

BENAS recommends no further actions with regards to asbestos exposure from the building materials utilized during the above-reference renovation activities.

Also, BENAS recommends that the findings of this inspection, including the Laboratory test results and analysis, computer-aided design drawings depicting the approximate sample locations, as well as the photographic documentation be utilized to supplement the existing Management Planner Records maintained by the Environmental Services Division of the Dallas Independent School District.

We appreciate the opportunity to provide these services to you at the Environmental Services Division of the Dallas Independent School District (**DISD**) on this project and hope to work with you on future projects. It is our pleasure to be considered a pennanent member of your professional construction and environmental TEAM.

If you have any questions or comments regarding this report or any other matter, please feel free to contact BENAS any time at **972/393-0128**. Our 24-Hour facsimile number is **972/393-0793**. Also, we can be reached via our Internet Web Address at <u>www.benas.com</u>. Our email address is <u>eo@benas.com</u>. Also, our General Manager, Mr. Okotcha "EO" can be reached via his cellular telephone at (214) **597-8834**. No time is too early or late to contact us.

Sincerely:

BENAS ENVIRONMENTAL SERVICES, INC.

amm

Ephraim N. Okotcha ("EO") Project nager & Texas Licensed Individual Asbestos Consultant

Comprehensive Asbestos Investigation NEW RENOVATIONS TO THE EXISTING BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD FACILITY 724 Green Cove Lane

Dallas, Texas 75232

BENAS Project No. BA-18-1415

TABLE OF CONTENTS

I.	LETTER	DF TRANSMITAL1
II.	EXECUTI	VE SUMMARY2
III.	GENERAI	L INFORMATION
Appendix	A: -	Laboratory Results of Bulk Samples of Suspect Asbestos-Containing Building Materials Analyzed by Polarized Light Microscopy (PLM), and Chain-Of-Custody Forms
Appendix	B: -	Computer Aided-Design (CADD) Drawings of the Approximate Sample Locations Map
Appendix	c: -	Photographic Documentation of the Suspect Bulk Samples Collected and Analyzed
Appendix	D -	BENAS' Licenses and Certifications
Appendix	E: -	Cates Laboratory, Inc. Licenses and Certifications

EXECUTIVE SUMMARY

A comprehensive asbestos-containing building materials (ACBM) investigation was performed for the New Renovations to the Existing Buildings at the Mark Twain Leadership Vanguard Facility. This facility is located at 724 Green Cove Lane in the City of Dallas, Dallas County, Texas. The purpose of this investigation is to determine if the building materials utilized for the renovation activities in all portions of the existing buildings at the Mark Twain Leadership Vanguard Facility contain asbestos fibers. Based on laboratory test results and analysis performed during this comprehensive study, none of the bulk samples of suspect ACM collected and analyzed during this study contain asbestos fibers.

Representative bulk samples of various suspect ACM located throughout the interior surfaces of these buildings were collected and analyzed during this investigation. The following is a listing of the homogeneous sampling areas (**Building Materials**) collected and analyzed during this investigation of the new renovations in the existing buildings at the facility:

- 1. Dark-Brown Floor Ceramic Tiles and Grout
- 2. Patterned Blue/Grey Wall Ceramic Tiles and Grout
- 3. Plaster Wall
- 4. White Wall Texture, Joint Compound and Sheetrock Mud
- 5. 2' X 2' Drop Ceiling Tiles
- 6. Mastic Under Red Rubber Mat
- 7. Grey Floor Ceramic Tiles and Grout
- 8. Patterned Black/White/Red Wall Ceramic Tiles and Grout
- 9. Red 12" X 12" Floor Tiles and Mastic
- 10. Terrazzo Flooring
- 11. Grey Cove-Base Ceramic Tiles and Grout
- 12. Plaster Ceiling
- 13. Mastic Under Black Rubber Cove-Base
- 14. Patterned Black/Red Wall Ceramic Tiles and Grout
- 15. Green HVAC Gaskets
- 16. Brown HVAC Gaskets
- 17. White Wrap and Mastic on Thermal Systems Insulation and HVAC Units
- 18. Ceiling Texture, Joint Compound and Sheetrock Mud
- 19. Blue Wall Ceramic Tiles and Grout
- 20. Grey Wall Ceramic Tiles and Grout
- 21. White 12" X 12" Floor Tiles and Mastic
- 22. Black Sink Putty Underneath Hand Wash Basins
- 23. Yellow 12" X 12" Floor Tiles and Mastic
- 24. Mastic Under Yellow Rubber Mat
- 25. Mastic Under Red Rubber Mat

None of the bulk samples enumerated for this comprehensive investigation determined the presence of asbestos fibers in any of the suspect ACM building materials.

BENAS recommends no further action with regards to asbestos exposure from the suspected ACM surveyed and tested during this study.

General Information:

- The conditions of building materials which contain asbestos fibers can be placed in three distinct categories: Significantly Damaged, Damaged or in Good Condition. Also, the potential for damage or further damage plays a significant role in the consideration for the type of response action(s) necessary to reduce the incidents of airborne asbestos fibers release in a building, or into the environment.
- Damage to ACM in a building could come from occupant activities, air and/or water erosion, vibration from mechanical (HVAC) and other equipment, and the age of the building material(s). Furthermore, the type of the ACM, friable or non-friable asbestos determines how easily asbestos fibers can be released into a building or the environment.
- Friable ACM can be crumbled, pulverized and reduced to powder by hand pressure, and will therefore release asbestos fibers more easily/rapidly than non-friable ACM.
- It should be stated that non-friable ACM could become friable if it has deteriorated to a point where fiber release is most likely.
- Significantly damaged friable ACM has a high potential of fiber releases into the environment and should be addressed immediately.

APPENDIX A

LABORATORY RESULTS OF BULK SAMPLES ANALYZED BY POLARIZED LIGHT MICROSCOPY (PLM), and CHAIN-OF-CUSTODY FORMS

Cates Laboratories 1339 Motor Circle Dallas, Texas 75207 (214) 920-5006

NVLAP Lab No. 200569-0 TDSHS License No. 30-0287

Client:	BENAS Environmental Services, Inc.	Lab Job No.:	PLM-18032
Project:	Mark Twain Leadership Vanguard; 724 Green Cove Lane, Dallas, TX 75232	Set No.:	26857
Project No:	BA-18-1415	Report Date:	10/4/2018
Identification:	Asbestos, Bulk Sample Analysis	Sample Date:	9/28/2018
Test Method:	Polarized Light Microscopy/Dispersion Staining (PLM/DS)		
	EPA Method 600/R-93/116		Page 1 of 9

On 10/1/2018, ninety-one (91) bulk samples were submitted by Mr. Ephraim Okotcha of BENAS Environmental Services, Inc. for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content
CL660876	1	Dark Brown Floor Ceramic Tiles & Grout - Building A: Nurses Office Restroom at Commode	None Detected - Ceramic Tile None Detected - Grout
CL660877	2	Patterned Blue/Grey Wall Ceramic Tiles & Grout - Building A: Nurses Office Restroom by Electrical Panel	None Detected - Ceramic Tile None Detected - Grout
CL660878	3	Plaster Wall - Building A: Main Office Reception, Back Office Room	None Detected - Paint Layer None Detected - Plaster
CL660879	4	White Wall Texture/Joint Compound/Sheetrock Mud - Building A: Main Office Front Section near Doorway	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material
CL660880	5	2' X 2' Drop Ceiling Tiles - Building A: Main Office Front Section near Doorway	None Detected
CL660881	6	Mastic under Red Rubber Mat - Building A: Hallway near Nurses Door Entrance	None Detected - Rubber Mat None Detected - Clear Adhesive
CL660882	7	Grey Floor Ceramic Tiles & Grout - Building A: Hallway Ramp at Water Fountain	None Detected - Ceramic Tile None Detected - Grout
CL660883	8	Patterned Black/White/Red Wall Ceramic Tiles & Grout - Building A: Hallway Ramp at Water Fountain	None Detected - Ceramic Tile None Detected - Grout
CL660884	9	Red 12" X 12: Floor Tiles & Mastic - Building A: Hallway Ramp at Doorway to Boy's Restroom	None Detected - Floor Tile None Detected - Yellow Mastic
CL660885	10	Terrazzo Flooring - Building A: Boy's Restroom near Teacher's Lounge	None Detected
CL660886	11	Grey Cove Base Ceramic Tiles & Grout - Building A: Boy's Restroom near Teacher's Lounge	None Detected - Ceramic Tile None Detected - Grout
CL660887	12	Plaster Ceiling - Building A: Boy's Restroom near Teacher's Lounge	None Detected - Paint Layer None Detected - Plaster
CL660888	13	Patterned Blue/Grey Wall Ceramic Tiles & Grout - Building A: Boy's Restroom near Teacher's Lounge	None Detected - Ceramic Tile None Detected - Grout

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NVLAP Lab No. 200569-0 TDSHS License No. 30-0287

Client:	BENAS Environmental Services, Inc.	Lab Job No.: PLM-18032
Project:	Mark Twain Leadership Vanguard; 724 Green Cove Lane, Dallas, TX 75232	Set No.: 26857
Project No:	BA-18-1415	Report Date: 10/4/2018
Identification:	Asbestos, Bulk Sample Analysis	Sample Date: 9/28/2018
Test Method:	Polarized Light Microscopy/Dispersion Staining (PLM/DS)	
	EPA Method 600/R-93/116	Page 2 of 9

On 10/1/2018, ninety-one (91) bulk samples were submitted by Mr. Ephraim Okotcha of BENAS Environmental Services, Inc. for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content
CL660889	14	Grey Wall Ceramic Tiles & Grout - Building A: Boy's Restroom near Teacher's Lounge	None Detected - Ceramic Tile None Detected - Grout
CL660890	15	Mastic under Black Rubber Cove Base - Building A: Hallway at Lockers near Classroom 109	None Detected - Cove Base None Detected - Yellow Mastic
CL660891	16	Plaster Wall - Building A: Hallway at Lockers between Classrooms 104 & 105	None Detected - Paint Layer None Detected - Plaster
CL660892	17	Patterned Black/White/Red Ceramic Tiles & Grout - Building A: Hallway at Water Fountain	None Detected - Ceramic Tile None Detected - Grout
CL660893	18	Grey Floor Ceramic Tiles & Grout - Building A: Hallway at Water Fountain	None Detected - Ceramic Tile None Detected - Grout
CL660894	19	Terrazzo Flooring - Building A: Girl's Restroom, Stall #1	None Detected
CL660895	20	Patterned Blue/Grey Wall Ceramic Tiles & Grout - Building A: Girl's Restroom at Mirrors	None Detected - Ceramic Tile None Detected - Grout
CL660896	21	Plaster Ceiling - Building A: Girl's Restroom, Middle Stall #3	None Detected - Paint Layer None Detected - Plaster
CL660897	22	Red 12" X 12: Floor Tiles & Mastic - Building A: Lobby Area at Auditorium, East Corner	None Detected - Floor Tile None Detected - Yellow Mastic
CL660898	23	Patterned Black/Red Wall Ceramic Tiles & Grout - Building A: Lobby Area at Auditorium, under White Board	None Detected - Ceramic Tile None Detected - Grout
CL660899	24	Mastic under Black Rubber Cove Base - Building A: Hallway across Auditorium Stage	None Detected - Cove Base None Detected - Yellow Mastic
CL660900	25	Green HVAC Gasket - Building A: Basement Boiler/Mechanical Room	None Detected
CL660901	26	Green HVAC Gasket - Building A: Basement Boiler/Mechanical Room	None Detected
CL660902	27	Green HVAC Gasket - Building A: Basement Boiler/Mechanical Room	None Detected
CL660903	28	Brown HVAC Gasket - Building A: Basement Boiler/Mechanical Room	None Detected
CL660904	29	Brown HVAC Gasket - Building A: Basement Boiler/Mechanical Room	None Detected

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Client:	BENAS Environmental Services, Inc.	Lab Job No.: PLM-18032
Project:	Mark Twain Leadership Vanguard; 724 Green Cove Lane, Dallas, TX 75232	Set No.: 26857
Project No:	BA-18-1415	Report Date: 10/4/2018
Identification:	Asbestos, Bulk Sample Analysis	Sample Date: 9/28/2018
Test Method:	Polarized Light Microscopy/Dispersion Staining (PLM/DS)	
	EPA Method 600/R-93/116	Page 3 of 9

On 10/1/2018, ninety-one (91) bulk samples were submitted by Mr. Ephraim Okotcha of BENAS Environmental Services, Inc. for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content
CL660905	30	Brown HVAC Gasket - Building A: Basement Boiler/Mechanical Room	None Detected
CL660906	31	White Thermal Systems Insulation Wrap & Mastic - Building A: Basement Boiler/Mechanical Room	None Detected - White Mastic None Detected - Wrap None Detected - Insulation
CL660907	32	White Thermal Systems Insulation Wrap & Mastic - Building A: Basement Boiler/Mechanical Room	None Detected - White Mastic None Detected - Wrap None Detected - Insulation
CL660908	33	White Thermal Systems Insulation Wrap & Mastic - Building A: Basement Boiler/Mechanical Room	None Detected - White Mastic None Detected - Wrap None Detected - Insulation
CL660909	34	Grey Floor Ceramic Tiles & Grout - Building B: Classroom 126 Restroom	None Detected - Ceramic Tile None Detected - Grout
CL660910	35	Patterned Blue/Grey Wall Ceramic Tiles & Grout - Building B: Classroom 126 Restroom	None Detected - Ceramic Tile None Detected - Grout
CL660911	36	Plaster Wall - Building B: Classroom 129 Restroom	None Detected - Paint Layer None Detected - Plaster
CL660912	37	Ceiling Texture/Joint Compound/Sheetrock Mud - Building B: Classroom 129 Restroom	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material
CL660913	38	Ceiling Texture/Joint Compound/Sheetrock Mud - Building B: Classroom 127 Restroom	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material
CL660914	39	Plaster Wall - Building B: Classroom 127 Restroom	None Detected - Paint Layer None Detected - Plaster
CL660915	40	Grey Floor Ceramic Tiles & Grout - Building B: Classroom 128 Restroom	None Detected - Ceramic Tile None Detected - Grout

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	EPA Method 600/R-93/116	Page 4 of 9

Page 4 of 9

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Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content
CL660916	41	Patterned Blue/Grey Wall Ceramic Tiles & Grout - Building B: Classroom 128 Restroom	None Detected - Ceramic Tile None Detected - Grout
CL660917	42	Green Terrazzo Flooring - Building B: Cafeteria near Right Double-Door Entrance	None Detected
CL660918	43	Green Terrazzo Flooring - Building B: Kitchen near Hand Wash Basin	None Detected
CL660919	44	Green Terrazzo Flooring - Building B: Cafeteria East Section by Refrigeration	None Detected
CL660920	45	Blue Wall Ceramic Tiles & Grout - Building B: Cafeteria Front Section at Water Fountain	None Detected - Ceramic Tile None Detected - Grout
CL660921	46	Grey Wall Ceramic Tiles & Grout - Building B: Cafeteria Front Section at Water Fountain	None Detected - Ceramic Tile None Detected - Grout
CL660922	47	White 12" X 12" Floor Tiles & Mastic, Type 1 - Building C: Hallway to Cafeteria at Right Door Entrance	None Detected - Floor Tile None Detected - Yellow Mastic
CL660923	48	Red 12" X 12: Floor Tiles & Mastic - Building C: Hallway to Cafeteria at Left Door Entrance	None Detected - Floor Tile None Detected - Yellow Mastic
CL660924	49	Mastic under Black Rubber Cove Base - Building C: Hallway to Cafeteria near Custodial Door Entrance	None Detected - Cove Base None Detected - Yellow Mastic
CL660925	50	Ceiling Texture/Joint Compound/Sheetrock Mud - Building C: Girl's Restroom near Cafeteria and Gymnasium	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material
CL660926	51	White 12" X 12" Floor Tiles & Mastic, Type 1 - Building C: Hallway to Cafeteria and Gymnasium	None Detected - Floor Tile None Detected - Yellow Mastic
CL660927	52	Grey Floor Ceramic Tiles & Grout - Building C: Girl's Restroom near Cafeteria and Gymnasium	None Detected - Ceramic Tile None Detected - Grout
CL660928	53	Patterned Blue/grey Wall Ceramic Tiles & Grout - Building C: Boy's Restroom near Cafeteria and Gymnasium	None Detected - Ceramic Tile None Detected - Grout

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Client:	BENAS Environmental Services, Inc.	Lab Job No.: PLM-18032
Project:	Mark Twain Leadership Vanguard; 724 Green Cove Lane, Dallas, TX 75232	Set No.: 26857
Project No:	BA-18-1415	Report Date: 10/4/2018
Identification:	Asbestos, Bulk Sample Analysis	Sample Date: 9/28/2018
Test Method:	Polarized Light Microscopy/Dispersion Staining (PLM/DS)	
	EPA Method 600/R-93/116	Page 5 of 9

Page 5 of 9

On 10/1/2018, ninety-one (91) bulk samples were submitted by Mr. Ephraim Okotcha of BENAS Environmental Services, Inc. for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content
CL660929	54	White 12" X 12" Floor Tiles & Mastic, Type 1 - Building C: Hallway to Cafeteria 2 Boiler Room junction	None Detected - Floor Tile None Detected - Yellow Mastic
CL660930	55	Terrazzo Flooring - Building C: Girl's Restroom near Yellow Ramp	None Detected
CL660931	56	Plaster Ceiling - Building C: Girl's Restroom near Yellow Ramp	None Detected - Paint Layer None Detected - Plaster
CL660932	57	Patterned Blue/Grey Wall Ceramic Tiles & Grout - Building C: Girl's Restroom near Yellow Ramp	None Detected - Ceramic Tile None Detected - Grout
CL660933	58	Patterned Black/White/Red Wall Ceramic - Building C: Hallway at Water Fountain by Electrical Room	None Detected - Ceramic Tile None Detected - Grout
CL660934	59	Mastic under Black Rubber Cove Base - Building C: Hallway across Water Fountain	None Detected - Cove Base None Detected - Yellow Mastic
CL660935	60	Black Sink Putty - Building C: Teacher's Work Room	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material
CL660936	61	Black Sink Putty - Building C: Classroom 139 at Hand Wash Basin	None Detected
CL660937	62	Ceiling Texture/Joint Compound/Sheetrock Mud - Building C: Classroom 139 Restroom	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material
CL660938	63	Black Sink Putty - Building C: Classroom 133 at Hand Wash Basin	None Detected
CL660939	64	Grey Floor Ceramic Tiles & Grout - Building C: Classroom 133 Restroom Entrance	None Detected - Ceramic Tile None Detected - Grout
These samples w only if it contain Materials (RACM	rere analyzed by la s greater than one M) – materials that	ayers. The overall percent asbestos for the sample is reported when relevant. The EPA of percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also t are friable or may become friable – be further analyzed by point counting when the res	considers a material to be asbestos containing indicate that Regulated Asbestos Containing sults indicate less than ten percent asbestos by

CVAE. CatesLab utilizes CVAE on a routine basis and does not include point counting unless specifically requested by the client. The results may not be reproduced

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Client:	BENAS Environmental Services, Inc.	Lab Job No.:	PLM-18032
Project:	Mark Twain Leadership Vanguard; 724 Green Cove Lane, Dallas, TX 75232	Set No.:	26857
Project No:	BA-18-1415	Report Date:	10/4/2018
Identification:	Asbestos, Bulk Sample Analysis	Sample Date:	9/28/2018
Test Method:	Polarized Light Microscopy/Dispersion Staining (PLM/DS)		
	EPA Method 600/R-93/116		Page 6 of 9

Page 6 of 9

On 10/1/2018, ninety-one (91) bulk samples were submitted by Mr. Ephraim Okotcha of BENAS Environmental Services, Inc. for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content
CL660940	65	Wall Texture/Joint Compound/Sheetrock Mud - Building C: Classroom 135 Restroom	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material
CL660941	66	Patterned Blue/Grey Wall Ceramic Tiles & Grout - Building C: Classroom 135 Restroom	None Detected - Ceramic Tile None Detected - Grout
CL660942	67	Black Sink Putty - Building C: Classroom 135 at Hand Wash Basin	None Detected
CL660943	68	Grey Cove Base Ceramic Tiles & Grout - Building C: Classroom 134 at Restroom Entrance	None Detected - Ceramic Tile None Detected - Grout
CL660944	69	Grey Cove Base Ceramic Tiles & Grout - Building C: Classroom 136 at Restroom Entrance	None Detected - Ceramic Tile None Detected - Grout
CL660945	70	Grey Cove Base Ceramic Tiles & Grout - Building C: Classroom 137 at Restroom Entrance	None Detected - Ceramic Tile None Detected - Grout
CL660946	71	Wall Texture/Joint Compound/Sheetrock Mud - Building C: Classroom 134, North Section	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material
CL660947	72	White 12" X 12" Floor Tiles & Mastic, Type 2 - Building C: Classroom 135, East Section	None Detected - Floor Tile None Detected - Yellow Mastic
CL660948	73	White 12" X 12" Floor Tiles & Mastic, Type 2 - Building C: Classroom 136 near Chalkboard	None Detected - Floor Tile None Detected - Yellow Mastic
CL660949	74	White 12" X 12" Floor Tiles & Mastic, Type 2 - Building C: Computer Room 131, South Section	None Detected - Floor Tile None Detected - Yellow Mastic
CL660950	75	White 12" X 12" Floor Tiles & Mastic, Type 2 - Building C: Classroom 137, West Section	None Detected - Floor Tile None Detected - Yellow Mastic
CL660951	76	White 12" X 12" Floor Tiles & Mastic, Type 2 - Building C: Computer Room 132, Northeast Corner	None Detected - Floor Tile None Detected - Yellow Mastic

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Client:	BENAS Environmental Services, Inc.	Lab Job No.: PLM-18032
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Project No:	BA-18-1415	Report Date: 10/4/2018
Identification:	Asbestos, Bulk Sample Analysis	Sample Date: 9/28/2018
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On 10/1/2018, ninety-one (91) bulk samples were submitted by Mr. Ephraim Okotcha of BENAS Environmental Services, Inc. for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein. The results are summarized below:

Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content
CL660952	77	Wall Texture/Joint Compound/Sheetrock Mud - Building C: Classroom 138, Northwest Corner	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material
CL660953	78	Wall Texture/Joint Compound/Sheetrock Mud - Building C: Computer Room 132, Northeast Corner	None Detected - Paint Texture None Detected - Joint Tape None Detected - Joint Compound None Detected - Paper None Detected - Wallboard Material
CL660954	79	Yellow 12" X 12" Floor Tiles & Mastic - Building C: Hallway at Yellow Ramp Area	None Detected - Floor Tile None Detected - Yellow Mastic
CL660955	80	Yellow 12" X 12" Floor Tiles & Mastic - Building C: Hallway at Yellow Ramp Area	None Detected - Floor Tile None Detected - Yellow Mastic
CL660956	81	Yellow 12" X 12" Floor Tiles & Mastic - Building C: Hallway at Yellow Ramp	None Detected - Floor Tile None Detected - Yellow Mastic
CL660957	82	Patterned Black/White/Yellow Wall Ceramic Tiles & Grout - Building C: Hallway at Water Fountain	None Detected - Ceramic Tile None Detected - Grout
CL660958	83	Mastic under Yellow Rubber Mat - Building C: Hallway at Yellow Ramp Area	None Detected - Rubber Mat None Detected - Clear Adhesive
CL660959	84	Mastic under Yellow Rubber Mat - Building C: Hallway at Yellow Ramp Area	None Detected - Rubber Mat None Detected - Clear Adhesive
CL660960	85	Mastic under Yellow Rubber Mat - Building C: Hallway at Yellow Ramp Area	None Detected - Rubber Mat None Detected - Clear Adhesive
CL660961	86	Terrazzo Flooring - Building C: Boy's Restroom	None Detected
CL660962	87	Grey Floor Ceramic Tiles & Grout - Building C: Boy's Restroom	None Detected - Ceramic Tile None Detected - Grout
CL660963	88	Plaster Ceiling - Building C: Boy's Restroom	None Detected - Paint Layer None Detected - Plaster

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	EPA Method 600/R-93/116		Page 8 of 9

Page 8 of 9

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Lab Sample No.	Client Field I.D.	Sample Description/Location	Asbestos Content
CL660964	89	Patterned Blue/Grey Wall Ceramic Tiles & Grout - Building C: Boy's Restroom	None Detected - Ceramic Tile None Detected - Grout
CL660965	90	Mastic under Red Rubber Mat - Building A: Red Ramp near Main Office Area	None Detected - Rubber Mat None Detected - Clear Adhesive
CL660966	91	Mastic under Red Rubber Mat - Building A: Red Ramp near Main Office Area	None Detected - Rubber Mat None Detected - Clear Adhesive
These samples w only if it contain Materials (RAC) CVAE. CatesLal	vere analyzed by 1 s greater than one M) – materials tha b utilizes CVAE c	ayers. The overall percent asbestos for the sample is reported when relevant. The EPA percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also t are friable or may become friable – be further analyzed by point counting when the res on a routine basis and does not include point counting unless specifically requested by the	considers a material to be asbestos containing indicate that Regulated Asbestos Containing sults indicate less than ten percent asbestos by the client. The results may not be reproduced

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	EPA Method 600/R-93/116	Page 9 of 9

On 10/1/2018, ninety-one (91) bulk samples were submitted by Mr. Ephraim Okotcha of BENAS Environmental Services, Inc. for asbestos analysis by PLM/DS. Copies of the lab data sheets are attached; additional information may be found therein.

STATEMENT OF LABORATORY ACCREDITATION

The samples were analyzed in general accordance with the procedures outlined in the Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116 or the U.S. Environmental Protection Agency method, under AHERA (EPA 600/M4-82-020), for the analysis of asbestos in building materials by polarized light microscopy. The results of each bulk sample relate only to the material tested and the results shall not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Specific questions concerning bulk sample results shall be directed to the Laboratory Director.

Approved Signatory:

Analyst:

Chris Munch

12 gh

Laboratory Director: John R. Cates, P.G.

Alm to Catio

NVLAP LAB CODE 200569-0

APPENDIX B

COMPUTER AIDED-DESIGN (CADD) DRAWINGS OF THE APPROXIMATE SAMPLE LOCATIONS







APPENDIX C

PHOTOGRAPHIC DOCUMENTATION OF REPRESENTATIVE BULK SUSPECT BUILDING MATERIALS SAMPLES COLLECTED AND ANALYZED



1. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM DARK BROWN FLOOR CERAMIC TILES AND GROUT LOCATED IN VARIOUS WET AREAS THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



2. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM PATTERNED BLUE/GREY WALL CERAMIC TILES AND GROUT LOCATED IN VARIOUS WET AREAS THROUGHOUT THE BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



3 VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM PLASTER WALL LOCATED THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



4. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM WHITE WALL TEXTURE, JOINT COMPOUND AND SHEETROCK MUD LOCATED THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



5. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM 2' X 2' DROP CEILING TILES LOCATED THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



6. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM MASTIC UNDER RED RUBBER COVE-BASE LOCATED IN VARIOUS AREAS THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



7. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM GREY FLOOR CERAMIC TILES AND GROUT LOCATED IN VARIOUS WET AREAS THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



8. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM PATTERNED BLACK/WHITE/RED WALL CERAMIC TILES AND GROUT LOCATED IN VARIOUS WET AREAS THROUGHOUT THE BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



9. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM RED 12" X 12" FLOOR TILES AND MASTIC LOCATED IN VARIOUS AREAS THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



10. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM TERRAZZO FLOORING LOCATED IN VARIOUS WET AREAS THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



11. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM GREY COVE-BASE CERAMIC TILES AND GROUT LOCATED IN VARIOUS WET AREAS THROUGHOUT THE BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



12. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM PLASTER CEILING LOCATED THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



13. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM MASTIC UNDER BLACK RUBBER COVE-BASE LOCATED IN VARIOUS AREAS THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



14. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM PATTERNED BLACK/RED WALL CERAMIC TILES AND GROUT LOCATED ON THE FRONT WALLS OF THE AUDITORIUM IN A BUILDING AT THE MARK TWAIN LEADERSHIP VANGUARD



15. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM GREEN GASKET ON HVAC SYSTEMS AND UNITS LOCATED IN THE BOILER/MECHANICAL ROOM IN THE BASEMENT OF A BUILDING AT THE MARK TWAIN LEADERSHIP VANGUARD



16. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM BROWN GASKET ON HVAC SYSTEMS AND UNITS LOCATED IN THE BOILER/MECHANICAL ROOM IN THE BASEMENT OF A BUILDING AT THE MARK TWAIN LEADERSHIP VANGUARD



17. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM WHITE WRAP AND MASTIC ON TSI AND UNITS LOCATED IN VARIOUS AREAS THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



18. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM CEILING TEXTURE, JOINT COMPOUND AND SHEETROCK MUD LOCATED IN VARIOUS AREAS THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



19. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM WHITE 12" X 12" FLOOR TILES AND MASTIC LOCATED THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



20. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM BLACK SINK PUTTY UNDERNEATH HAND-WASH BASINS LOCATED IN VARIOUS CLASS ROOMS THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



21. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM GREY COVE-BASE CERAMIC TILES AND GROUT LOCATED IN VARIOUS WET AREAS THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



22. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM YELLOW 12" X 12" FLOOR TILES AND MASTIC LOCATED IN VARIOUS AREAS THROUGHOUT THE SURVEYED BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



23. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM PATTERNED BLACK/WHITE/YELLOW WALL CERAMIC TILES AND GROUT LOCATED IN VARIOUS WET AREAS IN THE BUILDINGS AT THE MARK TWAIN LEADERSHIP VANGUARD



24. VIEW OF REPRESENTATIVE (TYPICAL) NON-ACM MASTIC UNDER YELLOW RUBBER MAT LOCATED ON THE YELLOW RAMP IN A BUILDING AT THE MARK TWAIN LEADERSHIP VANGUARD

APPENDIX D

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APPENDIX E

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Page 1 of2

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Disadvantaged Business Enterprise Certification - Florida



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AHERA THREE-YEAR REINSPECTION

MARK TWAIN ELEMENTARY SCHOOL 724 Green Cove Lane Dallas, Texas 75232

Prepared for



9400 N. Central Expressway Dallas, Texas 75231

Prepared by

DALLAS INDEPENDENT SCHOOL DISTRICT ENVIRONMENTAL SERVICES DEPARTMENT 3710 S. Lamar Street Dallas, Texas 75215

February 15, 2021

Armando Gonzalez AHERA Asbestos Management Planner TDSHS No. 205715

TABLE OF CONTENTS

1.0	INTRODUCTION	4
i.	General Information	4
ii.	Purpose	4
iii.	Warranty	4
2.0	ABREVIATIONS AND DEFINITIONS SCHEDULE	5
3.0	ORIGINAL INSPECTION SUMMARY	7
4.0	SURVEY METHODOLOGY	8
5.0	REINSPECTION FINDINGS	9
Та	ble 1. Material Description and Condition Assessment	9
6.0	CONCLUSIONS	11
Та	ble 2. Floor Tile Detail by Room	13
APP	ENDICES	14
Ce	rtificates	14
Flo	or Plan	15

1.0 INTRODUCTION

i. General Information

An Asbestos Hazard Emergency Response Act (AHERA) three-year re-inspection for Mark Twain Elementary School has been completed. The survey performed for this report was conducted on February 15, 2021 by Armando Gonzalez, an accredited AHERA Asbestos Inspector, and licensed by the Texas Department of State Health Services (TDSHS) as an Asbestos Management Planner (TDSHS No. 205715).

ii. Purpose

The purpose of the AHERA three-year re-inspection was to visually inspect all known friable and non-friable Asbestos Containing Building Materials and to reassess any changes in the condition of each material by an accredited inspector. This report meets requirements of 40 CFR Section 763.85 of AHERA.

iii. Warranty

Environmental Services Department (ESD) warrants that the findings contained herein have been promulgated in general accordance with accepted professional practices at the time of its preparation as applied by professionals in the local community. Conditions may exist which could not be identified within the scope of the survey or which were not apparent during the site visit. This inspection covered only those areas that were exposed and/or physically accessible to the inspector.

No other warranties are implied or expressed.

2.0 ABREVIATIONS AND DEFINITIONS SCHEDULE

- 1. Abatement removal, encapsulation or enclosure of asbestos-containing material
- 2. ACBM asbestos-containing building material
- 3. ACM asbestos-containing material
- 4. AHERA asbestos hazard emergency response act
- 5. ASB asbestos
- 6. CFR Code of Federal Regulations
- 7. Chase pipes running vertically and horizontally throughout the building
- 8. DISD Dallas Independent School District
- 9. **ESD** environmental services department
- 10. **FRI** friable (material containing greater than 1% asbestos by weight and can be crumbled, pulverized or reduce to powder with hand pressure)
- 11. HA hazard assessment (a number assigned by the Management Planner to assess the

current condition of a specific material and the potential for damage). See table below

1	Good condition with low potential for
I	damage.
2	Good condition with potential for
2	damage.
2	Good condition with potential for
5	significant damage.
4	Damaged condition with low potential for
4	damage.
F	Damaged condition with potential for
5	damage.
6	Damaged condition with potential for
0	significant damage.
7	Significant damage.

- 12. LF linear feet
- 13. SF square feet
- 14. Mastic glued used for tile or carpet installation (may or may not be asbestos-containing)
- 15. **Misc.** miscellaneous material (any other materials not included in the TSI/Surfacing categories)
- 16. **NA** not applicable
- 17. On-going age gradual deterioration due to continued process
- 18. **Riser** pipes rising from one level of the building to another
- 19. **Surfacing** material that is sprayed, troweled-on or otherwise applied to surfaces for acoustical, fireproofing and other purposes
- 20. TDSHS Texas Department of State Health Services
- 21. **TSI** thermal system insulation (ACM applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat transfer

3.0 ORIGINAL INSPECTION SUMMARY

The ACBMs identified in the original 1989 AHERA Management Plan are in the original inspection report, for review purposes, copies of the original report are located at Mark Twain Elementary School facility at 724 Green Cove Lane, Dallas, Texas 75232, and the Dallas Independent School District ESD located at 3701 S. Lamar Street, Dallas, Texas 75215.

Asbestos Management Planner: Larry Munson (Texas License No. 38050)

Asbestos Inspector: Shirley Carlisle (Texas License No. 12448)

Designated Asbestos Program Director: William H Cotton

4.0 SURVEY METHODOLOGY

After reviewing existing documentation within the ESD, a walkthrough of the facility building(s) was performed to inspect and assess the previously identified ACBMs. The following tasks were performed in each area of the facility building (s):

- Visual assessment of current condition of all friable ACBMs, both known and assumed;
- Visual tactile assessment of materials previously considered nonfriable to determine if the nature of friability has changed;
- Identified homogeneous areas that were determined to have friable materials present since previous inspection; and
- Assess condition of previously identified friable materials.

5.0 **REINSPECTION FINDINGS**

AHERA regulations require condition assessments of all friable ACBMs, both known and assumed. Table 1 presents the condition assessments for these materials at Mark Twain Elementary School.

Changes Y/N	Homogeneous Area/ Material Description/ Category/Friability	Material Location & Amount	Material Condition Assessment	Remarks
N	1C/ Sprayed-On Acoustical Ceiling Material (residual)/ Surfacing/ Friable	In classrooms throughout the facility/ Approx. 25,000 SF Assumed ACBM	HA-1 ACBMs in good condition with low potential for damage	Test upon disturbance. No action. O&M until removed.
Y Room 102 (media center) was abated in March 2008 by the Bond Office. No closeouts	2B/ 9"X9" Floor Tile and Mastic/ Miscellaneous/ Non-friable	Rooms 113B, 112-120, 123- 125, 127, 128, 822 and 824A. Approx. 10,500 SF	HA-1 ACBMs in good condition with low potential for damage	No action. O&M until removed.
N	4/ Crawl Space pipes and elbows/ Thermal System Insulation/ Friable	Under the facility on pipes and elbows. Approx. 220 LF	HA-3 ACBMs in good condition with potential for significant damage	No action. O&M until removed.
N	10B/ Miscellaneous Risers/ Thermal System Insulation/ Friable	In the gymnasium's storage room. Approx. 10 LF	HA-3 ACBMs in good condition with potential for significant damage	No action. O&M until removed
N	10C/ Fire Doors/ Miscellaneous/ Non-Friable	At the auditorium's stage, the mechanical room, and vault in the main office. Approx. 72 SF Assumed ACBM	HA-1 ACBMs in good condition with low potential for damage	Test upon disturbance. No action. O&M until removed

Table	1 Material	Description	and Condition	Assessment
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Changes Y/N	Homogeneous Area/ Material Description/ Category/Friability	Material Location & Amount	Material Condition Assessment	Remarks
	13/	Around all the	HA-3	Test upon
	Exterior Window	putty glazed	ACBMs in good	disturbance.
N	Caulk/	original exterior	condition with	No action.
	Miscellaneous/	windows/	potential for	O&M until
	Non-Friable	Assumed ACBM	significant damage	removed

6.0 CONCLUSIONS

Based on historical information and the information obtained from this inspection, six homogeneous areas of asbestos-containing materials are known or assumed to exist at Mark Twain Elementary School, and are as follows:

- 1C Sprayed-On Acoustical Ceiling Material (residual). Located In classrooms throughout the facility. Assumed ACBM. Approximately 25,000 SF;
- 2B 9"x9" Vinyl Composition Floor Tile and Mastic. In rooms 113B, 112-120, 123-125, 127, 128, 822 and 824A. Approximately 10,500 SF;
- 4 Crawl Space/TSI. Pipes and elbows under the facility. Approximately 220 LF;
- **4. 10B Miscellaneous Risers/TSI.** Risers located in the gymnasium's storage room. Approximately 10 LF;
- 5. **10C Fire Doors.** At the auditorium's stage, mechanical room, and vault in main office. Assumed ACBM. Approximately 72 SF; and
- 13 Window Caulk (exterior). Around the putty glazed original exterior windows. Assumed ACBM.

The above-mentioned ACBMs were found to be in good condition, and should be maintained under an operations and maintenance program until they are removed. If identified in other locations in the facility, these materials should be assumed to be asbestos-containing until laboratory analysis determines otherwise.

This inspection was based upon information existing in the Management Plan and ESD's visual assessment of the facility. Additional ACBMs may be present but were not sampled due to them being concealed (i.e. wall cavities, plenums above plaster ceilings, multiple layers of flooring). This reinspection covered only those areas that were exposed and assessable to the inspector.

On October 10, 2018, BENAS Environmental Services, Inc., conducted an Asbestos Containing Building Materials (ACBM) survey for the new addition (Unit-D) to the existing building. The findings of the study indicate that asbestos fibers were not present in any of the bulk samples of the suspected ACBM collected and analyzed.

Table 2 below presents the floor detail by room for Mark Twain by layer, and provides additional information pertaining to condition and material properties.

Table 2. Floor Tile Detail by Room for Mark Twain Elementary.

HOMOG AREA	CHANGE SINCE LAST REINSPECTION YES/NO	RESPONSE ACTIONS/ RENOVATIONS	ASB PRESENT YES/NO	FRIABLE	L/SF	1 st LAYER	2 ND LAYER	3 RD LAYER	4 [™] LAYER	HAZARD ASSESS.

Actions:

continue periodic surveillance per AHERA regulation;

restrict access to qualified personnel;

repair and encapsulate as needed; and

remove when feasible.

* indicates asbestos containing material

APPENDICES

Certificates

Floor Plan







3 of 7 01/31/02



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Asbestos Survey Report

Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079



APPENDIX E CLIENT-PROVIDED PRE-DESIGN (STB)

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Pre-Design (5TB)

Mark Twain School for the Talented and Gifted (ORG 220)



Prepared by: JMA Johnson, LLC 135 Noel Rd, Suite 1100 Dallas, Texas 75240

Sims Engineering, Inc. MEP Engineering 11700 Preston Rd 660 #194 Dallas, Texas 75230

Cedrick Frank Associates Access Monitoring PO Box 383176 Dallas, Texas 75138 Charles Gojer & Associates, Inc. Structural Engineering 615 Forest Central Drive, Suite 3 Dallas Texas 75243 Simon Engineering Civil Engineering 15443 Knol Trail Drive Suite 140 Dallas, Texas 75248

Riddle & Goodnight, Inc. Cost Estimator 115 Mary Drive Weatherford, Texas 76085

Owner Dallas Independent School District - 2020 BOND PROGRM

Program Manager



July 25, 2023

PRE-DESIGN (STB)

Mark Twain School for the Talented and Gifted (ORG 220)

Table of Contents

- Project Information 1
- Executive Summary 2
- Pre-Design Approval Form 3
- Scope of Work & Cost Estimate 4
 - Project Schedule 5
- Project Narrative and Drawings 6
- Campus and Observation Report 7
 - Request for Waiver 8
 - Electronic Submission 9

This project is part of: **CSP NO.**

1. Project Information



JMA Johnson, LLC

July 25, 2023

2. Executive Summary

Background:
On November 3, 2020 voters approved the two major Dallas ISD bond propositions, totaling \$3.470 billion. Voters said yes to Proposition A, which includes \$3.2 billion to fund repairs and upgrades to more than 200 of the district's 230 campuses, and Proposition 8, which provides \$270 million to cover the cost of purchasing and making updates to district technology.
On April 22, 2021 the Board of Trustees approved and authorized Dallas ISO to negotiate with and enter into agreements with previously approved Firms to provide architectural services for projects related to the 2020 Bond Program.
The firm of JMA Johnson, LLC and its consultants conducted several site visits and met with school representatives to validate the scope of work and budget for Mark Twain School for the Talented and Gifted. This report contains the FACILITY PROGRAM and documents the recommendations of the PRE-DESIGN PHASE (STB) process based on the CCL, the Architecture Firm and their sub-consultants' best professional judgment, site observations, school input and other Dallas ISO established parameters regarding schedule, budget, and priorities. The recommendations are summarized in the following sections:
 The Project Budget and Approval Signatures (Tab 3) documents the budget approval process concluding with the sign-off by District and school authorities. The Scope of Work & Cost Estimate (Tab 4) includes a brief description of the work recommended by the A/E Firm, with dollar values and cost codes. Other related documentation to support the above recommendations.
JMA Johnson, LLC hereby confirms that, in the Firm(s)' opinion, the approved Project Scope can be designed and constructed within the time limits outlined in the Exhibit B. JMA Johnson, LLC also confirms that, in the Firm(s)'s opinion, the approved Project Scope can be designed and constructed for the dollar amount of the approved Construction Cost Limitation.

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Mark Twain School for the Talented and Gifted (ORG 220) SCOPE VALIDATION REPORT PRE-DESIGN (5TB)

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5. Project Schedule Meeting Minutes Sign-In Sheets

EXHIBIT B MILESTONE SCHEDULE

Phases	Original Milestones per contract	Revised Dates
Pre-Design Phase	3-Mar-23	14-Aug-23
Schematic Design Phase	7-Apr-23	Aug 28
Design Development Phase	5-May-23	Sept 11
50% Construction Documents Phase	12-Jun-23	Oct 5
95% Construction Documents Phase	11-Jul-23	Nov 2
Construction Document Phase	8-Aug-23	Dec 8
Submittal date for the Building Permit and TAS	8-Aug-23	Dec 8
Issue Documents for Bidding	10-Aug-23	10-Jan-24
Competitive Sealed Proposal Process	19-Oct-23	31-Jan-24
Anticipated Construction Duration	6 Months	31-Jul-24

> 5. Project Schedule Meeting Minutes





DISD 2020 Bond Program $\,I\,$ Project Assignment for McKissackMcKissack ORG# 220 $\,$ CSP# ----- MARK TWAIN LEADERSHIP VANGUARD ACADEMY RENOVATION

JMA JOHNSON, LLC I Architect Keith Gibson/Javier Vega I Project Manager • Javier Vega did not attend the meeting. He is the new Project Manager. His contact information is listed for reference only.•

MEETING MINUTES #1

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Tuesday 11/15122	11 00am	1200pm	TBD	TBD	Michael Johnson	JMA Johnson, LLC Architect
<u>aJ!f.:<mark>i∙bi-</mark></u>		<u>tmniui.</u>				<u>⊳∖ mu iiktul-t</u>
Principal Ori	entation					

Playbook Mooting

Michael Johnson Keith Gibson Javier Vega Joe Flores Tiffany Green JMA Johnson, LLC McKissackMcKissack McKissackMcKissack DISD Contract Manager DISD Principal m1chael@jm8-Johnson.com c101271@dallasIsd.org c79450@dallasisd org c348@dallasisd.org t1fgreen@dallas1sd org

MEETING MINUTES

The purpo e of tl,e meeting was to introduce the school administrators, to the Program Manogement Team De iyn Guidelines and Principlesr the Project Manager respon ible ror the project and to meet the A/E Prime Architect who will lead the school scope of work tasks.

Mr. Keith Gibson e><plained the Team Meeting Agenda. Keith Gibson presented a lhorough explanition of the scope of work and the Principal Plavbook Bond Checklist, and highlighted the preliminary project milstor schedule. He led the meeting by explaining the project process and A/E campus protocols the team would be abidinB by. Mr.

> 5. Project Schedule Meeting Minutes

Gibson specifically mformed the m mbers present of the Pre-Oes.ign Phase and the 1asks .u-.l@nPd to th1;1 Project Manaeement team. Ihe Project Manager and the Project Architect and his team.

Michael L. John on, the fu'Chilett went on to dhcu-.s hts desig111,11 ion for the proposed r nova1lon. He briefly discussed the other scope items related to ros,on of the sd,ool backyard, sidewalks. and other scope ilems related to 1he MEP scope of work

Jee FloreI., the OISD Contract Ma"-ager ror tht5 project In11oduced himself 10 the 1cam prCl'sent at the meeting. He briefly stated his tenure with DISO and stated he and the Architect had previously worked logccher on $_3$ proj.-cl in WIImet Lewas, He made it dear 10 hittl Progr.:m Mar"tager and he Architect how vital it is to spChd more limit designing quilfly d1awmg5, than to check off boxes on a checkli5t. He mentions III..it the scope is budget based. HC? encouragCld the Architect to show before Imaees of what is propol.cd for cha.ngefit. H also sulle-s IIIaII fthe project is managed very well, the cont, actor *wOfk* mol1cs mote efficiently. The work will be coo.dinated with the school team on campus., with e.ich phase havina reviewS and slen-off documents, dnd lots of direct ocordinalion.

He further states, there is a goal to get everything related to the sidewalks moving before the New Year. There was also a suggestion th<H because a big portion of this p.ojcct is mechanical, that a zoning diagram be completed. He remind-s the team that specifics, about '/, ddre-saling c::,ch classroom is accounted for related 10 h ating and cooling The A,chltect is atso encouraged to really investigate radiaton. relUrns, double sourc(!-., if lhey edsl 111 each clofssroom, chill rs. bollers. etc. HCl stresses the ImportchCQ of the Engineer and the Architect working closely together.

Michael Johnson bring.sup conv(>fS.i'illOr"ISIIbOuI the parkInR lot, concrete, and a5bcSIOS.:,nd states he and his NE tcarn wHI be back aul to do a more intensive Investigation on the .!pp,oved scope It rn and b glr, 10 Put a co.: t estimate budeet in place for review and consideration.

END OF MEETING MINUTES

The above referenced represents JMA Johnson Architects. LLC's understanding of the meeting discussio_n Items not relevant to the meeting's purpose have been disregarded Please forward any revisions. regarding these meeUng notes to JMA Johnson Architects. LLC to 1he attention of sheron@jma-johnson.com within five (5) business days from the date of receipt. If no comments are received within this time period, these notes shalt be considered of record.

6. Architectural Project Summary and Narrative

ARCHITECTURAL NARRATIVE

Detailed School Building Description:

Mark Twain School for the Talented and Gifted is a one-story institutional building, has a rectangular plan and a flat roof, and the exterior walls are finished with face brick. The detailing is considered modern with face brick detailing with elongated aluminum windows.

The front entrance detailing highlights the symmetrical facade projecting the center bay above a sloped roof element. The construction type is brick masonry on a steel frame structure. The roof is modified bitumen with a granulated asphalt cap sheet.

Considering the building age; it is greater than 66 years, the exterior appearance has held up well. The building was built in 1955 making the physical building materials and infrastructureapproximatel sixty-eight {68) years old.

Facility Snapshot:

Site Location

The school is located in the Southen Oak Cliff community of Dallas, Texas. Boundary Streets: Green Cove Lane (North), Lone Oak Drive (Northeast), Haywood Parkway (East), Town Creek Drive, (South) and Oak Trail (West).

Educational Facilities - Classroom Usage

All the classroom space at Mark Twain Vanguard is utilized for class instruction. The school enrollment generally is below the maximum capacity per each school year. It does not appear there is a shortage of classroom space within the main building area. The optimal student capacity is 637.

Zoning Description: R7.5 Building Area: 57,638 sq ft on an 8.29 acre site.

Franchise Utilities Electric, Gas, Cable, and Telephone All utilities enter from Green Cove Lane at the north side of the campus.

Vehiclar Access and Parkiing

45 parking spaces required by the City of Dallas 48+ 2Accessible parking spaced are provided.

Economy and Infrastructure

DART Bus Service

Highways: Interstate 35 and Interstate 20, and US. Highway 67 Education Facilities Elementary Schools: Umphrey Lee, T.G.Terry, Ron McNair, Birdie Alexander, Adelle Turner

Middle School: D.A. Hulcy High School: David W, Carter

PRE-DESIGN (STB)

Mark Twain School for the Talented and Gifted (ORG 220)

6. Architectural Project Summary and Narrative

STRUCTURAL ENGINEERING

The structural engineering scope is limited to engineering the foundation and reinforcement for the new masonry Marquee Sign. Currently, at the pre-design phase, the geotechnical soils report has not been completed to initiate the foundation and reinforcement design. It will be presented at the schematic design phase.

LANDSCAPING

Landscaping is limited to replacement of dead shrubs at the front of the school building.

MECHANICAL ELECTRICAL AND PLUMBING

Detailed narrative and site visit report is referenced in 7.Campus Visit and Observation Report.

ACCESS MONITORING

Access monitoring will be added to the scope to both upgrade and add new devices throughout the school building to comply with DISD current security TDG's.

<u>ROOFING</u>

The existing mod bit (modified bitumen) roof system will not be replaced but it does comply with the D15D current TDG's.

6. Architectural Project Summary and Narrative

PROJECT SCOPE

tem Description	Discipline	Class	Priority
Provide security updates including cameras, card access readers, and door contacts.	Life Safety & Security	Renovation	S,
Provide secure front vestibule.	Life Safety & Security	Renova 10n	1
RtJptace ex enor wa e,proot'mg/sealant jo nts	Building Envelope	VVoterproofing Seelent	
Rep ace fire alam, system	Electrical	F.re Alarm System	
Rep ace extertor lights with LED lighting	Electrical	Ligh11n11 (Exlellor)	
Provide e•te11or lighting controls	Electrical	Ligilling (EXIOllor)	
Replace vln I compos,te lite (VCT) floo,mg iv1d base at	Architecture	Floo11ng (r:;o1pel, tile, etc	2
Replace teaching surfaces at each classroom.	Architecture	Markerboard/Tackboard	2
Replace ct11pel/ n)ll comµosite tile (VCT) a11 ase through fac1l1ty excludino 0ll 1nom conidors, eudiforium and ethlelic	Ollt Architecture	'Flooring (carpet, tile, etc.)	2
Reoptoce ex1enor doors	Arel'\tocture	Doors	2
Provkle new ma1queu sign localed at f1ont an11y.	Archllaclure	Signage/Way-finding	2
Replace outdated extenor windows wtth new energy efficient window assembly	nt Bui! 1ng Envelope	Windows	2
Remove and replaco conc1ete sidewalks	C1V	Slle Paving - Replacement	
Remove and replace concrete pavement.	Civil	Site Paving - Replacement	2
Rep ace Interior lights wit L D I/9htdlg	Electrical	Lighting (Interior)	2
Provide Intenor I, ghting controls.	Electrical	Lighting (Interior)	2
Meclum1cel/HV C wnprovemenls ,nclu new sp 11 system, c&hrle1 stahon, rooflop and fan coil units, replace steam p1p waler pumps end p1pinu, exhaust rans. steam boiler, ductw p11d controls on send units	i /iechanical mo. /ork	HVAC	2
Plumbing improvements include grease waste and waste p1p1ng replacement, new hot water heater anc, hose relacement	Plumbing	Pluml.1111g	2
Provide/replace IDF/MDF air conditioning.	viechanical	HVAC	
Provide flexible 'next gen' furniture	Aiclutec\uro	Furniture	Fum

·cost !or1hese llems nol Inciuded 111 total obo\/8

6. Architectural Project Summary and Narrative

ARCHITECTURAL FIELD REPORT FINDINGS, DEFICIENCEIS, AND RECOMMENDATIONS

A. MAJOR DISCREPANCIES

A major building deficiency is a portion of the schools HVAC system is still operating an obsolete steam heat convector. The DISD maintenance department history with performing repairs to an outdated window system is not current with energy efficiency standards which is a reason that validates replacement of windows.

B. MAJOR ADA/TDLR

General observation of TDLR accessibility:

1. Several exit doors do not have door hardware that allows entry into the building, which is a major safety concern because the campus staff must prop open the doors when outdoor activities occur (i.e., fire drills, physical education exercises, general egress etc.).

2. There is not an approved egress path from the accessible parking spaces at the rear parking lot to the front entry of the school

C. PROJECT SUMMARY RECOMMENDATIONS

1. Replacement of the HVAC system needs to remain as a base bid item, not as an alternate item.

- 2. Security/ Safety items should remain as base bid items. Egress from the parking lot spaces.
- 3. Egress from the parking lot spaces to the front entry should be implemented at a future date.

RECOMMENDATIONS

Recommend adding sidewalk from parking lot to front of the school. Recommend adding a ramp at north and south sides of the building. Recommend resurfacing the parking lot.

PRE-DESIGN (STB)

Mark Twain School for the Talented and Gifted (ORG 220)

6. Civil Project Summary and Narrative

CIVIL NARRATIVE

Location

Mark Twain Vanguard Academy is an Elementary School is located in Dallas Tx Surrounded by Oak Trail on the east, Green Cove Ln on the North, Lone Oak Dr and Haywood Pkwy on the West and Town Creek Dr on the south. The property is currently owned and operated as an Elementary School by DISD.

Site Features

The site is a fully developed school campus composed of a main One-story brick building, a modular one-story building, concrete parking lot, a concrete basketball court, a playground, open field, a sidewalk/ramp network within and around the compound. All the features are evenly spread throughout the site.

Topography

Most of the site is unpaved green space except the building footprints, parking lot, basketball court, and connecting driveways and sidewalks within the compound. The topography is relatively gently leveled surface with a slope draining eastward. The site has few trees, most of which are located at the front of the main building and the corner of Green Cove Ln and Lone Oak Dr roads.

Site Grading and Drainage

Generally, the existing buildings are elevated with full sidewalk access to the adjacent streets on all sides.

Existing site grading and drainage system will remain the same and proposed reconstruction of sidewalks will match existing condition.

Since the existing paved surfaces are being reconstructed (sidewalk surfaces), there is no new proposed impervious surface to increase the existing runoff from the site.

The proposed reconstruction is planned to replace broken, cracked and damaged sidewalks, to provided Barrier Free Ramps at Pedestrian crossing to meet the minimum current ADA requirements of City of Dallas and the state of Texas. In addition there is an existing driveway access and asphalt parking that needs to be replaced due to excessive cracking and distress along with an existing concrete flume that is giving away due to excessive cracking as well. All of the potential items which need to be reconstructed are shown in the phot map for reference.

Erosion Control

Erosion control will be established by utilizing several Best Management Practices. These BMP's will include silt fence, silt sedimentation traps for inlets, stone outlet structures for existing pipe and grate inlets, soil retention blankets for exposed grades steeper than a 6:1 slope. All BMP's will be designed and built according to the latest TCEQ and City of Dallas standards. It might also be likely that a Storm Water Pollution Prevention Plan will have to be developed and an NOi completed and submitted to TCEQ for a storm water permit.

6.1 Drawings and Graphics


PRE-DESIGN (5TB) Mark Twain School for the Talented and Gifted (ORG 220)

6.1 Drawings and Graphics



PRE-DESIGN (5TB) Mark Twain School for the Talented and Gifted (ORG 220)

6.1 Drawings and Graphics



.July 25, 2023

PRE-DESIGN (STB)

Mark Twain School for the Talented and Gifted (ORG 220)

7. Campus Visit and Observation Report

13355 Noel Rd Suite 1100, Dallas, Texas 75240 August 30, 2022 ARCHITECT'S FIELD REPORT EXPERIENCE (Construction) PROJECT Mark Twain Leadership Vanguard Academy 724 Green Cove Lane Dallas, Texas 75232 FIELD REPORT NO 1 Observation Walk CONTRACT DiSD Bond Program Phase II Michael L. Johnson, JMA Johnson Arch1lects Ke,th Gibson, PM McKissaci< and McK1ssaci DATE: Tuesday, August30.2022 TIME 1.30 pm WEATHER: Hol TEMP. RANGE 98 NIBOPUGIPN 1. A finitial sile visil was made on August 30, 2022 lo walk lhe Mark Twain Leadel'Ship Vanguard Academy school facility and to rev.ew lhe scope of work, provided by the Owner (DISD) and 10 determine the magnitude of the FCA scope of work, based on observal10ns. The following is a brier field report of the findings 2. Building HistOry: A. The existing school 1s approximately 57.638 SF on an 8 92 acre site C. The building existing access drive with parking, Oak Trail E. The building has 2 floor levels adjusted to the site topography so that no portion exceeds 2 stories F 3. Neighborhood Information A Mark Twain Leadership Vanguard Academy is located in the Oak Cliff community of Dallas. Adjacer neighborhoods are Redbird and Glenn Oaks	JMA Johnson, LLC			Architec	Architect's Field Report		
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	4	01					

- А В.
- There are 30 class rooms organized in 3 zones Zone one is the admlnislrahon, auditorium and classrooms.
- C. D Zone two includes the secondary administration. offoces. library, 1<1tchen. caretena and classrooms
- Zone three is all classrooms

PRE-DESIGN (STB)

Mark Twain School for the Talented and Gifted (ORG 220)

7. Campus Visit and Observation Report

The Firm of JMA Johnson, LLC developed the following field report in compliance with the ARCHITECT AGREEMENT.

6. **Building Construction**

- Α. Studenl corndor walls are gypsum board.
- В Ce,hngs in classrooms and corridors are suspended acousl1cal panel
- С The gymnasium has an exposed struciure painted ceiting
- D The floors in lhe corridors and classrooms, office and !he media cenler are vinyl compos11,on life Carpel has been added as a cover in lhe principal's and library areas.
- Paving f.,

 - The parking lot ,s concrete The hard surface at !he playground Is asphalt
- Irrigation 7.

А В

- Irngation,s provided at landscape areas А
- В Planling conforms w11h the C11y of Dallas standards.
- В. Parking
 - All parking has ample hgl1ling for nighl-time activ1l1es А
- 9 Data Collection:
 - Α. In add11ion Io Ihe initial s, le visit, Ihe Dallas ISO Scope-of-Work Documem was reviewed. Il is attached for reference
- 10. Format:
 - A. This Report was prepared for !he sole use by lhe Chen!. building Owner. and lhe Archi1ec1

RECOMMENDATIONS

In our professional opinion:

- A Pavement joints need to be recaulked
- B Soil erosion needs 10 be installed.
- C Courtyard area drains need lo be tmclogged
- D.Severe floor cracks need to be repaired m the cafetena

END OF REPORT

PRE-DESIGN (STB) Mark Twain School for the Talented and Gifted (ORG 220)

7. Campus Visit and Observation Report

The Firm of JMA Johnson, LLC developed the following field report in compliance with the ARCHITECT AGREEMENT.



Photo 1 Classroom Ceiling & Light Fixtures



Photo 3 Rear Entry at Kitc11en Cafeteria



Photo 5 Damaged Masonry at Dock



Photo 2 Classroom Celling Light Fixtures



Photo 4 Drainage Soil Erosion



Pl1oto 6 Damaged Maso11ry at DtJck

PRE-DESIGN (5TB)

Mark Twain School for the Talented and Gifted (ORG 220)

7. Campus Visit and Observation Report



Photo 7 Storage Unit



Photo 9 Guard Rall at Rear Entry



Photo 11 Mechanical Room



Photo 8 Rear Exit Doo.- Thesholcl



Photo 10 Rear Entry brain



Photo 12 Mechanical Room Boile,

PRE-DESIGN (STE Mark Twain School for the Talented and Gifted (ORG 221

7. Campus Visit and Observation Repo1



Photo 13 Mech, mical Room Boiler



Photo 15 Mechanical Room Piping



'hate 17 Mechanical Room Boiler



Photo 14 Mechanical Room Piping



Photo 16 MeclianIrnI Room



Photo 18 Mechanical Room

PRE-DESIGN (STB:

Mark Twain School for the Talented and Gifted (ORG 220

7. Campus Visit and Observation Reporl



Photo 19 Mecl)anical Room Panel



Photo 21 Electrical Panel\$



Photo 20 Mechanical Roorn fanel



Photo 22 Electrical Panels



Photo 23 Interior Corridor



Photo 24 Interior Corridor

PRE-DESIGN (5TB)

Mark Twain School for the Talented and Gifted (ORG 220)

7. Campus Visit and Observation Report

The Firm of JMA Johnson, LLC developed the following field report in compliance with the ARCHITECT AGREEMENT.



Photo 25 Interior Corridor



Photo 27 Interior Corridor



Pl1oto 29 Interior Gymnasium Ceiling



Photo 26 Interior corridor r-loors



Pilato 28 Interior Gymnasium



Pl1oto 30 Interior Gymnasium Ceiling Lights

PRE-DESIGN (STB

Mark Twain School for the Talented and Gifted (ORG 220

7. Campus Visit and Observation Repor







Photo 33 Interior Iol)by



Photo 35 Interior Entry Lobby



Photo 32 Interior Entry Lobby



Pl1oto 34 1i1terlor Entry Lobby



Photo 36 Interior F.ntry

PRE-DESIGN (STB) Mark Twain School for the Talented and Gifted (ORG 220)

7. MEP Campus Visit and Observation Report

The Firm of JMA Johnson, LLC developed the following field report in compliance with the ARCHITECT AGREEMENT.



11700 Preston Rd. Suite 660 tt194 Dallas, TX 75230 (214) 295-9571 siniseng.com

Field Report

Date:	2/28/23
To:	Michael Johnson
From:	Chris ims, P.E.
Project:	DISD Mark Twain Vanguard Academy

The following observations were made during a visit to the site on December 19, 2022:

<u>Electrica</u>l

Exterior Lighting

The existing exterior lighting system is made up of single and dual fixture pole lights, building mounted wall packs and recessed canopy fixlures. These fixtures appear to be compact fluorescent. We plan to replace approximately (16) pole-mounted lighting fixture , (12) wall packs and (6) recessed canopy fixtures with new LED fixtures. We intend ro mount the new pole-mounted fixtures to the existing poles. We will provide new lighting controls to meet the 2015 IECC.

We will provide power to a new marquee sign per DISD standards at the location selected by the District.

Fire Alarm

The Existing Fire Alarm system is not current with DISD requirements will be replaced with a Notifier FS2-3030 per the new DISD Technical Design Guidelines. We believe that this upgrade will require all of the fire alarm devices within the building to be changed out.

DJSD Mark Twain TAG MEP Field Report

Page 1 of 6

JMA Johnson, LLC

7. MEP Campus Visit and Observation Report

The Firm of JMA Johnson, LLC developed the following field report in compliance with the ARCHITECT AGREEMENT.

Interior Lighting

Existing interior lighting throughout the buildings is composed of compact nuorescent bulb fixtures with wall switches for controls. These fixtures are in average shape, but they do not meet the District's current standards for lighting. The District has been replacing interior lighting with LED fixtures in order to improve energy efficiency and lower maintenance time with fewer bulb changes. We intend to replace all interior lighting with new LED fixtures and provided new lighting controls that are compliant with the 2015 JECC and the DISD Technical Design Guidelines.

AV/Security/PA

We will call out locations for new security cameras al the direction of the District.

We will provide power and call out locations for new card readers and door contacts at locations as directed by the District.

Electrical Power

We will provide power to new mechanical equipment being added or replaced as a part of the scope of the project. We will reuse existing circuits where possible and run new circuits where necessaty. Refer to the Mechanical section of this report for more information.

Mechanica

Existing HY AC Systems

The building HVAC system is predominantly ser ed by central station 4-pipe roofmounted air handling units. It is also served by **DX** packaged rootlop units in some places. One wing within the building is still served by steam convectors. Below is a table with a list summarizing the major air handling units and chiller:

DISD Mark Twain TAG MEPField Report

Page 2 of 6

JMA Johnson, LLC

PRE-DESIGN (5TB)

Mark Twain School for the Talented and Gifted (ORG 220)

7. MEP Campus Visit and Observation Report

The Firm of JMA Johnson, LLC developed the following field report in compliance with the ARCHITECT AGREEMENT.

LABEL	MANUFACTURER	MODEL II	SERIAL 11	TONS	YEAR MADE
AHU-1	CARRIER	39MISTW05CKHFBXXIX	3410U23415	15	2010
AHU-2	CARRIER	39MW12D02031D22XCS	3410U23336	12	2010
AHU-3	CARRIER	39MW40	3410U23437	40	2010
AHU-4	CARRIER	39MW50D02031F33XCS	3410U23415	SO	2010
RTU-IDF	CARRIER	SOHJ-004000631HQ	5104GS0422	3	2010
RTU	TRANE	4YCC4024AI060AA	154511662L	2	2015
RTU	CARRIER	48TCRDOBA2MGAOF2FO	3310G40627	7.5	2010
RTU	CARRIER	48TCRD08A2M6AOF2FO	3310G40626	7.5	2010
RTU	TRANE	Y5C092H4ELA2600001000	216611235L	7.5	2021
RTU	TRANE	YSC092H4ELA2600001000	213611217L	7.5	2021
RTU	CARRIER	48HJE007651	0505G20394	6	2005
RTU-MDF	CARRIER	SOHJ-005	5104650273	4	2004
RTU-Admin	CARRIER	50TJ-006	0200620995	5	2000
Chiller	CARRIER	30XAB22064-03533	3410Q91570	220	2010

HVAC nit Replacement

The scope document calls for the replacement of split systems, central station air handlers, rooftop unit and fan coil units.

There are no split systems on the project so we intend to omit this part of the scope.

The central station air handlers labelled as AHU-1,2,3, & 4 in the table above were all installed in 2010. They appear to be in average condition and have approximately 8-10 years of useful life left. These are units that we can replace if the budget allows or omit from the scope if the budget does not allow.

We plan to replace the rooftop units listed above except for the (2) units that were replaced in 2021and the unit that was replaced in 2015. In total, we plan to replace (6) rooftop units totaling 33 tons.

The scope calls for the replacement of the existing IDF and MDF room air conditioners. The building's MDF room is in Book Room 112. This room is served by a 4-ton rooftop unit. The building's IDF room is in Room 113A. This room is served by **a** 3-ton rooftop unit. These units are a part of the (6) unit mentioned in the paragraph above that we plan to replace.

DISD Mark Twain TAG MEP F'ield Rcporl

Page 3 of 6

7. MEP Campus Visit and Observation Report

The Firm of JMA Johnson, LLC developed the following field report in compliance with the ARCHITECT AGREEMENT.

The s<.:upe of work calls for the replacement of the existing fan coil units. There are no fan coil units on the project, but we believe that this language was intended to communicate replacement of the existing steam convectors that serve on of the wings of the building. We concur that these systems are old and need replacement. We would replace this system with a new approximate 40-ton, 4-pipe air handler on the roof of the building feeding a medium-pressure ductwork system to approximately (8) new vav boxes with hot water reheat. After the VA V boxes, a low-pressure duct system would run to new diffusers distributing air to each classroom previously served by the convectors. We would need all new controls for this portion of the building. We would abandon the existing pneumatic controls system currently serving this section of the building and tie the new controls into the existing DDC systems.

HVAC System Replacement

The scope document calls for the replacement of the steam piping, water pumps, hydronic piping, exhaust fans, steam boiler, ductwork and controls on pumps and units.

The existing steam boiler was be replaced while we were in the field. We intend to omit this item from the scope unless we get further direction from the District.

The chilled and heating water pumps appear to be in need of replacement. We intend to replace them with (2) new pumps for each system, each with a Vf-D.

The prima1y chilled water pump near the chiller appears to be in good working order. We intend to omit this item from the scope unless we get further direction from the District.

The chilled water system appears to be original. We intend to replace the entire chilled water system in the building.

The heating water system appears to have been installed recently. We intend to omit this item from the scope unless we get further direction from the District.

The scope document calls for replacement of the steam piping. If we add a new air handler to the area currently served by steam convectors, we would no longer need the steam piping. The District has abandoned steam systems and piping in most schools, but the new boiler currently being installed is a steam boiler. Our

DISD Mark '!'wain TAG ME:P Field Report

Page 4 of 6

JMA Johnson, LLC

PRE-DESIGN (STB)

Mark Twain School for the Talented and Gifted (ORG 220)

7. MEP Campus Visit and Observation Report

The Firm of JMA Johnson, LLC developed the following field report in compliance with the ARCHITECT AGREEMENT.

suggestion is to install a new heat exchanger to convert the steam to hydronic hot water in the boiler room. Then, we can backfeed the existing hydronic system with the new boiler and add the section of the school currently served by steam to the hydronic system. See the previous paragraph about replacing the steam convectors with a 4-pipe air handling unit and VA V boxes.

The Scope Document provided by the District calls for replacement of the existing exhaust fans. The exhaust fans appear to be in average condition, and we do not believe they need to he replaced at this time. We intend to omit them from the scope unless we get further direction from the District.

Plumbina

Domestic Water Systems

The Scope Document provided by the District calls for replacement of the existing water heater tank. We believe that the water heater and its associated tank were replaced in 2021 and do not need to be replaced at this time. We intend to omit it from the scope unless we get further direction from the District.

The Scope Document provided by the District calls for replacement of the existing sanitary sewer and grease waste systems. Because of the age of the school, there is a good possibility that the anitary sewer lines are clay pipes which would be in bad hape. We were not able to verify this in our site visit. We would like to gel some direction from the DISD Maintenance Staff on these items. Unless we hear otherwise, we intend include the replacement of all grease waste and sanitary sewer piping within the scope of the project.

We will replace the existing hose bibs on the project with new ones.

Other Items

The following items that are not currently part of the scope of the project should be considered for addition to the scope if the budget allows for their addition.

I. The building chilled water system is served by a 220-1011air cooled chiller located in a mechanical yard between two wings of the building. The chiller information can be found in the equipment chai1 earlier in this report. The chiller was manufactured is 13 years old. It appears to be in decent

DISD Mru·k Twain TAG MEP Field Report

Page 5 of 6

PRE-DESIGN (STB) Mark Twain School for the Talented and Gifted (ORG 220)

PRE-DESIGN (STB)

Mark Twain School for the Talented and Gifted (ORG 220)

7. MEP Campus Visit and Observation Report

The Firm of JMA Johnson, LLC developed the following field report in compliance with the ARCHITECT AGREEMENT.

condition, but it has approximately S years of useful life remaining before major components star! needing to be replaced. The District may want to consider changing this unit out while other major mechanical work is being done to the school especially if this campus will not receive funding for more mechanical repairs in the next 5 years.

END OF REPORT

01S0 Mark Twain TAG M8P Field Report

Page 6 of 6

Mark Twain School for the Talented and Gifted (Org 220)

8. REQUEST FOR WAIVERTO CONSOLIDATE DESIGN PHASES



F	PROPOSED DESIGN PHASES	PROPOSED WORK PRODUCT	
REQUIRED PRE-DESIGN/STB		PERAOM	
	SCHEMATIC DESIGN	SD/DD Progress Print Only, No formal review required	
	DESIGN DEVELOPMENT	SD/DD Progress Print Only, No formal review required	
REQUIRED	60% CONSTRUCTION DOCUMENTS	PER AOM	
	95% CONSTRUCTION DOCUMENTS	PERAOM	

JUSTIFICATION: The original Mark Twain scope of work exceeded the CCL budget. The project experienced delays awaiting the DISD Maintenance and Operations Mechanical Departments approval of mechanical equipment design changes.

FINANCIAL IMPACT: The requested mechanical equipment and scope changes to cancel the replacement or the windows wilt not Increase the CCL budget.

REQUESTED BY: <u>Ji"M</u>	<u>""A""J"'oi¥hn"so:r⊁</u> ,I L; ⊂ * Name of Firm		
Name & Title:	Michael L. Johnoon. President		
Signature:	ichail (, Johinsón Bernovezena:	8611.)/2023	
REVIEWED BY:	McKls:sack & McKissack PMF Name of Firm		
Name & Title:	Robert Spicer, Project Manager		
Signature:		8611.)/2023	
AUTHORITY:			
Dallas \SD Contract Ma	anager:		
	Name	Signature	Date
Director of Planning &	Design:		
	Name	Signature	Date
			Revised on 11121122

JMA Johnson, LLC

July 25, 2023

PRE-DESIGN (STB) Mark Twain School for the Talented and Gifted

9. Electronic Submission

1. Flash drive with Pre-Design (STB) documents submittal in PDF for Dallas ISO - Construction Services Record file confirms availability for review 07/25/23.

2. JMA Johnson, LLC confirms submission to Bluebeam 03/15/23 with file Pre-Design (STB) Documents 2020 Bond AOM Tab 7 PD (Pre-Design STB)- Mark Twain School for the Talented and Gifted 07/25/23.

Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079



APPENDIX F LICENSES

Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079





Texas Department of State Health Services

TERRACON CONSULTANTS INC

is certified to perform as an

Asbestos Consultant Agency

in the State of Texas and is hereby governed by the rights, privileges and responsibilities set forth in Texas Occupations Code, Chapter 1954 and Title 12, Texas Administrative Code, Chapter 295 relating to Texas Asbestos Health Protection, as long as this license is not suspended or revoked.



License Number: 100157

Control Number: 97529

Jennifer Shuford, MD, MPH, Commissioner of Health

Expiration Date: 11/30/2024

(Void After Expiration Date)

VOID IF ALTERED NON-TRANSFERABLE

SEE BACK

Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079





Texas Department of State Health Services

CATES LABORATORIES INC

is certified to perform as an

Asbestos Laboratory

PCM, PLM

in the State of Texas and is hereby governed by the tights, privileges and responsibilities set forth in Texas Occupations Code, Chapter 1954 and Title 12, Texas Administrative Code, Chapter 295 relating to Texas Asbestos Health Protection, as long as this license is not suspended or revoked



License Number: 300287

Control Number: 96696

ennifer Shuford, MD, MPH, Commissioner of Health

VOID IF ALTERED NON-TRANSFERABLE



Expiration Date: 04/07/2025

(Void After Expiration Date)

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Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079





Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079

Fierracon

National Voluntary Laboratory Accreditation Program



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

Cates Laboratories, Inc. 1339 Motor Circle Dallas, TX 75207 Mr. John R. Cates Phone: 214-920-5006 Fax: 1-972-767-0167 Email: jrcates@cateslab.com http://www.cateslab.com

ASBESTOS FIBER ANALYSIS

NVLAP LAB CODE 200569-0

Bulk Asbestos Analysis

Code	Description
18/A01	EPA 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

For the National Voluntary Laboratory Accreditation Program

Effective 2023-04-01 through 2024-03-31

Page 1 of 1

Mark Twain School for the Gifted and Talented | 724 Green Cove Lane, Dallas, TX April 1, 2024 | Terracon Project No. 94237079





Texas Department of State Health Services

Asbestos Individual Consultant

ROGER L BEAHM JR License No. 105675 Control No. 98052 Expiration Date: 4-Jun-2024





Texas Department of State Health Services

Asbestos Inspector

DAVID A ACOSTA License Number: 602152 Control Number: 100734 Expiration Date: 1-Nov-2025





Texas Department of State Health Services

Asbestos Inspector

MICHAEL R MENDOZA License No. 600350 Control No. 100212 Expiration Date: 13-Feb-2024





GEOTECHNICAL EXPLORATION

RENOVATION – MARK TWAIN SCHOOL FOR THE TALENTED AND GIFTED (ORG 220)

724 Green Cove Lane Dallas, Texas ALPHA Report No. G231071 July 17, 2023

Prepared for:

DALLAS ISD 9400 N. Central Expressway, 8th Floor Dallas, Texas 75231 Attention: Mr. Robert Spicer

Prepared By:





Geotechnical Construction Materials Environmental TBPELS Firm No. 813 2209 Wisconsin Street Dallas, Texas 75229 Tel: 972.620.8911 Fax: 972.620.1302 www.alphatesting.com

July 17, 2023

Dallas ISD 9400 N. Central Expressway, 8th Floor Dallas, Texas 75231

Attention: Mr. Robert Spicer

Re: Geotechnical Exploration **Renovation – Mark Twain School for the Talented and Gifted (ORG 220)** 724 Green Cove Lane Dallas, Texas ALPHA Report No. G231071

Attached is the report of the geotechnical exploration performed for the referenced project. This study was authorized using Purchase Order No. 923478 dated May 15, 2023 and performed in accordance with ALPHA Proposal No. 96143-rev2 dated April 20, 2023.

This report contains results of field explorations and laboratory testing and an engineering interpretation of these with respect to available project characteristics. The results and analyses were used to develop recommendations to aid design and construction of foundations.

ALPHA TESTING, LLC. appreciates the opportunity to be of service on this project. If we can be of further assistance, such as providing materials testing services during construction, please contact our office.

Sincerely,

ALPHA TESTING, LLC.

Md. Rakib Hasan, E.I.T. Geotechnical Project Manager



Harsha R. Addula, P.E. Associate Principal



TABLE OF CONTENTS

ALPHA REPORT NO. G231071

1.0	PURP	OSE AND SCOPE	1
2.0	PROJI	ECT CHARACTERISTICS	1
3.0	FIELD	EXPLORATION	1
4.0	LABO	PRATORY TESTS	2
5.0	GENE	RAL SUBSURFACE CONDITIONS	2
6.0	DESIC	GN RECOMMENDATIONS	3
	6.1	Drilled Straight-Shaft Pier Foundation System (Vestibule/Canopy and Marque	e
		Sign)	3
	6.2	Floor System for Vestibule/Canopy	5
	6.3	Drilled and Underreamed Piers (Marquee Sign - Alternative)	6
	6.4	Flatwork	6
	6.5	Seismic Considerations	7
	6.6	Drainage and Other Considerations	7
7.0	GENE	RAL CONSTRUCTION PROCEDURES AND RECOMMENDATIONS	8
	7.1	Site Preparation and Grading	8
	7.2	Foundation Excavations	9
	7.3	Fill Compaction 1	1
	7.4	Utilities1	1
	7.5	Groundwater	2
8.0	LIMIT	TATIONS1	2

APPENDIX

- A-1 Methods of Field Exploration Boring Location Plan – Figure 1
- B-1 Methods of Laboratory Testing Logs of Borings Key to Soil Symbols and Classifications



1.0 PURPOSE AND SCOPE

The purpose of this geotechnical exploration is for ALPHA TESTING, LLC. (ALPHA) to evaluate for Dallas ISD (Client) some of the physical and engineering properties of subsurface materials at selected locations on the subject site with respect to formulation of appropriate geotechnical design parameters for the proposed construction. The field exploration was accomplished by securing subsurface samples from widely spaced test borings performed within the proposed new construction area. Engineering analyses were performed from results of the field exploration and results of laboratory tests performed on representative samples.

Also included are general comments pertaining to reasonably anticipated construction problems and recommendations concerning earthwork and quality control testing during construction. This information can be used to evaluate subsurface conditions and to aid in ascertaining construction meets project specifications.

Recommendations provided in this report were developed from information obtained in test borings depicting subsurface conditions only at the specific boring locations and at the particular time designated on the logs. Subsurface conditions at other locations may differ from those observed at boring locations, and subsurface conditions at boring locations may vary at different times of the year. The scope of work may not fully define the variability of subsurface materials and conditions that are present on the site.

The nature and extent of variations between borings may not become evident until construction. If significant variations then appear evident, our office should be contacted to re-evaluate our recommendations after performing on-site observations and possibly other tests.

2.0 PROJECT CHARACTERISTICS

The project site is located at 724 Green Cove Lane in Dallas, Texas. A site plan illustrating the general outline of the project is provided as Figure 1, the Boring Location Plan, in the Appendix. At the time of the field exploration, the project site consisted of an existing school building with a few trees and some grass covered areas. Cursory visual observations indicate the site is relatively level.

Present plans provide for construction of a marquee sign and a vestibule/canopy at the front entrance of the existing school building. It is anticipated the new structures will be supported with a drilled pier foundation system. Site grading information was not available at the time of this study. We have assumed cuts and fills of 1 ft or less will be required to establish final grades for the proposed new construction.

3.0 FIELD EXPLORATION

Using standard rotary drilling equipment, subsurface conditions on site were explored by drilling two (2) test borings in general accordance with ASTM D 420. The corresponding location and depth of each test boring are provided in Table A.



TABLE A					
Planned Construction	Boring No.	Boring Depth, ft			
Marquee Sign	1	30			
Vestibule/Canopy	2	30			

Subsurface types encountered during the field exploration are presented on Log of Boring sheets included in the Appendix. The boring logs contain our Field Technician's and Engineer's interpretation of conditions believed to exist between actual samples retrieved. Therefore, these boring logs contain both factual and interpretive information. Lines delineating subsurface strata on the boring logs are approximate and the actual transition between strata may be gradual.

4.0 LABORATORY TESTS

Selected samples of the subsurface materials were tested in the laboratory to evaluate their engineering properties as a basis in providing recommendations for foundation design and earthwork construction. A brief description of testing procedures used in the laboratory can be found in Methods of Laboratory Testing, Section B-1 of the Appendix. Individual test results are presented on Log of Boring sheets enclosed in the Appendix.

5.0 GENERAL SUBSURFACE CONDITIONS

Based on the Geologic Atlas of Texas from the Texas Bureau of Economic Geology, published by the University of Texas at Austin, the project site is mapped in the Austin Chalk formation. The Austin Chalk formation generally consists of massive gray unweathered limestone, overlain by tan weathered limestone. Residual overburden soils associated with Austin Chalk formation generally consist of clay soils with moderate to very high shrink/swell potential.

Within the 30-ft maximum depth explored on the site, subsurface materials generally consist of clay (CH) and calcareous clay (CL) underlain by shaly limestone (tan and gray) extended to the boring termination depths. Tan shaly limestone was encountered at 28 ft and 11 ft below existing grade in Borings 1 and 2, respectively. Gray shaly limestone was encountered at 29 ft and 23 ft below existing grade in Borings 1 and 2, respectively and extended to the boring termination depth of 30 ft. The letters in parenthesis represent the soils' classification according to the Unified Soil Classification System (ASTM D 2487). More detailed stratigraphic information is presented on the Log of Borings, attached in the Appendix.

Groundwater was not encountered while advancing the borings and in open bore holes immediately upon completion of the borings. These groundwater observations provide an indication of the groundwater conditions present at the time the borings were drilled. It is common to detect seasonal groundwater within the clayey matrix or near the soil/rock (shaly limestone) interface, or from fractures in the rock, particularly during or after periods of precipitation. Most of the subsurface materials are relatively impermeable and are anticipated to have a relatively slow response to water movement. Therefore, several days of observation will be required to evaluate actual groundwater levels within the depths explored. The groundwater level at the site is anticipated to fluctuate seasonally depending on the amount of rainfall, prevailing weather conditions and subsurface drainage characteristics. If more detailed groundwater information is required, monitoring wells or piezometers can be installed.



Further details concerning subsurface materials and conditions encountered can be obtained from the Log of Boring sheets provided in the Appendix.

6.0 **DESIGN RECOMMENDATIONS**

The following design recommendations were developed on the basis of the previously described Project Characteristics (Section 2.0) and General Subsurface Conditions (Section 5.0). If project criteria should change, including locations of the proposed structures on the site, our office should conduct a review to determine if modifications to the recommendations are required. Further, it is recommended our office be provided with a copy of the final plans and specifications for review prior to construction.

The design information given in this report was developed assuming final grades are established within 1 ft of existing grades as discussed in Section 2.0. Further cutting and filling on the site beyond that assumed might require modifications to the recommendations provided in this report. Therefore, it is recommended our office be contacted before performing other cutting and filling on site to verify the appropriate design parameters are utilized for final foundation design. A final grading plan should be provided for review.

Differential movements can occur between the existing structure and the proposed additions. Methods should be implemented to allow for possible differential performance between the foundation systems of the existing structure and the new addition. Preventative measures should also be taken in order not to damage the integrity of the existing foundation system, pavement and flatwork during construction of the facility.

6.1 <u>Drilled Straight-Shaft Pier Foundation System (Vestibule/Canopy and Marquee Sign)</u>

The proposed vestibule/canopy and marquee sign could be supported using a system of drilled, straight-shaft piers bearing in shaly limestone. Drilled, straight-shaft piers should bear at least 3 ft into the underlying tan shaly limestone or 2 ft into gray shaly limestone. Tan shaly limestone was encountered at 28 ft and 11 ft below existing grade in Borings 1 and 2, respectively. Gray shaly limestone was encountered at 29 ft and 23 ft below existing grade in Borings 1 and 2, respectively. Deeper penetrations will be required to develop skin friction and/or uplift resistance. The piers should have a minimum shaft length of 10 ft.

Based on the conditions encountered in the boring, the design values in Table B are recommended for design of drilled, straight-shaft pier foundations.



TABLE B Net Allowable End Bearing and Skin Friction Values						
Penetration into Bearing MaterialNet Allowable End Bearing (ksf)Skin Friction1 (ksf)Allowable Uplif Skin Friction1						
At least 3 ft Below the Surface of Tan Shaly Limestone and Upper 2 ft of Gray Shaly Limestone	30.0	4.5	3.6			
At least 2 ft Below the Surface of Gray Shaly Limestone	50.0	7.5	6.0			
¹ The skin friction values provided are applicable for the portion of the shaft below the bottom of any temporary casing used.						

The minimum clear spacing between piers should be at least two (2) pier shaft diameters to develop the full load carrying capacity from skin friction. Closer spacing will result in reduced skin friction resistance. The skin friction will vary linearly from the full value at a clear spacing of 2 diameters to 50 percent of the design value with no clear spacing.

The allowable bearing capacities provided in Table B contain a factor of safety of at least three (3) considering a general bearing capacity failure and the skin friction values and the allowable uplift skin friction have a factor of safety of at least two (2). Normal elastic settlement of piers under loading is estimated at less than about $\frac{1}{2}$ inches.

Each pier should be designed with sufficient full-length reinforcing steel and a sufficient embedment into the shale to resist the uplift pressure (soil-to-pier adhesion) due to potential soil swell along the shaft from post construction heave and other uplift forces applied by structural loadings. The magnitude of uplift adhesion due to soil swell along the pier shaft cannot be defined accurately and can vary according to the actual in-place moisture content of the soils during construction. It is estimated this uplift adhesion will not exceed about 2.0 ksf. This soil adhesion is approximated to act uniformly over the portion of the shaft situated within 12 ft of finished exterior grades. The uplift adhesion due to soil swell can be neglected over the portion of the shaft in contact with any shaly limestone.

All grade beams, tilt-wall panels and pier caps should be constructed with a minimum 10-inch void between the grade/tilt-wall panel/pier cap and the underlying clayey soils. Grade beams should be formed and not cast in earthen trenches. Commercially available cardboard box forms (cartons) are made for this purpose. The cardboard cartons should extend the full length and width of the grade beams. Prior to concrete placement, cartons should be inspected to verify they are firm, properly placed, and capable of supporting wet concrete. Some type of permanent soil retainer, such as pre-cast concrete panels, must be provided to prevent soils adjacent to grade beams/tilt-wall panels/pier caps from sloughing into the void space. Additionally, backfill soils placed adjacent to grade beams must be compacted as outlined in Section 7.3.

Lateral analysis for drilled piers can be performed using the following design parameters (L Pile) provided for the site subsurface materials in Table C. The lateral resistance of the upper 6 ft of the pier shafts in contact with the clay overburden soil should be neglected.



TABLE C Design Parameters For L-PILE					
Material	Native Clay Soils and Upper 3 ft of Tan Shaly Limestone	Tan Shaly Limestone Below a Minimum 3 ft of Penetration	Gray Shaly Limestone		
L-Pile p-y Model	Stiff clay	Weak rock	Weak rock		
Effective Unit Weight (γ), pci	0.069	0.079	0.081		
Undrained Cohesion (c), psi	5.2	-	-		
Rock Uniaxial Compressive Strength (q _u), psi	-	250	400		
Rock Mass Modulus (Er), psi	-	25,000	40,000		
Rock Quality Designation (RQD) ² , %	-	50-70	75-95		
Rock Strain Factor (k _{rm})	-	0.0001	0.00005		

¹The upper 6 ft of soil should be neglected due soil disturbance and seasonal moisture changes. ²Rock Quality Designation (RQD) is based on our area experience and the results of the field exploration.

6.2 Floor System for Vestibule/Canopy

Our findings indicate the soil-supported slabs for the structures constructed within 1 ft of existing grade could experience soil-related potential seasonal movements on the order of about 3 to 4 inches depending on the depth of shaly limestone as measured from final grades.

These potential seasonal movements were estimated in general accordance with methods outlined by Texas Department of Transportation (TxDOT) Test Method Tex-124-E, the results of swell tests, and engineering judgment and experience. Estimated movements were calculated assuming the moisture content of the in-situ soil within the normal zone of seasonal moisture content change varies between a "dry" condition and a "wet" condition as defined by Tex-124-E. Also, it was assumed a 1 psi surcharge load from the slab acts on the subgrade soils. Movements exceeding those predicted could occur if positive drainage of surface water is not maintained or if soils are subject to an outside water source, such as leakage from a utility line or subsurface moisture migration from off-site locations.

In view of these potential seasonal movements, the most positive floor system for the structures supported on piers is a system (slab) suspended completely above the existing expansive soils. At least 12 inches of void space should be provided between the bottom of the system (slab) and lowest suspended fixture and the top surface of the underlying expansive clays. Cardboard carton forms can be used to create the minimum void space. Provisions should be made for differential movement of utility lines, including areas where the utility penetrates through the grade beam and/or where the utility penetrates below grade areas.



6.3 Drilled and Underreamed Piers (Marquee Sign - Alternative)

As an alternative to the drilled straight-shaft piers, the proposed marquee sign could be supported using a system of drilled and underreamed piers. It is recommended these piers bear in the native clayey soils at a depth of about 18 ft below final grade.

Underreamed piers can be dimensioned using a net allowable end bearing pressure of 2.5 ksf with no skin friction component of resistance. The bearing capacity contains a factor of safety of at least 3 considering a general bearing capacity failure. Normal elastic settlement of piers under loading is estimated to be less than about 1 inch.

Some field adjustments in the depth of the piers may be required in some areas to maintain the bottom of the piers above any groundwater seepage that may be encountered near the bearing depths. Adjustments in the depths of the piers should be observed in the field by ALPHA personnel. In no case should the top of the bell extend into the injected or moisture-conditioned soils. **Test piers are recommended prior to construction to verify constructability of the underreams and to evaluate the groundwater conditions at the time of construction.** The test piers should be drilled near the planned pier location to verify constructability of the underreams. If underream collapse occurs during test pier drilling, we should be contacted for further recommendations. In the event drilled and underreamed piers cannot be installed due to the presence of groundwater, an alternate pier system such as helical piers or drilled, straight shaft piers could be considered.

Each pier should contain full length reinforcing steel and should be designed to resist the uplift pressure (soil-to-pier adhesion) due to potential soil swell along the shaft from post-construction heave and other uplift forces applied by structural loadings. The magnitude of uplift adhesion due to soil swell along the pier shaft cannot be defined accurately and can vary according to the actual in-place moisture content of the soils during construction. It is estimated this uplift adhesion will not exceed about 2.0 ksf. This soil adhesion is approximated to act uniformly over the portion of the pier shaft in contact with clayey soils within 12 ft of the final adjacent grade.

The uplift force due to swelling of active clays should be resisted by the underreamed portion of the pier. The underreamed portion should be at least two (2) and not exceeding three (3) times the diameter of the shaft. The minimum clear spacing between edges of adjacent piers should be at least one (1) underream diameter, based on the larger underream.

Lateral analysis for piers constructed at the site can be performed using the design parameters (L-Pile) provided for the site soils in Table C.

6.4 Flatwork

Flatwork will be subjected to potential soil-related seasonal movements on the order of about 3 to 4 inches as described in Section 6.2. In areas where flatwork movement is critical (such as, but not limited to, main entrances), flatwork should be structurally supported on drilled piers as recommended on Sections 6.1 and 6.3. As an alternative, subgrade improvements consisting of moisture conditioning or chemical injection could be considered to reduce movements to about 1 inch. Our office should be contacted for subgrade improvement recommendations if desired.



6.5 <u>Seismic Considerations</u>

The Site Class for seismic design is based on several factors that include soil profile (soil or rock), shear wave velocity, and strength, averaged over a depth of 100 ft. Since our borings did not extend to 100-foot depths, we based our determinations on the assumption that the subsurface materials below the bottom of the borings were similar to those encountered at the termination depth of the borings. Based on Section 1613.2.2 of the 2018 International Building Code and Table 20.3-1 in the 2010 ASCE-7, we recommend using Site Class C (very dense soil and soft rock) for seismic design at this site.

6.6 Drainage and Other Considerations

Adequate drainage should be provided to reduce seasonal variations in the moisture content of foundation soils. All pavement and sidewalks within 10 ft of the structure should be sloped away from the building to prevent ponding of water around the foundations. Final grades within 10 ft of the structure should be adjusted to slope away from the structure at a minimum slope of 2 percent. Maintaining positive surface drainage throughout the life of the structures is essential.

In areas with pavement or sidewalks adjacent to the structure, a positive seal must be maintained between the structure and the pavement or sidewalk to minimize seepage of water into the underlying supporting soils. Post-construction movement of pavement and flat-work is common. Normal maintenance should include examination of all joints in paving and sidewalks, etc. as well as re-sealing where necessary.

Several factors relate to civil and architectural design and/or maintenance, which can significantly affect future movements of the foundation and floor slab system:

- Preferably, a complete system of gutters and downspouts should carry runoff water a minimum of 5 feet from the completed structure or into a closed drainage system.
- Large trees and shrubs should not be allowed closer to the foundations than a horizontal distance equal to roughly their mature height due to their significant moisture demand upon maturing.
- Moisture conditions should be maintained "constant" around the edge of the slabs. Ponding of water in planters, in unpaved areas, and around joints in paving and sidewalks can cause slab movements beyond those predicted in this report.
- Planter box structures placed adjacent to the building should be provided with a means to assure concentrations of water are not available to the subsoil stratigraphy.

Trench backfill for utilities should be properly placed and compacted as outlined in Sections 7.3 and 7.4 and in accordance with requirements of local City standards. Since granular bedding backfill is used for most utility lines, the backfilled trench should not become a conduit and allow access for surface or subsurface water to travel toward the structures. Concrete cut-off collars or clay plugs should be provided where utility lines cross building lines to prevent water from traveling in the trench backfill and entering beneath the structure.



7.0 GENERAL CONSTRUCTION PROCEDURES AND RECOMMENDATIONS

Variations in subsurface conditions could be encountered during construction. To permit correlation between test boring data and actual subsurface conditions encountered during construction, it is recommended a registered Professional Engineering firm be retained to observe construction procedures and materials.

Some construction problems, particularly degree or magnitude, cannot be anticipated until the course of construction. The recommendations offered in the following paragraphs are intended not to limit or preclude other conceivable solutions, but rather to provide our observations based on our experience and understanding of the project characteristics and subsurface conditions encountered in the borings.

7.1 Site Preparation and Grading

Site preparation for the proposed project should include removing the existing site improvements (i.e. pavements, flatwork, foundation and utilities), vegetation, topsoil, and any other unsuitable surface materials from the areas of construction. Existing foundation elements should be removed or cut off at least 1 ft below finished grade or 1 ft below the new structural elements, whichever is deeper. Abandoned utility lines should be either removed or positively sealed to prevent possible water seepage into subgrade soils. Any soil disturbed due to removal of the existing site improvements should be re-compacted in accordance with recommendations provided in Section 7.3, as applicable.

All areas supporting the flatwork, pavement or areas to receive fill should be properly prepared.

- After completion of the necessary stripping, clearing, and excavating and prior to placing any required fill, the exposed subgrade should be carefully evaluated by probing and testing. Any undesirable material (organic material, wet, soft, or loose soil) still in place should be removed.
- The exposed subgrade should be further evaluated by proof-rolling with a heavy pneumatic tired roller, loaded dump truck or similar equipment weighing approximately 20 tons to check for pockets of soft or loose material hidden beneath a thin crust of possibly better soil.
- Proof-rolling procedures should be observed routinely by a Professional Engineer, or his designated representative. Any undesirable material (organic material, wet, soft, or loose soil) exposed during the proof-roll should be removed and replaced with well-compacted material as outlined in Section 7.3.
- Prior to placement of any fill, the exposed subgrade should then be scarified to a minimum depth of 6 inches and recompacted as outlined in Section 7.3.


If fill is to be placed on existing slopes (natural or constructed) steeper than six horizontal to one vertical (6:1), the fill materials should be benched into the existing slopes in such a manner as to provide a minimum bench-key width of five (5) ft. This should provide a good contact between the existing soils and fill materials, reduce potential sliding planes, and allow relatively horizontal lift placements.

Slope stability analysis of embankments (natural or constructed) was not within the scope of this study.

The contractor is responsible for designing any excavation slopes, temporary sheeting or shoring. Design of these structures should include any imposed surface surcharges. Construction site safety is the sole responsibility of the contractor, who shall also be solely responsible for the means, methods and sequencing of construction operations. The contractor should also be aware that slope height, slope inclination or excavation depths (including utility trench excavations) should in no case exceed those specified in local, state and/or federal safety regulations, such as OSHA Health and Safety Standard for Excavations, 29 CFR Part 1926, or successor regulations. Stockpiles should be placed well away from the edge of the excavation and their heights should be controlled so they do not surcharge the sides of the excavation. Surface drainage should be carefully controlled to prevent flow of water over the slopes and/or into the excavations. Construction slopes should be closely observed for signs of mass movement, including tension cracks near the crest or bulging at the toe. If potential stability problems are observed, a geotechnical engineer should be contacted immediately. Shoring, bracing or underpinning required for the project (if any) should be designed by a professional engineer registered in the State of Texas.

Due to the nature of the clayey soils found near the surface at the borings, traffic of heavy equipment (including heavy compaction equipment) may create pumping and general deterioration of shallow soils. Therefore, some construction difficulties should be anticipated during periods when these soils are saturated.

7.2 Foundation Excavations

All foundation excavations should be properly monitored to verify loose, soft, or otherwise undesirable materials are removed and foundations will bear on satisfactory material. Soil exposed in the base of all foundation excavations should be protected against detrimental change in condition, such as surface sloughing, side disturbance, rain, or excessive drying.

Surface runoff should be drained away from excavations and not allowed to pond in the bottom of the excavation. Concrete for foundations should be placed as soon as practical after the excavation is made. That is, the exposed foundation soils should not be allowed to become excessively dry or wet before placement of concrete. Drilled piers should be excavated and concrete placed the same day.

Prolonged exposure of the bearing surface to air or water will result in changes in strength and compressibility of the bearing stratum. Therefore, if delays occur, straight shaft drilled piers should be slightly widened and deepened to provide a fresh penetration surface, or a new (deeper) full penetration should be provided. Drilled and underreamed piers should be slightly deepened and cleaned in order to provide a fresh bearing surface.



All pier shafts should be at least 1/30th of the length of the pier or 1.5 ft in diameter, whichever is greater, for pier stability considerations, to facilitate clean-out of the base and for proper monitoring. Concrete placed in pier holes should be directed through a tremie, hopper, or equivalent. Placement of concrete should be vertical through the center of the shaft without hitting the sides of the pier or reinforcement to reduce the possibility of segregation of aggregates. Concrete placed in piers should have a minimum slump of 5 inches (but not greater than 7 inches) to avoid potential honey-combing.

Observations during pier drilling should include, but not necessarily be limited to, the following items:

- Verification of proper bearing strata and consistency of subsurface stratification with regard to boring logs,
- Confirmation the minimum required penetration into the bearing strata is achieved,
- Complete removal of cuttings from bottom of pier holes,
- Proper handling of any observed water seepage and sloughing of subsurface materials,
- No more than 2 inches of standing water should be permitted in the bottom of pier holes prior to placing concrete, and
- Verification of pier/pier shaft diameter, underream diameter, and steel reinforcement.

Groundwater was not encountered during the field explorations. However, from our experience, shallower groundwater seepage could be encountered during pier installation, and the risk of encountering seepage is increased during or after periods of precipitation. *Temporary casing may be anticipated to control groundwater seepage that could occur in the clayey matrix, near the interface of the overburden soil and rock (shaly limestone), or from fractures in the soil and rock.* Casing should be seated in the clays or shaly limestone below the depth of seepage, and all water and loosened material should be removed from the cased excavation before starting the design penetration. As casing is extracted, care should be taken to maintain a positive head of plastic concrete and minimize the potential for intrusion of water seepage. It is recommended a separate bid item be provided for casing on the contractors' bid schedule.

Groundwater can also occur within fractures in the bearing stratum for drilled, straight-shaft piers and this may require extending the casing and deepening the piers. From our experience with similar soil and rock conditions, sometimes groundwater cannot be controlled by the use of casing, and underwater placement of pier concrete may be required. Special mix designs are usually required for tremied or pumped concrete. Proper concreting procedures should include placement of concrete from the bottom to the top of the pier using a sealed tremie or pumped concrete. The tremie should be maintained at least 5 feet into the wet concrete during placement. It is recommended a separate bid item be provided for casing and underwater concrete placement on the contractor's bid schedule. Pier drilling contractors experienced in similar soil and groundwater conditions should be utilized for this project.



ALPHA should be contacted for further evaluations and recommendations if caving soils and/or groundwater seepage is encountered during straight shaft pier installation.

7.3 Fill Compaction

Clay soils used for general fill with a plasticity index equal to or greater than 25 should be compacted to a dry density between 93 and 98 percent of standard Proctor maximum dry density (ASTM D 698). The compacted moisture content of the clays during placement should be within the range of +2 to +6 percentage points of the material's optimum moisture.

Calcareous clay soils used for general fill with a plasticity index less than 25 should be compacted to a dry density of at least 95 percent of standard Proctor maximum dry density (ASTM D 698). The compacted moisture content of the clays during placement should be within the range of -1 to +3 percentage points of the material's optimum moisture.

Processed shaly limestone used as fill should be compacted to at least 95 percent of standard Proctor maximum dry density. The compacted moisture content of shaly limestone used as fill is not considered crucial to proper performance. However, if the material's moisture content during placement is within 3 percentage points of optimum, it will facilitate compaction. In general, processed shaly limestone used as fill should have a maximum particle size of 6 inches. However, any processed shaly limestone used as fill within 2 ft of the final grade in building pad areas should have a maximum particle size of 2 inches. Shaly limestone used as fill should incorporate sufficient fines to prevent the presence of voids around larger diameter rock pieces. A gradation of at least 40 percent passing a standard No. 4 sieve is recommended.

In cases where mass fills are more than 10 ft deep, the fill/backfill below 10 ft should be compacted to at least 100 percent of standard Proctor maximum dry density (ASTM D 698) and within -2 to +2 percentage points of the material's optimum moisture content. The portion of the fill/backfill shallower than 10 ft should be compacted as previously outlined.

Clay fill should be processed and the largest particle or clod should be less than 6 inches prior to compaction.

Compaction should be accomplished by placing fill in about 8-inch thick loose lifts and compacting each lift to at least the specified minimum dry density. Field density and moisture content tests should be performed on each lift.

Even if fill is properly compacted, fills in excess of about 10 ft are still subject to settlements over time of up to about 1 to 2 percent of the total fill thickness. This should be considered when designing areas with deep fill and/or wall backfill.

7.4 <u>Utilities</u>

In cases where utility lines are more than 10 ft deep, the fill/backfill below 10 ft should be compacted to at least 100 percent of standard Proctor maximum dry density (ASTM D 698) and within -2 to +2 percentage points of the material's optimum moisture content. The portion of the fill/backfill shallower than 10 ft should be compacted as previously outlined. Density tests should be performed on each lift (maximum 12-inch thickness) and should be performed as the trench is being backfilled.



Even if fill is properly compacted, fills in excess of about 10 ft are still subject to settlements over time of up to about 1 to 2 percent of the total fill thickness. This should be considered when designing pavements, flatwork, and other on-grade structures over utility lines and/or other areas with deep fill. If this potential for settlement is not acceptable, it may be necessary to backfill areas below 10 ft using flexible base material, low strength flowable fill or processed limestone. We should be contacted for further evaluation and recommendations.

If utility trenches or other excavations extend to or beyond a depth of 5 ft below construction grade, the contractor or others shall be required to develop an excavation safety plan to protect personnel entering the excavation or excavation vicinity. The collection of specific geotechnical data and the development of such a plan, which could include designs for sloping and benching or various types of temporary shoring, is beyond the scope of this study. Any such designs and safety plans shall be developed in accordance with current OSHA guidelines and other applicable industry standards.

7.5 Groundwater

Groundwater was not encountered during the field exploration. However, from our experience, groundwater could be encountered during excavation at this site for utilities, foundations, and other general excavations. The risk of encountering this seepage is increased during or after periods of precipitation. Standard sump pit and pumping procedures should be adequate to control seepage on a local basis for relatively shallow excavations.

In any areas where significant cuts are made to establish final grades at the site, attention should be given to possible seasonal water seepage that could occur through natural cracks and fissures in the newly exposed stratigraphy. From our experience, seasonal seepage could occur where shaly limestone is at or near the final site grade. Subsurface drains may be required in these areas to intercept seasonal groundwater seepage. The need for these or other de-watering devices should be carefully addressed during construction. Our office could be contacted to visually observe the final grade to evaluate the need for such drains.

8.0 LIMITATIONS

Professional services provided in this geotechnical exploration were performed, findings obtained, and recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. The scope of services provided herein does not include an environmental assessment of the site or investigation for the presence or absence of hazardous materials in the soil, surface water or groundwater. ALPHA, upon written request, can be retained to provide these services.

ALPHA is not responsible for conclusions, opinions or recommendations made by others based on this data. Information contained in this report is intended for the exclusive use of the Client (and their designated design representatives), and is related solely to design of the specific structures outlined in Section 2.0. No party other than the Client (and their designated design representatives) shall use or rely upon this report in any manner whatsoever unless such party shall have obtained ALPHA's written acceptance of such intended use. Any such third party using this report after obtaining ALPHA's written acceptance shall be bound by the limitations and limitations of liability contained herein, including ALPHA's liability being limited to the fee paid to it for this report. Recommendations presented in this report should not be used for design of



any other structures except those specifically described in this report. In all areas of this report in which ALPHA may provide additional services if requested to do so in writing, it is presumed that such requests have not been made if not evidenced by a written document accepted by ALPHA. Further, subsurface conditions can change with passage of time. Recommendations contained herein are not considered applicable for an extended period of time after the completion date of this report. It is recommended our office be contacted for a review of the contents of this report for construction commencing more than one (1) year after completion of this report. Non-compliance with any of these requirements by the Client or anyone else shall release ALPHA from any liability resulting from the use of, or reliance upon, this report.

Recommendations provided in this report are based on our understanding of information provided by the Client about characteristics of the project. If the Client notes any deviation from the facts about project characteristics, our office should be contacted immediately since this may materially alter the recommendations. Further, ALPHA is not responsible for damages resulting from workmanship of designers or contractors. It is recommended the Owner retain qualified personnel, such as a Geotechnical Engineering firm, to verify construction is performed in accordance with plans and specifications.



APPENDIX



A-1 METHODS OF FIELD EXPLORATION

Using standard rotary drilling equipment, two (2) test borings were performed for this geotechnical exploration at the approximate locations shown on the Boring Location Plan, Figure 1. The boring locations were established in the field using a handheld GPS device or by pacing or taping and estimating right angles from landmarks which could be identified in the field and as shown on the site plan provided during this study. The locations of the test borings shown on the Boring Location Plan are considered accurate only to the degree implied by the methods used to define them.

Relatively undisturbed samples of the cohesive subsurface materials were obtained by hydraulically pressing 3-inch O.D. thin-wall sampling tubes into the underlying soils at selected depths (ASTM D 1587). These samples were removed from the sampling tubes in the field and examined visually. One representative portion of each sample was sealed in a plastic bag for use in future visual examinations and possible testing in the laboratory.

The Texas Cone Penetration (TCP) test was used to assess the apparent in-place strength characteristics of the rock type materials. The TCP test consists of a 3-inch diameter steel cone driven by a 170-pound hammer dropped 24 inches (340 ft-pounds of energy) and is the basis for TxDOT strength correlations. Depending on the resistance (strength) of the materials, either the number of blows of the hammer required to provide 12 inches of penetration, or the inches of penetration of the cone due to 100 blows of the hammer are recorded on the field logs and are shown on the Log of Boring sheets as "TX Cone" (reference: TxDOT Test Method TEX 132-E).

Logs of the borings are included in the Appendix. The logs show visual descriptions of subsurface strata encountered using the Unified Soil Classification System. Sampling information, pertinent field data, and field observations are also included. Samples not consumed by testing will be retained in our laboratory for at least 14 days and then discarded unless the Client requests otherwise.





B-1 METHODS OF LABORATORY TESTING

Representative samples were examined and classified by a qualified member of the Geotechnical Division and the boring logs were edited as necessary. To aid in classifying the subsurface materials and to determine the general engineering characteristics, natural moisture content tests (ASTM D 2216), Atterberg-limit tests (ASTM D 4318), and dry unit weight determinations were performed on selected samples. In addition, unconfined compression strength tests (ASTM D 2166) and pocket-penetrometer tests were conducted on selected soil samples to evaluate the soil shear strength. Results of all laboratory tests previously described are provided on the accompanying Log of Boring sheets.

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WHERE IT ALL BEGINS

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BORING NO .: Sheet 1 of 1

PROJECT NO .: G231071

1

c	Client: Dallas ISD Location: Dallas, TX																
F	rojec	t: <u> </u>	Renovation - Mark	Twain School for the "	Talented and	d Gifted (ORG 220) Surface Elevation:									_		
د 1	tart L rilline	ate: a Method:	0/18/2023	CONTINUOUS FLIG	HT AUGER	10/2	025			Nor Nor	st: th:						-
_		·····								Har	nmer	Drop	(lbs /	in):	170	/ 24	
Depth, feet	Graphic Log		GROUND WAT	ER OBSERVATIONS NONE ft): DRY urs (ft): DESCRIPTION		Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft, in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (tsf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Swell, %
		Brown CL	AY with calcareous	nodules					3 25								
									0.20								
									4.5				31				
_ 5 _					6.0				4.5				25				
		Tan CALC	CAREOUS CLAY		0.0				4.5+	1.9		103	21	45	18	27	
									2.5				18				
10																	
									2.25				22				
15 																	
									1.25	0.9		104	23				
20 																	
 25									2.0				23				
		Tan SHAI	YLIMESTONE		28.0												
		Grav SHA	LY LIMESTONE		29.0			100/									
30		TEST BO		D AT 30 FT	30.0			7″									

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BORING NO.: 2 Sheet 1 of 1

PROJECT NO .: G231071

Client:			Dallas ISD						Location: Dallas, TX						_		
Project: Start Date:			Renovation - Mark Twain School for the Talented and Gifted (ORG 220) 6/19/2023 End Date: 6/19/2023						Surface Elevation: West:						-		
Drilling Method: CONTINUOUS FLIGHT AUGER N							Nor	th:									
	Hammer Drop (lbs / in):170								170	/ 24	_						
Depth, feet	Graphic Log		GROUND WA	TER OBSERVATION NONE (ft): urs (ft): DESCRIPTION	IS 	Sample Type	Recovery % RQD	TX Cone or Std. Pen. (blows/ft, in)	Pocket Penetrometer (tsf)	Unconfined Comp. Strength (Isf)	% Passing No. 200 Sieve	Unit Dry Weight (pcf)	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index	Swell, %
		Brown Cl	AY with calcareou	s nodules					0.05				22				
									3.23				33				
									4.5				27				
5									4.0	2.1		104	23	56	23	33	
									3.75				22				
									4.5+				21				
	///				11.0												
		Tan SHA	LY LIMESTONE														
 15								100/ 1.25"									
								100/ 1"									
					23.0												
		Gray SH/	ALY LIMESTONE														
25								100/ 0.5"									
30					30.0			100/ 0.5"									
 		TEST BC	DRING TERMINATE	ED AT 30 FT													

ALPHA 🥂 TESTING WHERE IT ALL BEGINS

KEY TO SOIL SYMBOLS AND CLASSIFICATIONS



RELATIVE DENSITY OF COHESIONLESS SOILS (blows/ft)

VERY LOOSE 0 TO 4 LOOSE 5 TO 10 MEDIUM 11 TO 30 DENSE 31 TO 50 VERY DENSE OVER 50

SHEAR STRENGTH OF COHESIVE SOILS (tsf)

VERY SOFT	LESS ⁻	THAN	0.25
SOFT	0.25	то	0.50
FIRM	0.50	TO	1.00
STIFF	1.00	ТО	2.00
VERY STIFF	2.00	то	4.00
HARD	OVE	R	4.00

RELATIVE DEGREE OF PLASTICITY (PI)

LOW	4 TO	15
MEDIUM	16 TO	25
HIGH	26 TO	35
VERY HIGH	OVER	35

RELATIVE PROPORTIONS (%)

1	TO	10
11	ТО	20
21	то	35
36	то	50
	1 11 21 36	1 TO 11 TO 21 TO 36 TO

SAMPLING SYMBOLS

SHELBY TUBE (3" OD except where noted otherwise)

SPLIT SPOON (2" OD except where noted otherwise) AUGER SAMPLE

TEXAS CONE PENETRATION

ROCK CORE (2" ID except where noted otherwise)

PARTICLE SIZE IDENTIFICATION (DIAMETER)

BOULDERS COBBLES COARSE GRAVEL FINE GRAVEL COURSE SAND MEDIUM SAND FINE SAND SILT CLAY

8.0" OR LARGER 3.0" TO 8.0" 0.75" TO 3.0" 5.0 mm TO 3.0" 2.0 mm TO 5.0 mm 0.4 mm TO 5.0 mm 0.07 mm TO 0.4 mm 0.002 mm TO 0.07 mm LESS THAN 0.002 mm

DALLAS INDEPENDENT SCHOOL DISTRICT **CONSTRUCTION SERVICES**

Project Manual

VOLUME 2 OF 3

CSP # 207459

ORG 220 – Mark Twain School for the Talented and Gifted – RENOVATION **100% Construction Drawings**



A/E FIRM JMA Johnson, LLC

Sims Engineering Charles Gojer & Associates, Inc. Structural Engineering Simon Engineering Riddle & Goodnight, Inc. Cedrick Frank & Associates

MEP Engineering Civil Engineering Cost Estimator Access Monitoring

August 16, 2024

Volume 2 of 3 100% CONSTRUCTION DOCUMENTS PHASE

Division 0

- 00 01 00 Project Manual Cover
- 00 01 01 Project Title Page
- 00 01 07 Seals Page
- 00 01 10 Table of Contents
- 00 01 15 List of Drawing Sheets
- 00 11 13 Advertisement for CSP

Proposal Requirements

- 00 11 17 Intention to Propose Form
- 00 21 13 Instructions to Proposers

Project Information

- 00 31 00 Available Project Information
- 00 31 18 School Operation Parameters Statement

Proposal Documents

- 00 41 10 Overall Proposal Packaging Checklist
- 00 41 11 (a) Escalation Document Final_
- 00 41 11 (Part 1-A) Proposal Form Base Bid
- 00 41 12 (Part 1-C) Proposal Form Alternates & Unit Pricing
- 00 41 13 (Part 1-B) Technical Proposal Form
- 00 43 13 (Part 1-A) Proposal Guarantee Bond
- 00 43 43 Prevailing Wage Rates Schedule
- 00 45 00 DISD Required Forms Combined
- 00 45 20 (Part 1-A) Certificate of Non-Discrimination
- 00 45 22 (Part 1-A) Notification of Hazardous Materials
- 00 45 23 (Part 1-A) Family Conflict of Interest Questionnaire
- 00 45 39 (Part 2) a. COVERSHEET FOR MWBE
- 00 45 39 (Part 2) c. Dallas ISD Master Joint Venture Agreement

Contract Forms

- 00 52 10 a. COVERSHEET FOR
- 00 52 10 b. A101 DISD
- 00 52 11 a. COVERSHEET FOR A201
- 00 52 11 b. A201 DISD
- 00 55 00 Notice to Proceed Forms
- 00 61 13 Performance Bond Form
- 00 61 16 Payment Bond Form
- 00 73 19 a. COVERSHEET FOR SAFETY MANUAL
- 00 73 19 b. Dallas USD Construction Minimum Safety Program Guidelines
- 00 73 19 c. 2020 Bond Badging Procedures GCProfSvcsandSUBS

Division 1

General Requirements

- 01 10 00 Summary of Work
- 01 25 00 Substitution Procedures
- 01 23 00 Alternates
- 01 29 00 Payment Procedures
- 01 29 73 Schedule of Values
- 01 31 00 Project Management and Coordination

Dallas ISD Construction Services

- 01 32 00 Construction Progress Documentation
- 01 32 16 Construction Progress Schedule
- 01 32 33 Photographic Documentation
- 01 33 00 Submittal Procedures
- 01 35 43 EPA Lead-Based Paint Renovation, Repair, and Painting Program
- 01 40 00 Quality Requirements
- 01 42 00 References
- 01 45 23 Testing Adjusting and Balancing for HVAC (updated 1-28-2020 Final)
- 01 50 00 Temporary Facilities and Controls
- 01 52 14 Temporary Facilities for Students
- 01 60 00 Product Requirements
- 01 73 00 Execution
- 01 74 19 Construction Waste Management and Disposal
- 01 77 00 Closeout Procedures & Checklist
- 01 78 23 Operation and Maintenance Data
- 01 78 39 Project As-Builts & Record Documents
- 01 79 00 Demonstration and Training
- 01 91 00 General Cx Requirements (1-28-20 Final)
- 01 92 00 Hazmat Report–Terragon Asbestos Survey Report Project 94237079, April 1, 2024.
- 01 93 00 Geotechnical Report-Alpha Testing-Org 220 Mark Twain School for the Gifted and Talented Renovation, July 17, 2023.

Existing Conditions

- 02 01 50 Selective Demolition
- 02 20 00 Site Preparation
- 02 22 00 Site Demolition

Division 3

Concrete

- 03 10 00 Concrete Formwork and Accessories
- 03 20 00 Concrete Reinforcement
- 03 30 00 Cast In-Place Concrete

Division 4

Masonry

- 04 05 11 Masonry Mortar and Grout
- 04 20 00 Concrete Unit Masonry
- 04 20 01 Brick Veneer Masonry
- 04 72 00 Cast Stone Masonry

Metals

- 05 12 00Structural Steel05 50 00Metal Fabrications
- 05 52 13 Pipe and Tube Railings

Division 6

Division 5

Wood, Plastics, and Composites

- 06 10 00 Rough Carpentry
- 06 20 00 Finish Carpentry/Millwork
- 06 41 00 Plastic Laminate Clad Cabinets

Thermal and Moisture Protection

07 19 00 Water Repellents

Division 8

Openings

- 08 11 13 Hollow Metal Doors, Frames and Windows
- 08 14 16 Flush Wood Doors
- 08 31 00 Access Doors and Panels
- 08 43 13 Aluminum Framed Storefronts and Windows
- 08 70 11 Door Hardware
- 08 80 00 Glazing

Division 9

Finishes

09 21 16 Gypsum Board Assemblies

- 09 22 16 Non-Structural Metal Framing
- 09 22.36 Metal Lath
- 09 24 00 Portland Cement Plastering
- 09 30 00 Tiling
- 09 30 16 Quarry Tile Flooring
- 09 50 00 Acoustical Ceilings
- 09 64 00 Resilient Flooring
- 09 68 13 Tile Carpeting
- 09 90 00 Paints and Coatings

Division 10

Specialties

- 10 11 01 Visual Display Boards
- 10 14 00 Signage
- 10 14 63 Marquee Sign
- 10 21 23 Cubicle Curtains
- 10 26 01 Wall and Corner Guards
- 10 28 00 Toilet Accessories
- 10 75 00 Flagpoles

Division 11 – "NOT USED"

Division 12

Furnishings

- 12 24 13 Roller Window Shades
- 12 30 00 Millwork
- 12 36 00 Countertops

Divisions 13 – 20 "NOT USED"

Division 21

Fire Suppression

- 21 05 00 Common Work Results for Fire Suppression
- 21 13 00 Fire Suppression Sprinklers

Plumbing

- 22 05 53 Identification for Plumbing Piping and Equipment
- 22 07 19 Plumbing Piping Insulation
- 22 08 00 Commissioning of Plumbing Systems
- 22 10 05 Plumbing Piping
- 22 10 06 Plumbing Piping Specialties
- 22 11 16 Domestic Water Piping
- 22 42 00 Plumbing Fixtures

Division 23

Heating, Ventilating, and Air-Conditioning (HVAC)

- 23 00 10 Basic Mechanical Requirements
- 23 05 00 Common Work Results For HVAC
- 23 05 13 Common Motor Requirements for HVAC Equipment
- 23 05 29 Hangers and Supports for HVAC Piping and Equipment
- 23 05 53 Mechanical Identification
- 23 07 13 Duct Insulation
- 23 08 00 Commissioning of HVAC Systems
- 23 09 00 Instrumentation and Control for HVAC
- 23 21 13 Hydronic Piping
- 23 21 23 Hydronic Pumps
- 23 25 00 HVAC Water Treatment
- 23 31 00 HVAC Ducts and Casing
- 23 33 00 Air Duct Accessories
- 23 34 26 Centrifugal HVAC Fans
- 23 36 00 Air Terminal Units HW Heat
- 23 37 00 Air Outlets and Inlets
- 23 74 13 Modular Outdoor Air Handling Units
- 23 81 26 Mini-Split-System Air Conditioners

Divisions 24 – 25 "NOT USED"

Division 26

Electrical

- 26 05 00 Common Work Results for Electrical
- 26 05 19 Low-Voltage Electrical Power Conductors and Cables
- 26 05 26 Grounding and Bonding for Electrical Systems
- 26 05 29 Hangers and Supports for Electrical Systems
- 26 05 34 Raceways
- 26 05 37 Boxes
- 26 05 53 Identification for Electrical Systems
- 26 08 00 Commissioning of Electrical Systems
- 26 09 23 Lighting Control Devices
- 26 24 16 Panel Boards
- 26 27 26 Wiring Devices
- 26 28 13 Fuses
- 26 28 18 Enclosed Switches
- 26 51 00 Exterior Lighting
- 26 56 00 Exterior Fixtures

Communications

27 05 00	Common Work results for Communications
27 15 01	Premise Wiring Guide
27 51 23	Ip Integrated Electronic Communications Network

Division 28

Electronic Safety and Security

- 28 05 00 Common Work Results for Electronic Safety and Security
- 28 20 00 Electronic Surveillance
- 28 31 00 Fire Detection and Alarm

Divisions 29 – 30 "NOT USED"

Division 31

Earth Moving

- 31 10 00 Site Clearing
- 31 23 34 Excavation and Backfill for Conduits
- 31 25 00 Erosion and Sedimentation Controls
- 31 63 29 Drilled Piers

Division 32

Landscaping

- 32 12 30Flexible Base (Crushed Stone)32 13 14Sidewalks32 16 00Concrete Curbs and Gutters32 17 22Devenser Marking
- 32 17 23 Pavement Marking

Division 33 – "NOT USED"

Miscellaneous Reports – For Information Only

Alpha Testing – Geotechnical Exploration – Mark Twain School for the Talented and Gifted, Org 220, 724 Green Cove Lane, Dallas, Texas - Alpha Report No G231071, Dated July 17, 2023.

Terracon-Path-of-Construction Asbestos Survey Report, Mark Twain School for the Talented and Gifted, 724 Green Cove Lane, Dallas, Texas, Project Number 94237079, Dated April 1, 2024.

END OF CONTENTS

SECTION 02 01 50 - SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

- A. This section includes provisions for renovation and alterations to existing facility.
- B. Related Documents: Drawings and general provisions of Contract, including Dallas ISD Contracting Requirements and Division 1 Sections apply to this Section
- C. Coordination of Work: All Work shall be closely coordinated with security and contracting requirements established by the Dallas Independent School District

1.02 QUALITY ASSURANCE

- A. Products and materials required for renovation and alterations to existing facility shall not contain lead, asbestos, polychlorinated biphenyls (PCB) or other types of hazardous materials.
- B. Manufacturer & Installer Qualifications: Refer to applicable sections of Project Manual for work of this section.
- C. Drawings and Project Manual may not show all demolition work required to perform the necessary alteration work required for compliance with Contract Documents.
 - 1. Contract Documents do not define products or standards of workmanship in existing construction. Quality and type of existing materials shall be determined by inspection or testing.
 - 2. Information on the Drawings showing existing conditions does not constitute a guarantee that other items may not be found or encountered.
 - 3. Existing construction shall be removed as required to meet Contract Documents.
 - 4. Work shall be performed by skilled workers thoroughly experienced in the necessary crafts required to meet the requirements of this section and Contract Documents, in compliance with Owner's insurance underwriters' requirements, and UL Approvals and Testing for materials, assemblies and procedures.
 - 5. Alteration work shall be performed to cause as little inconvenience to adjacent occupied building areas as possible
 - 6. Contractor shall assume responsibility of existing facility after alteration work is started.
 - 7. Condition of existing structure and site will be maintained by Owner up to the time the Work of this Project is started.
 - 8. Report to Architect for adjustments of discrepancies between Contract Documents, and existing site and building conditions.
- D. Site Visit: Prior to submitting bid, inspect existing conditions including access to site, type of building construction, objects and materials to be encountered, all other conditions concerning or affecting the Work for compliance with Contract Documents.

1.03 SUBMITTALS

- A. Texas CHPS Submittals: For products having recycled content, documentation indicating percentages by weight of pre-consumer and post-consumer recycled content. Include statement including the cost for each product having recycled content.
- B. Manufacturer's Product Data: Submit in accordance with Section 01 33 00 to indicate:

- 1. All technical information clearly marked to describe full compliance with requirements of this section and Contract Documents, including manufacturers published installation recommendations.
- C. Coordinate with applicable sections for specific products.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Materials shall be delivered, stored and handled in accordance with Sections 01610 and 01620, and manufacturer's recommendations.
- B. Materials shall be delivered in manufacturer's original, unopened containers bearing the foomanufacturer's name and label.

1.05 WARRANTY

- A. General: Warranty for selective demolition work shall not deprive Owner of other rights the Owner may have under other provisions of the Contract Documents. Selective demolition warranty shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty for selective demolition work shall be in compliance with Section 01 73 00.

PART 2 PRODUCTS

2.01 SALVAGED MATERIALS AND PRODUCTS

- A. Materials & Products Not for Construction: Salvaged materials and/or products scheduled to remain the property of the Owner which will not be used as part of alteration work shall be coordinated with Owner to determine a place of storage.
- B. Materials & Products for Construction: Salvaged materials and/or products permitted for use with new construction shall be closely coordinated with Contract Documents, Architect's design requirements and Owner's requirements.
 - 1. Do not use salvaged materials and products in new construction unless indicated in Contract Documents or permitted by Architect.
 - 2. Do not use damaged, soiled or otherwise unsound salvaged material and products.
- C. Storage: Store salvaged materials and products in a dry, secure place on Project site.

2.02 NEW MATERIALS AND PRODUCTS

A. Provide new materials and products for alteration work as required for compliance with Contract Documents. Refer to applicable sections of the Project Manual for work of this section and substitution requirements.

PART 3 EXECUTION

3.01 PREPARATION

- A. General: Examine Project conditions for compliance with requirements for installation tolerances and other conditions affecting the installation and performance of the Work.
- B. Unsatisfactory conditions shall be reported in writing to Architect. Do not proceed with renovation work until unsatisfactory conditions detrimental to the proper completion of the Work have been corrected and reviewed with Architect
 - 1. Beginning of renovation work implies General Contractor has inspected and accept the substrate and Project conditions as being properly prepared for compliance with Contract Documents.

C. Hazardous Material: Products, materials and methods used in the renovation work shall be free of lead, asbestos, PCB or other types of hazardous materials.

3.02 PROTECTION

- A. Provide, erect and maintain temporary barriers, barricades, pedestrian and traffic control and security devices as required to protect workers and the public in accordance with applicable rules and regulations.
 - 1. Erect and maintain weatherproof closures for exterior openings.
 - 2. Protect the aesthetic and structural integrity of existing materials and items which are not scheduled to be altered.
 - 3. Items scheduled for reinstallation shall be carefully removed, stored and protected.
 - 4. Items to be retained by Owner shall be delivered and stored where directed by Owner.
- B. Prevent movement and settlement of existing structure.
- C. In addition to alterations required to meet Contract Documents, the following are required:
 - 1. Repair or removal of hazardous or unsanitary conditions.
 - 2. Remove abandoned items and items serving no useful purpose, such as abandoned piping, conduit and wiring.
 - 3. Remove unsuitable or extraneous materials not marked for salvage, such as abandoned equipment, and debris such as rotted wood, rusted metals and deteriorated concrete.
 - 4. Clean surfaces, and remove surface finishes as required to install new work and finishes, and cleaning of surfaces of items scheduled to remain.

3.03 UTILITIES AND FIRE PROTCTION SYSTEMS

- A. Each type of existing utility service located within alteration area which is not designated in Contract Documents to be disconnected and/or removed, including Fire Protection System, shall remain in full operation as part of Contractor's cost and responsibility.
 - 1. "Re-routing" work to maintain full operation shall be Contractor's cost and responsibility.
 - 2. Mark the locations of disconnected utilities on the site; clearly identify capping locations on Project Record Documents.
 - 3. Coordinate selective demolition work with Owner's Representative to allow uninterrupted services.
- B. Unidentified Utilities: Before proceeding with alteration work, notify Architect of unidentified utilities within alteration areas.

3.04 FIRE AND SMOKE RATINGS

- A. Perform patching to restore and to maintain the integrity of floor and ceiling assemblies, roof and ceiling assemblies and walls indicated to have a required fire or smoke rating.
- B. Where walls, partitions and ceilings are required to have a smoke or fire rating, run continuous through concealed spaces and seal tightly against any penetrations of pipes, ducts, conduits, or other building components.
 - 1. Use firestopping materials which meet or exceed the required ratings.
- C. Patch cracks, holes or other defects required to achieve the smoke or fire rating.

3.05 STRUCTURAL WORK

- A. Perform alterations to structural system of existing building only as indicated inContract Documents.
 - 1. If alterations to structural system is required but not specifically documented, notify Architect for a written authorization before performing alterations.

- 2. Do not perform alterations to structural system beyond Contract Document requirements without Architect/Structural Engineer's written approval.
- B. If existing structure appears to be endangered, cease operations and notify Architect immediately.
- C. Replacement, repair or modification of structural system affected by cutting and patching work shall be performed in a manner to preserve the aesthetic and structural integrity of materials and construction as part of Contractor's cost and responsibility.

3.06 CUTTING AND PATCHING WORK

- A. Perform cutting and patching work in compliance with the applicable requirements of the technical specifications sections of this Project Manual covering the work to be performed.
- B. Existing conditions, installations and obstructions affecting the work are part of Contract Document requirements as though they were completely shown or described in the Documents.
- C. The removal, cutting, replacement and/or patching of existing walls, partitions, and floors as may be required for access to structure, valves, piping, conduit and tubing by mechanical and electrical trades shall be included and performed as an obligation of, and as directed by the Contractor and approved by Architect.
- D. Deteriorated Conditions: When existing work is removed and deteriorated structure or systems are exposed, report these conditions
 - 1. Do not cover deteriorated conditions until procedures have been determined and approved by the Architect.
 - 2. If procedures are not immediately determined and approved, provide temporary closures for protection from further deterioration.
 - 3. Deteriorated conditions which could not be foreseen during the bidding period, shall be documented and submitted to Architect.
- E. Cut finish surfaces such as masonry, tile, plaster or metals, using methods which will terminate surfaces in a straight line at a natural point of division.
- F. Adjustments: Where partitions and other construction are removed, patch floors, walls, and ceilings with finish materials to match existing.
 - 1. Where removal of partitions results in adjacent spaces becoming one, rework floors and ceilings to provide smooth planes without breaks, steps, or bulkheads.
 - 2. Where extreme change of plane of 2" or more occurs, notify Architect to establish a decision.
- G. Patch Work: Except where otherwise specifically indicated as a definite change, finish materials and appearance of new patch work shall match existing contiguous materials and finishes in all respects.
 - 1. Patch work shall match existing adjacent work in texture and appearance so that the transition of existing work to new work is not visible.
- H. Concrete Work: Edges of existing concrete shall be kept damp for 24 hours and scrubbed with neat portland cement grout just before new concrete is placed. Instead of using a portland cement grout, an approved epoxy concrete adhesive may be used.
 - 1. Finish: Shall match existing adjoining work.
 - 2. Concrete for Patch Work: 3,000 psi at 28 days, unless otherwise approved.

- 3. Reinforcing Bars and Dowels: Shall be provided where required. Where installation of concrete is not practical, openings shall be filled with dry packed non-shrink epoxy grout in accordance with manufacturer's published instructions.
- Transition Work: Where new work abuts or finishes flush with existing work, make a smooth Ι. transition.
 - 1. Cut existing finished surfaces to achieve a smooth transition with new work.
 - 2. If existing finished surfaces cannot be cut in a smooth transition with new work, terminate existing surfaces in a neat straight line and cover with a trim appropriate to finished surface.

3.07 PAINTED SURFACES

- A. Painted surfaces of existing conditions which are required to be repainted shall be prepared and painted in accordance with paint manufacturer's published instructions and Section 09910.
 - 1. Bare areas and patches in existing painted surfaces shall be sanded smooth and flush with adjoining surfaces, and primed.

3.08 RESTORATION WORK

- A. Repair alterations performed in excess of that required, at no additional cost to Owner.
 - 1. Leave existing facility in as good condition as existed before commencement of alteration work.
 - 2. Materials and workmanship used in restoring the work shall conform in type and quality to that of original existing construction, except where otherwise shown or specified.
- B. Damaged Surfaces: Patch and replace any portion of an existing finished surface which is found to be damaged, lifted, discolored, or shows other imperfections, with matching material.
 - 1. Provide adequate support of substrate prior to patching the finish.
 - 2. Refinish patched areas of painted or coated surfaces in a manner to produce uniform color and texture over entire surface.
 - 3. When existing surface finish cannot be matched, refinish entire surface to nearest intersections, as approved by Architect.

3.09 REMOVAL OF MATERIALS

- A. Except where noted otherwise, immediately remove demolished materials from site as the Work progresses.
 - 1. Remove and legally dispose of contaminated, vermin infested, or dangerous materials encountered.
 - 2. Do not burn or bury materials on Project site.
- B. Upon completion of the selective demolition work, leave work areas in clean condition.

END OF SECTION 02 01 50

SECTION 02 20 00 - SITE PREPARATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Furnishing of all labor, tools, equipment and incidentals required to complete the work.
- B. Layout of work.
- C. Topsoil stripping.
- D. General site excavation.
- E. Removing below-grade improvements.

1.2. RELATED SECTIONS:

A. Section 02 30 00 - Earthwork

1.3 REFERENCED STANDARDS:

Meet requirements and recommendations of applicable portions of Standards listed.

- A. ASTM D698 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 lb/ft;).
- B. ASTM D4972 pH of Soil
- C. ASTM G57 Field Measurement of Soil Resistivity Using the Wenner Four Electrode Method.
- D. ASTM D4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- E. Texas Department of Transportation Standard Specifications of Construction of Highways, Streets, and Bridges, 1993, TxDOT.
- F. North Central Texas Council of Governments Standard Specifications for Public Works Construction, 1991, Edition, NCTCOG.

1.4 SUBMITTALS:

- A. Samples:
 - 1. Provide adequate samples for determination of moisture density relationships and Plasticity Index (P.I.) Of on-site materials, imported fill material and drainage aggregate.
- B. Tests Reports: Submit complete laboratory analysis of soil material proposed for fill material.
 - Establish moisture density relationship of in-place sub-grade in accordance with ASTM D-698.
 Establish moisture density relationship of proposed select fill(s) material in accordance with ASTM D-698.
 - Perform PI test on proposed select fill material to confirm conformance with the project specifications in accordance with ASTM D-4318.
- 1.5 JOB CONDITIONS:
 - A. Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walk, and other adjacent occupied or used facilities. Do not close or obstruct streets, walk or other occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from the Architect.
 - B. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING: The designated area shall be cleared of all trees, brush, shrubbery, plants, etc., not indicated on the plans to be preserved.

3.2 GENERAL SITE EXCAVATION

- A. Perform the necessary cutting of the site to establish the grade indicated on the Site Plan. Cutting shall be sufficiently deep to allow for fill materials to be placed on top of cut area with the finish top soil or paving material to attain the final finish grades.
- B. After acceptance of exposed cut surfaces by the Testing Laboratory, the exposed surface shall be proof-rolled. Soft, loose areas shall be removed to a level of stiff or dense soil. Backfill with acceptable select fill, moisture condition and compact as required by these specifications and the plans.
- C. Areas designated for planting or within the limit of construction not covered by building or pavements shall be held down 6" below finish grade for topsoil placement.
- D. General Demolition: Shall consist of removal and disposal of obstructions visible at the ground surface,. Remove all such excavated materials from site.
- E. Unauthorized Excavation: Consists of removal of materials beyond indicated subgrade elevations or dimensions without prior approval by Architect. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending the indicated bottom elevation of the footing or base to the excavation bottom, without altering required top elevation. Backfill and compact unauthorized excavations as specified for authorized excavations of same classification.

3.3 BACKFILL AND FILL - GENERAL:

- A. Surface Preparation for Fill: Scarify soil to a depth of 6", moisture condition the soil at optimum moisture. Compact to 95% of Standard Proctor at moisture contents at or above the Proctor optimum.
- B. Backfill and Fill: Place backfill and Select Fill materials in 8" loose lift. Before compaction, bring soil to optimum moisture. Compact each layer to required percentage of maximum density for each area of classification. Do not place backfill or fill material on surfaces that are muddy or frozen.
- 3.4 GRADING: Uniformly grade all areas including adjacent transition areas and at all miscellaneous ground structures, curbs and walks, grade surrounding area uniformly to top of curb, walk or structure unless shown otherwise.
 - A. Finish Grading: Grade area adjacent to building lines to drain away from structures and to prevent ponding. Finish surfaces to be free from irregular surface changes.
 - B. Topsoil: Where areas are designated as planting, hold down subgrade 6". Fill with topsoil to required finish grade or to top of surrounding ground structure. Top soil shall be placed to a depth of 6", spread and hand raked to required finish grades. Top soil shall be placed over all fill areas, areas designated as planting and all areas not covered by building or pavement included in this contract. Coordinate topsoil placement and requirements with landscape work.

3.5 MAINTENANCE:

- A. Protect newly graded areas from traffic and erosion and keep free of trash and debris.
- B. Repair and re-establish grades in settled, eroded and rutted areas to required finish elevations.
- C. When completed, compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, reshape and compact to the required density prior to further construction.

3.6 FIELD QUALITY CONTROL :

Mark Twain School for the Talented and Gifted Org # 220 Dallas ISD Construction Services

- A. Perform in-place density tests on each lift of compacted subgrade or fill in accordance with ASTM D-698 at the rate of one test per 2,500 sf.
- 3.7 DISPOSAL OF SPOILAGE AND CLEANOUT :
 - A. All materials excavated or scheduled to be removed from the site, including, but not limited to concrete paving, asphalt paving, natural soils, abandoned utilities, rock, etc. shall be legally disposed off the site by the Contractor.
 - B. During the course of the construction, the site shall be maintained free of excavated materials, spoilage, etc. and shall be kept clean and neat at all times.

END OF SECTION

SECTION 02 22 00 - SITE DEMOLITION

PART 1 - GENERAL

- 1.1 SECTION INCLUDES
 - A. Demolish designated structures and portions of existing facilities.
 - B. Remove materials from site.
 - C. Disconnect, cap, and remove identified utilities.

1.2 RELATED SECTIONS

- A. Section 01 57 00: Temporary Controls.
- B. Section 01 78 00: Closeout Submittals.
- C. Section 02 30 00: Earthwork.

1.3 REFERENCED STANDARDS

A. American National Standards Institute (ANSI): A10.6: "American National Standard Safety Requirements for Demolition.

1.4 SUBMITTALS

- A. Submit demolition and removal procedures and schedule under provisions of Section 01 33 00 Shop Drawings, Product Data and Samples.
- B. Submit record documents under provisions of Section 01 78 00 Closeout Submittals. Accurately record actual locations of capped utilities and subsurface obstructions.

1.5 QUALIFICATIONS

A. Demolition Firm: Company specializing in performing the work of this section with minimum 5 years documented experience.

1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable codes for demolition of structures, safety of adjacent structures, dust control, runoff control, disposal.
- B. Obtain required permits from authorities.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Do not close or obstruct roadways, sidewalks, or hydrants without permits.
- E. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials, and when removing such materials from the project site.

SITE DEMOLITION CSP 207459 August 16, 2024

Mark Twain School for the Talented and Gifted Org # 220 Dallas ISD Construction Services

09 01 00-2

SITE DEMOLITION CSP 207459 August 16, 2024

1.7 EXISTING CONDITIONS

- A. Conduct demolition to minimize interference with adjacent portion of structures to remain.
- B. Conduct operations with minimum interference with public usage of buildings. Maintain protected egress and access at all times.

1.8 PROTECTION

- A. Take care to ensure that there shall be no damage to elements or portions thereof which are not required to be removed. Erect and maintain temporary shoring, bracing, and other means to safeguard the structural integrity of the existing portions of building and its parts to remain.
- B. Erect and maintain temporary bracing, shoring, lights, barricades, signs, and other means to protect the public, workers, and other persons, and finishes and improvements to remain from damage; all in accordance with applicable regulatory requirements.
- C. Erect and maintain temporary barriers to confine dust and debris.
- D. Protect existing trees to remain. Keep area within the drip line clear of construction traffic, parking, soil contamination, soil stockpiling, storage of materials, debris, and ponding water.

1.9 EXAMINATION OF SITE

A. Before submitting a Bid, Bidders shall visit and examine site to ascertain actual nature and scope of demolition work. Submittal of a Bid shall be taken as evidence that such an examination has been made and various features noted. Later claims for extra compensation on account of additional labor, materials, or equipment required for difficulties encountered in demolition work shall not be recognized.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials designated for demolition shall become the Contractor's property; remove and dispose of such materials unless otherwise indicated or specified. Sales of salvage materials are not allowed on site.
- B. Furnishings and equipment items to remain Owner's property shall be removed by him prior to the start of demolition (or shall be designated on the Drawings herein to be removed and stored by Contractor). Items not so designated shall be considered debris and shall be removed and disposed of accordingly.
- C. Carefully disconnect, remove and protect items directed by the Architect to be salvaged.
- D. Transport salvaged items to on-site storage areas.
- E. Fill Materials: Type specified in Section 02300 Earthwork.

PART 3 - EXECUTION

3.1 INSPECTIONS

- A. Prior to starting demolition, make inspection and report observable defects and structural weaknesses of construction designated for demolition, of adjacent structures, and of improvements to remain. If unsatisfactory conditions exist, do not commence demolition until appropriate determinations have been made.
- B. Following demolition, make inspection and report defects and structural weaknesses of items partially demolished, cut, or removed; of adjacent structures; and of improvements remaining.

3.2 PREPARATION

- A. Prevent movement or settlement of adjacent structures. Provide bracing, shoring, and underpinning as required.
- B. Protect existing appurtenances, structures and landscaping which are not to be demolished.
- C. Locate, disconnect, remove, and cap designated utility lines within demolition areas.
- D. Mark location of disconnected utilities. Identify utilities and indicate capping locations on Project Record Documents.

3.3 DEMOLITION REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent structures.
- B. Cease operations immediately if adjacent structures appear to be in danger. Notify Architect. Do not resume operations until directed.
- C. Conduct operations with minimum interference to public or private accesses. Maintain protected egress and access at all times.
- D. Obtain written permission from adjacent property owners when demolition equipment shall traverse, infringe upon or limit access to their property.

3.4 DEMOLITION

- A. Perform demolition in accordance with ANSI 10.6 and applicable regulatory requirements.
- B. Remove items designated for demolition within the limits of work indicated, and as required to perform the work. Do not remove anything beyond the limits of demolition indicated without the prior written approval of Architect. If in doubt whether to remove an item, obtain written approval prior to proceeding.
- C. Demolish indicated structures and appurtenances in an orderly and careful manner. Remove materials carefully providing format and structurally sound junctures between new and existing materials. Demolish structures above each floor level before damaging supporting members on lower levels.
- D. Upon discovery of hazardous materials (asbestos, P.C.B's, etc) or if it is suspected that hazardous

SITE DEMOLITION CSP 207459 August 16, 2024 materials have been encountered, cease work immediately and notify the Architect.

E. Except where noted otherwise, immediately remove demolished material from site.

- F. Remove materials to be re-installed or retained in manner to prevent damage. Store and protect under provisions of Section 01610 Basic Product Requirements.
- G. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered.
- H. Do not burn or bury materials on site.
- I. Remove concrete slabs on grade where designated or as required to produce the intended results.
- J. Keep work sprinkled to minimize dust. Provide hoses and watermain or hydrant connections for this purpose.
- K. Backfill areas excavated caused as a result of demolition. Use soil and methods specified in Section 02 30 00 Earthwork.
- L. Rough grade and compact areas affected by demolition to maintain site grades and contours. Do not allow water to pond in excavations.
- M. Remove demolished materials from site as work progresses. Leave site in clean condition.
- N. Demolish concrete in small sections.
- O. Do not jackhammer within 2 inches of reinforcing or structural steel to remain; remove final 2 inches of material using chipping guns or suitable hand tools.
- P. If in the event hazardous materials (asbestos, PCP's, etc.) are encountered during the course of the demolition work, or if it is even suspected that such materials shall or have been encountered cease work immediately in the affected area and promptly notify Architect.

3.5 CUTTING

- A. Make new openings neat, as close as possible to profiles indicated and only to extent necessary for new work.
- B. Do not cut or alter structural members unless specifically indicated or approved, and do not damage reinforcing or structural steel to remain.
- C. At concrete, masonry, paving, and other materials where edges of cuts and holes shall remain exposed in the completed work, make cuts using power-sawing and coring equipment. Sawcut full depth of work to be removed for flush exposed face. Do not overcut at corners of cut openings. Provide 6" diameter core cuts at corners of concrete to be sawcut and removed prior to sawcutting.
- D. Upon completion of cutting and coring, clean remaining surfaces of loose particles and dust.

3.6 PIPES, DUCTS, AND CONDUITS

- A. Remove deactivated mechanical, plumbing, and sprinkler piping, ducts, and electrical conduit, including fastenings, connections, and other related appurtenances and accessories which would otherwise be exposed in the completed work or interfere with construction operations.
- B. Cap deactivated piping systems at points of cutoff.

SITE DEMOLITION CSP 207459 August 16, 2024

3.7 RECONDITIONING EXISTING SUBSTRATES

- A. Clean surfaces on which new materials shall be applied, removing adhesives, bitumen, and other adhering materials, as necessary to furnish acceptable substrates for new materials.
- B. Perform sandblasting, chipping, grinding, acid washing, etching, and other work as required by conditions encountered and new materials involved.
- C. Use of acids or other cleaning agents shall include neutralizing, washing, rinsing, and drying, as applicable.
- D. Determine substrate requirements for reconditioned surfaces in cooperation with the manufacturer's representative and installer of each new material involved.

END OF SECTION

PART 1 GENERAL

- 1.1 DESCRIPTION OF WORK
 - A. Scope

Furnish all labor, materials, tools, equipment and related items required to install formwork and shoring for cast-in-place concrete, and installation into formwork of items furnished by others, such as anchor bolts, setting plates, bearing plates, anchorages, inserts, frames, nosings and other items to be embedded in concrete.

B. Location

The work to be performed is located at McGuire Air Force Base, New Jersey

- C. Related work specified in other sections:
 - 1. Portland Cement Concrete Paving Section 02 5140
 - 2. Concrete Reinforcement Section 03 2000
 - 3. Cast-in-Place Concrete Section 03 3000

1.2 QUALITY ASSURANCE

- A. It is Contractor's responsibility to design and engineer formwork.
- B. Reference Standards:
 - 1. ACI 301, Specifications for Structural Concrete for Buildings.
 - 2. U.S. Product Standard for Softwood Plywood, Construction and Industrial PS-1.
- C. Allowable Tolerances: Except when close coordination and fitting of various trades' work precludes allowance of tolerance, maximum total permissible deviations from established lines, grades and dimensions shall be as stated below. See and maintain forms in such manner as to ensure completed work within specified tolerance limits.

unner	1010110	Shan be as stated below. Oce and	inalitatii loi						
comp	leted v	vork within specified tolerance limits	5.						
1.	Variation from plumb:								
	a.	In lines and surfaces of arises:							
		In any 10 ft of length	1/4 in.						
		Maximum for the entire length	1 in.						
	b.	For exposed conspicuous lines:							
		In any 20 ft of length	1/4 in.						
		Maximum for the entire length	1/2 in.						
2.	Variat	tion in sizes and location of							
	sleeve	es, floor and wall openings	+/-1/4 in.						
3.	Variat	tion in cross-sectional dimensions							
	of bea	ams in thickness of slabs:							
		Minus	1/4 in.						
		Plus	1/2 in.						
4.	Variat	tion in steps	1/4 in.						
5.	Variat	tion in location of anchor bolts							
	unles	s provided with sleeves or other							
		•							

means of adjustment1/4 in.

D. Max. deflection of form facing materials at concrete surfaces exposed to view shall be 1/240 of span between structural members.

Leslie A. Stemmons Elementary School	CONCRETE FORMWOR	K AND ACCESSORIES
Org #210		CSP 207459
Dallas ISD Construction Services	03 10 00 - 1	August 16, 2024

E. Shop Drawings: Diagram of proposed construction joints not indicated on drawings.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Forms: Wood, metal or other approved material that will not adversely affect surface of concrete and will provide or facilitate obtaining specified surface finish.
 - 1. Wood:
 - a. Unexposed Surfaces:
 - 1. No.2 Common or Better Southern Yellow Pine lumber, sufficient thickness to sustain loads to be imposed, dressed to uniform smooth contact surfaces, readily removable, or:
 - 2. Commercial Standard Douglas-Fir, moisture resistant, concrete form plywood, not less than 5 ply, at least 3/4" thick, one side smooth.
 - b. Exposed Surfaces: Non-absortive overlay plywood such as medium or high density overlay, Finn-Form or equal.
- B. Carton Forms (Void Boxes): Shall be corrugated cardboard cartons, as manufactured by SureVoid Products, Inc., Englewood, Co. All surfaces of void box forms shall be moisture-resistant. Forms shall have interior cross walls forming a uniform cellular configuration. Carton forms shall be manufactured from medium wax impregnated paper using waterproof adhesive.
 - 1. Slabs: Use "Regular" strength with interior cell sizes 8" x 8" or smaller, capable of sustaining a working load of 1000 psf. "SlabVoid."
 - 2. Grade beams and walls: Trapezoidal shape as shown on details. Provide end caps at end of forms and corners. Provide pre-manufactured curve-ended units, "ArcVoid" or "SureRound PierVoid", against tops of drilled piers for tight fit. Cartons shall be capable of sustaining a working load of 150 PSF times the height of pour, in feet, without significant deformation.
 - 3. Piers: At interior piers supporting slab over carton forms use "SureRound Pier Void" or equal to provide tight fit around pier
- C. Form Accessories:
 - 1. Form ties: Bolt rods or patented devices having a minimum tensile strength of 3,000 pounds when fully assembled. Ties shall be adjustable in length and free of lugs, cones, washers or other features which would leave a hole larger than 1" in diameter. Ties shall be of such construction that, when forms are removed, there will be no metal remaining within 1" of finished surface.
 - 2. Form Release Agent: Non-Staining, wax barrier type, Symons Corp., "Magic Cote" or equal.
 - 3. Construction Joint Form: Burke Concrete Products "Keyed Kold Joint" or equal.

PART 3 EXECUTION

3.1 PERFORMANCE

- A. Formwork Construction:
 - 1. Construct forms tight to prevent loss of mortar. Use chamfer strips in corners of forms to produce beveled edges on permanently exposed surfaces.
 - 2. Camber formwork to compensate for deflections in formwork prior to concrete attaining design strength.
 - 3. Adjust shores and struts to take up settlement caused by concrete placement.
 - 4. Provide temporary openings in formwork to allow cleaning and observation.

Leslie A. Stemmons Elementary School	CONCRETE FOR	MWORK AND ACCESSORIES
Org #210		CSP 207459
Dallas ISD Construction Services	03 10 00 - 2	August 16, 2024

- 5. Construct forms for beams and girders so that sides may be removed without disturbing bottom of form or its support.
- 6. Clean contact and screed surfaces of hardened concrete and foreign materials prior to assembly.
- B. Form Coatings:
 - 1. Apply specified form release agent; follow manufacturer's direction.
 - 2. Do not allow agent to puddle in forms or to contact hardened concrete against which fresh concrete is to be placed.
 - 3. Do not coat forms with material that will stain or disfigure exposed concrete surfaces; do not use forms coated with such material.
- C. Form Accessories:
 - 1. Form Ties: Coat ties that are to be pulled from walls with cup grease or other approved material to facilitate removal.
- D. Construction Joints:
 - 1. Locate and install construction joints, which are not shown on the drawings, so as not to impair strength and appearance of the structure, and as acceptable to the Structural Engineer.
 - 2. Provide keyways at least 1-1/2" deep in construction joints in walls and slabs; accepted bulkheads designed for this purpose may be used for slabs.
 - 3. Place construction joints perpendicular to the main reinforcement. Continue reinforcement across construction joints.
 - 4. Construct isolation joints in slabs on ground at points of contact between slabs on ground and vertical surfaces, such as column pedestals, foundation walls, grade beams and elsewhere as indicated.
- E. Installation of Embedded Items:
 - 1. Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached thereto.

END OF SECTION
SECTION 03 20 00 - CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings, Bidding Requirements, Contract Forms, Conditions of the Contract and Division 1 General Requirements apply to the work of this section.
- 1.2 DESCRIPTION OF WORK
 - A. Furnish all labor, materials, tools, equipment and related items required to fabricate and place reinforcement for cast-in-place concrete, including bars, welded wire fabric, ties and bar supports.
 - B. Related work specified in other sections:
 - 1. Testing Laboratory Services Section 01 4000
 - 2. Portland Cement Concrete Paving Section 02 5200
 - 3. Concrete Formwork Section 03 1000
 - 4. Cast-in-Place Concrete Section 03 3000

1.3 QUALITY ASSURANCE

- A. Reference Standards (latest edition):
 - 1. ACI 301, Specifications for Structural Concrete for Buildings
 - 2. ACI 318, Building Code Requirements for Reinforced Concrete
 - 3. ASTM A615, Specification for Deformed Billet Steel Bars for Concrete.
 - 4. ASTM A185, Specifications for Welded Steel Wire Fabric for Concrete Reinforcement.
 - 5. Concrete Reinforcing Steel Institute, Manual of Standard Practice.
 - 6. "Details and Detailing of Concrete Reinforcement", ACI 315
- B. Allowable Tolerances:
 - 1. Fabricating:
 - a. Sheared length: Plus or minus 1"
 - b. Stirrups and ties: Plus or minus 1/2".
 - c. Members more than 8" but not over 2'-0" deep: Plus or minus 1/2".
 - d. Members more than 2'-0" deep: Plus or minus 1".
 - e. Crosswise of members: Space evenly within 2" of stated separation.
 - f. Lengthwise of members: Plus or minus 2".
 - 2. Maximum bar relocation to avoid interference with other reinforcing steel, conduits or other embedded item: 1 bar diameter.
- C. Testing Laboratory Services. Refer to section 01 4529.

1.4 SUBMITTALS

A. Shop Drawings: Include complete bending diagrams, assembly diagrams, splicing and laps, and rods, shapes, dimensions and details of bar reinforcing and accessories.

CONCRETE REINFORCEMENT CSP 207459 August 16, 2024

- 1. Show diagrammatic elevations of walls at scale large enough to clearly show position and erection marks of marginal bars, around openings, dowels, splices, etc., for these bars.
- 2. Show complete layout plan for each layer of reinforcing of structural slabs and beams showing number, arrangement, spacing, location, marking, orientation, etc., of reinforcement required for layer being described.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size, length and mark.
- B. Unload reinforcing carefully to prevent damage. Store above ground in dry, well drained area; protect from mud, dirt and corrosion.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Reinforcing Bars: ASTM A615, deformed billet steel bars, domestic manufacture, Grades 60 and/or 75 as indicated on structural drawings.
- B. Welded Wire Fabric Reinforcing: ASTM A185, domestic manufacture, steel wire spot welded at intersections and of size indicated. Furnish in flat sheets, not rolls.
- C. Metal Accessories: Include spacers, chairs, bolsters, ties and other devices necessary for properly placing, spacing, supporting and fastening reinforcement in place, conforming to requirements to CRSI "Manual of Standard Practice for Detailing Reinforced Concrete Structures". Metal accessories shall be galvanized where legs will be exposed in finished concrete surfaces.
- D. Tie Wire: FS QQ-W-461, black enameled steel, 16 ga. min.
- E. Reinforcing bars to be welded: ASTM A706, "Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement."

2.2 FABRICATION

A. In accordance with CRSI "Manual of Standard Practice".

PART 3 EXECUTION

3.1 PREPARATION

A. Cleaning: Before placing in work, thoroughly clean reinforcement of loose rust, mill scale, dirt, oil and other coating which might tend to reduce bonding. Reinspect reinforcing left protruding for future bonding, or following delay in work, and reclean if necessary.

3.2 INSTALLATION

A. Bar Placement: In accordance with ACI 301, ACI 318 and CRSI "Manual for Standard Practice"

Mark Twain School for the Talented and Gifted Org # 220 Dallas ISD Construction Services CONCRETE REINFORCEMENT CSP 207459 August 16, 2024

- 1. Bending: Bend bars cold; do not heat reinforcing or bend by makeshift methods. Discard bent, kinked or otherwise damaged bars.
- 2. Splices: In accordance with ACI 301 and ACI 318.
- B. Wire Fabric Placement:
 - 1. Install in longest practicable length.
 - 2. Do not make end laps midway between supporting beams, or directly over beams of continuous structures.
 - 3. Offset end laps in adjacent widths to prevent continuous lap.
 - 4. Keep wire in proper position during concrete placement.
 - 5. All wire fabric shall be delivered in flat sheets, not rolled.

END OF SECTION

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

- 1.1 RELATED DOCUMENTS
 - A. Drawings, Bidding Requirements, Contract Forms, and Conditions of the Contract apply to the work of this section.
- 1.2 DESCRIPTION OF THE WORK
 - A. Furnish all labor, materials, tools, equipment and related items required to provide cast-in-place concrete consisting of portland cement, fine and coarse aggregate, water and selected admixtures; combined, mixed, transported, placed, finished and cured as herein specified.
 - B. Related work specified in other sections:
 - 1. Concrete Formwork Section 03 1000
 - 2. Concrete Reinforcement Section 03 2000

1.3 QUALITY ASSURANCE

- A. Referenced Standards:
 - 1. ACI 301, Specifications for Structural Concrete for Buildings.
 - 2. ASTM C33, Standard Specifications for Concrete Aggregate.
 - 3. ASTM C94, Standard Specifications for Ready-Mix Concrete.
 - 4. ASTM C150, Standard Specifications for Portland Cement.
 - 5. ASTM C260, Standard Specifications for Air-Entraining Admixtures for Concrete.
 - 6. ASTM C494, Standard Specifications for Chemical Admixtures for Concrete.
- B. Concrete Mix Design: Contractor shall employ and pay cost of a recognized independent Testing Laboratory to perform the following services:
 - 1. Design concrete mixes in accordance with ACI 301.
 - 2. For each concrete mix type proposed, make trial mix using aggregate proposed.
 - 3. Determination of required average strength above specified strength shall be in accordance with ACI 301.
 - 4. Make advance tests of trial mixes with proposed materials. Mold and cure in accordance with ASTM C31; test cylinders in accordance with ASTM C-39. Do not place concrete on project until laboratory reports and breaks of confirmation cylinders indicate that proposed mixes will develop required strengths.
 - 5. Submit proposed mix designs to Architect for review min. 14 days prior to placing concrete. Show:
 - a. Proportions of cement, fine and coarse aggregates and water.
 - b. Combined aggregate gradation.
 - c. Aggregate specific gravities and gradations.
 - d. Water-cement ratio, design strength, slump and air content.
 - e. Type of cement and aggregates.
 - f. Type of dosage of admixtures.
 - g. Type, color and dosage of integral coloring compounds, where applicable.
 - h. Special requirements for pumping.
 - i. Range of ambient temperature and humidity for which design is valid.
 - j. Any special characteristics of mix which require precautions in mixing, placing, or finishing techniques to achieve finished product.
 - 6. Mix designs based on record of past performance in accordance with ACI 301, method 2, may be submitted in lieu of mix designs required above, provided all necessary information is included.

- 7. Check mix designs and revise if necessary wherever changes are made in aggregates or in surface water content of aggregate or workability of concrete. Slump shall be minimum to produce workable mix. Laboratory shall prescribe maximum quantity of water.
- C. Test Cylinders: Make at least one (1) test of each day's pouring or each fifty (50) cu. yards, whichever comes first, on each different portion or section of the work. Mold and cure specimens in accordance with ASTM C31, and test in accordance with ASTM C39. Test cylinders shall be made and tested by the laboratory. Footings, walls, and floor systems constitute different sections. Each test shall consist of five (5) specimens: two (2) to be tested at twenty-eight (28) days, two (2) to be tested at seven days, and one held in reserve. Determine temperature and air content for each set of test cylinders in accordance with ASTM C231.
- D. Field Quality Control:
 - 1. Determine slump for each strength test and whenever consistency of concrete appears to vary, in accordance with ASTM C143.
 - 2. Monitor addition of water to concrete and length of time concrete is allowed to remain in truck.
 - 3. Certify delivery tickets indicating class of concrete, amount of water added during initial batching, and time initial batching occurred.
 - 4. Monitor work being performed in accordance with ACI (American Concrete Institute) recommendations as a standard of quality.
- E. Source Quality Control: Periodically inspect and control concrete mixing and loading of transit mix trucks at batch plant at intervals as agreed to by Architect and laboratory personnel.
- 1.4 PRODUCT DELIVERY, STORAGE AND HANDLING
 - A. Mix and deliver concrete to project ready-mixed in accordance with ASTM C94. Mix concrete min. 70 revolutions of transit mix drum at mixing speed. Min. 40 revolutions shall be at production plant.
 - B. Schedule delivery so that continuity of any pour will not be interrupted for over 15 minutes.
 - C. Place concrete on site within 90 minutes after proportioning materials at batch plant.

1.5 JOB CONDITIONS

- A. Weather Requirements:
 - 1. Hot Weather Concreting:
 - a. Follow ACI 301.
 - b. Provide retarding type admixture conforming to ASTM C494-Type A or D in accordance with manufacturer's recommendations.
 - 2. Cold Weather Concreting:
 - a. Follow ACI 301.
 - b. When ambient temperature at site is below 40 degrees F, or is expected to fall to that temperature within ensuing 24 hours, heat water and/or aggregates prior to adding to mix so that temperature of concrete will be between 60 degrees F and 90 degrees F at time of placement.
 - c. Maintain temperature of deposited concrete between 50 degrees F and 70 degrees F for min. 7 days after placing.
 - 3. Temperature Changes: Maintain changes in concrete temperature as uniform as possible, but in no case exceed change of 5 degrees per hour or 25 degrees in any 25 hour period.
 - 4. Admixture intended to accelerate hardening of concrete or produce higher than normal strength at early periods will not be permitted unless specified or prior approval is obtained from Architect.

1.6 SUBMITTALS

- A. Concrete Mix Design.
- B. Delivery Tickets: Furnish duplicate delivery tickets for each load of ready-mix concrete delivered to site, in accordance with ASTM C94. Show batch weights on each ticket.

PART 2 PRODUCTS

- 2.1 MATERIALS
 - A. Portland Cement: ASTM C-150, Type I. Type III may be used for cold weather concreting when approved by Architect.
 - B. Aggregate:
 - 1. Fine: ASTM C-33, clean hard, durable, uncoated, natural non-staining sand free from silt, loam or clay.
 - 2. Coarse: ASTM C-33, hard, durable, uncoated, crushed stone, gradation in accordance with size No.57, unless otherwise approved in mix design. Max. aggregate size in accordance with ACI 318.
 - C. Water: Clean and free from oil, acid and injurious amounts of vegetable matter, alkalies and other impurities.
 - D. Admixtures:
 - 1. Water-reducing or water-reducing/set-retarding; ASTM C494.
 - 2. Air entraining agent: ASTM C260.
 - E. Curing Materials:
 - 1. Waterproof Paper: FS UU-P-265a.
 - 2. Polyethylene Sheeting: Minimum 0.004" thick, free from defects, uniform in appearance, white.
 - 3. Curing Compounds: L&M "CURE" by L & M Construction Chemicals, Inc., or approved equal, for interior concrete slab surfaces. Curing compound must be compatible with floor hardener and sealer.
 - F. Liquid Floor Hardener and Sealer: "Lapidolith" as manufactured by Sonneborn Building Products or approved equal.
 - G. Expansion Joint Filler: ASTM D1752, Type 1, non-asphaltic.
 - H. Non-shrinking Cement Grout: U.S. GrouT Corp. "Five Star Grout" or equal.
 - I. Non-Slip Stair Nosing: Equal to Wooster No. 101 "Alumograt" of required length.
- 2.2 MIXES
 - A. Strength: Concrete is classified and specified by ultimate compressive strength (fc) at age 28 days.
 - B. Proportions: Proportions of cement, aggregate, and water to attain required plasticity and compressive strength shall be in accordance with ACI 318. Do not make changes in proportions without Architect's approval.
 - C. Design concrete to yield the following characteristics:

Туре	Min 28 Day Compressive Strength	Cement Type	Min. Cement Content	Max. Dry Density	Slump Min.	Limits Max.
I	3000 psi	Portland	5*	NA	3"	5"
II	4000 psi	Portland	6*	NA	3"	5"

* bags per cu. yd.

- D. Concrete Uses: Refer to structural drawings for type usage.
- E. Concrete permanently exposed to weather: Contain air-entraining admixture to produce 5% +/- 1% air by volume of concrete.
- F. Maximum Fly Ash content shall not exceed 20% by weight.

PART 3 EXECUTION

3.1 PREPARATION

- A. Notify Architect and Testing Laboratory at least 24 hours prior to when each concrete operation is to begin.
- B. Allow various trades ample time to install anchor bolts, sleeves, conduit and inserts necessary for proper execution of their work. Accurately position in form. Do not cut reinforcing steel to facilitate installation of inserts or accessories.
- C. If power screeds are to be used, recess sleeves and cap in manner to prevent water and cement from entering, but so that they may be located after finishing. Otherwise, extend sleeves 1" above finish floor.
- D. Remove impounded water from forms and excavations before concrete is deposited. Close temporary drains by grouting or by other satisfactory means. Close openings left in forms for cleaning and inspection, after forms have been cleaned out, inspected and approved.
- E. Remove debris from space to be occupied by concrete before concrete is deposited. Before beginning placement, remove hardened concrete and foreign substances from inner surface of mixing and conveying equipment.
- F. Provide runways, pumps, conveyors, etc. to convey concrete to point of deposit in order not to disturb forms or reinforcement or segregate concrete. Do not allow conveying equipment directly over reinforcement.
- G. Do not allow concrete to free-fall over 5'-0"; provide tremies, chutes or other approved means of conveyance when drop exceeds this amount.

3.2 INSTALLATION

- A. Placing: Place concrete in accordance with requirements of ACI 301 and as modified herein. Direct concrete rapidly from mixer to forms and deposit as nearly as possible in its final position to avoid segregation due to re-handling or flowing. Do not place partially hardened, contaminated or re-tempered concrete.
- B. Consolidation: Place concrete with aid of mechanical vibrating equipment unless otherwise approved by Architect. Apply vibration at point of deposit and in area of freshly placed concrete. Vibrate enough to accomplish thorough compaction and complete embedment or reinforcement and fixtures. Supplement vibration by hand-spading in corners and angles of forms to prevent honey-combing.

- C. Bonding: Before depositing new concrete on concrete that has set, roughen and clean surface of set concrete of laitance, foreign matter and loose particles. Wet surface of set concrete just prior to placing new concrete.
- D. Protection and Curing:
 - 1. Protect concrete from frost damage and moisture loss.
 - 2. Provide artificial heat to maintain temperature of concrete above minimum required herein for duration of curing period.
 - 3. Keep forms sufficiently wet to prevent cracking of concrete or loosening of form joints.
 - 4. Cure surfaces of exposed concrete by means of curing compound or sheeting method, as applicable.
- E. Patching Formed Surfaces of Exposed Concrete:
 - 1. After forms have been removed, inspect concrete surfaces and patch pour joints, voids, stone pockets, other defective areas and tie holes before concrete is thoroughly dry. Chip away defective areas to depth of not less than 1" with edges perpendicular to surface. Wet areas to be patched and spaced at least 6" wide entirely surrounding it, to prevent absorption of water from patching mortar. Do not patch concrete in freezing weather.
 - 2. Apply chemical bonding agent to surface in accordance with manufacturer's recommendations, followed immediately by patching mortar. Make patch of same proportions as used for concrete except omit coarse aggregate. Add only enough water consistent with requirements for handling and placing.
 - 3. Thoroughly compact mortar into place and screed off; leave patch slightly higher than surrounding surface. Leave undisturbed for one to two hours to permit initial shrinkage before final finishing. Finish patch to match texture and color of adjoining surface. Completely fill tie holes left by withdrawal of rods and holes left by removal of end of ties. For holes passing entirely through wall, force mortar through with plunger type grease gun. Cure all patches.
- F. Finishing Formed Surfaces:
 - 1. As Formed Finish.
 - a. Provide at surfaces not exposed to view in completed work.
 - b. Remove fins by stoning, otherwise leave texture imparted by forms.
 - 2. Rubbed Finish:
 - a. Provide at exterior vertical surfaces exposed to view in completed work.
 - b. After removal of forms, patching and repairing, and while concrete is still green, spread slurry consisting of 1 part portland cement and 1-1/1 part damp, loose sand by volume, over pre-dampened surface. Apply using burlap pads or sponge rubber floats. Remove surplus materials, then rub with clean burlap. Water for completed surfaces for 7 days min.
- G. Flatwork:
 - 1. Forms and Screeds: Set edge forms and intermediate screed strips accurately to produce designed elevations and contours in finished surfaces. Align concrete surface to contours of screed strips using strike-off templates or compacting type screeds. When formwork is cambered, set screeds to like camber to maintain proper concrete thickness.
 - 2. Floated Finish: Provide at slab surfaces to precede other finishes. Begin floating after concrete has been struck off, consolidated and leveled, surface water has disappeared and surface is sufficiently hardened to support power driven float. Finish surface with impact type power driven float or hand float. Test surface with 10'-0" straightedge placed at min. 2 different angles; correct irregularities exceeding 1/4". Refloat repaired areas.
 - 3. Trowel Finish: Provide at interior slab surfaces under carpet, vinyl composite floor tile and exposed concrete floors.
 - 4. Light Broom Finish: Light broom finish under thin ceramic tile floors, ramps and steps.
- H. Liquid Floor Hardener and Sealer:

Leslie A. Stemmons Elementary School Org #210 Dallas ISD Construction Services

- 1. Apply hardener and sealer for all finished concrete floors that will be left exposed, not receiving additional finish.
- 2. Apply hardener and sealer in separate coats in accordance with manufacturer's directions and using the maximum quantity recommended. Surface to be treated must be clean and dry, with all work above the floor completed before the hardener and sealer is applied. Upon completion, concrete surfaces shall be clean, without discrepancies, discoloration, or traces of excess hardener left on the surface.

END OF SECTION

SECTION 04 0511 MASONRY MORTAR AND GROUT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A Mortar for masonry.
- B. Grout for masonry.

1.2 REFERENCE STANDARDS

- A ACI 530/530. 1/ERTA Building Code Requirements and Specification for Masonry Structures and Related Commentaries; American Concrete Institute International.
- B ASTM C5 Standard Specification for Quicklime for Structural Purposes.
- C. ASTM C91/C91 M Standard Specification for Masonry Cement.
- D. ASTM C94/C94M Standard Specification for Ready-Mixed Concrete.
- E ASTM C144 Standard Specification for Aggregate for Masonry Mortar.
- F. ASTM C150/C 150M Standard Specification for Portland Cement.
- G. ASTM C207 Standard Specification for Hydrated Lime for Masonry Purposes.
- H ASTM C270 Standard Specification for Mortar for Unit Masonry.
- I ASTM C387/C387M Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar.
- J ASTM C404 Standard Specification for Aggregates for Masonry Grout.
- K ASTM C476 Standard Specification for Grout for Masonry.
- L ASTM C780 Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
- M ASTM C979/C979M Standard Specification for Pigments for Integrally Colored Concrete.
- N ASTM C1019- Standard Test Method for Sampling and Testing Grout.
- 0. ASTM C1148 Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar.
- P. ASTM C1314- Standard Test Method for Compressive Strength of Masonry Prisms.
- Q ASTM C1357 Standard Test Methods for Evaluating Masonry Bond Strength.
- R ASTM E514/E514M Standard Test Method for Water Penetration and Leakage Through Masonry.

1.3 SUBMITTALS

- A See Division 1 Sections for submittal procedures.
- B Product Data: Include design mix and indicate whether the Proportion or Property specification = of ASTM C270 is to be used. Also include required environmental conditions and admixture= limitations.
- C. Samples: Submit two samples of mortar, illustrating mortar color and color range.
- D. Reports: Submit reports on grout indicating conformance of component grout materials to= requirements of ASTM C476 and test and evaluation reports to requirements of ASTM C1019.
- E Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

Masonry Mortar and Grout CSP 207459 August 16, 2024

04 05 11-1

1.4 QUALITY ASSURANCE

A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.6 FIELD CONDITIONS

A Cold and Hot Weather Requirements: Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

21 MORTAR AND GROUT APPLICATIONS

- A. At Contractor's option, mortar and grout may be field-mixed from packaged dry materials, made from factory premixed dry materials with addition of water only, or ready-mixed.
- B. Mortar Mix Designs: ASTM C270, Property Specification.

2.2 MATERIALS

- A. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C387/C387M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
- B Packaged Dry Material for Mortar for Repointing: Premixed Portland cement, graded sand, and chemical admixtures complying with ASTM C91/C91 M with the addition of water only.
- C. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.
- D. Portland Cement: ASTM C150/C150M.
 - 1. Type: Type I Normal.
- E Masonry Cement: ASTM C91. 1. Type: Type **N**
- F. Hydrated Lime: ASTM C207, Type S.
- G. Quicklime: ASTM C5, non-hydraulic type.
- H. Mortar Aggregate: ASTM C144.
- I Grout Aggregate: ASTM C404.
- J. Water: Clean and potable.

2.3 MORTAR MIXING

A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.

- B. Maintain sand uniformly damp immediately before themixing process.
- C. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturers recommended pigment-to-cement ratio; mix in accordance with manufacturer's instructions, uniform in coloration.
- D. Add admixtures in accordance with manufacturer's instructions; mix uniformly.
- E Do not use anti-freeze compounds to lower the freezing point of mortar.
- F. If water is lost by evaporation, re-temper only within two hours of mixing.

2.4 GROUT MIXING

- A. Mix grout in accordance with ASTM C94/C94M.
- B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with STM C476 for fine and coarse grout.
- C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.

2.5 PRECONSTRUCTION TESTING

- A. Testing will be conducted by an independent test agency, in accordance with provisions of Section 01 4000 Quality Requirements.
- B. Mortar Mixes: Test mortars prebatched by weight in accordance with ASTM C780 recommendations for preconstruction testing.
- C. Grout Mixes: Test grout batches in accordance with ASTM C1019 procedures.

26 MORTAR AND GROUT MIXES

- A. Mortar for Unit Masonry: ASTM C270, Proportion Specification.
 - 1. Masonry below grade and in contact with earth; Type S.
 - 2 Exterior, non-loadbearing masonry; Type N.
 - 3 Interior, non-loadbearing masonry; Type N.
- B. Grout: ASTM C476; consistency as required to fill volumes completely for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
- C. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.
- D. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.1 PREPARATION

A. Plug clean-out holes for grouted masonry with brick masonry units. Brace masonry to resist wet grout pressure.

3.2 INSTALLATION

A. Install mortar and grout to requirements of section(s) in which masonry is specified.

B. Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.

3.3 GROUTING

- A Perform all grouting by means of low-lift technique. Do not employ high-lift grouting.
- B. Low-Lift Grouting:
 - 1. Limit height of pours to 12 inches.
 - 2 Limit height of masonry to 16 inches above each pour.
 - 3 Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
 - 4 Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

3.4 FIELD QUALITY CONTROL

A An independent testing agency will perform field tests, in accordance with provisions Division 1 sections.

END OF SECTION 04 05 11

SECTION 04 20 00 - CONCRETE UNIT MASONRY

PART 1 GENERAL

1.1 SUMMARY

- Related Documents: Provisions established within the General and Supplementary GeneralConditions of the Contract, Division 1 -General Requirements, and the Drawings are collectively applicable to this Section.
- B. Section Includes:
 - 1. Concrete and Clay Masonry units.
 - 2. Reinforcement, anchorages, and accessories.

1.2 SUBMITTALS

- A. Submit product data under provisions of Section 01 33 00.
- B. Submit product data for decorative masonry units and fabricated wire reinforcement.
- C. Submit samples under provisions of Section 01 33 00.
- D. Submit 4 samples of face brick units to illustrate color texture and extremes of color range.

1.3 MOCKUP

- A. Construct face brick to 4 by 6 feet panel size, including mortar, special shapes, bonding, joint work, reinforcement, grouting, corbeling, mortar color expansion and control joints and accessories specified.
- B. Obtain approval prior to proceeding with the work.
- C. Remove panel when directed by Architect after completion of work.

1.4 QUALITY ASSURANCE

- A. Acceptable Manufacturer: Minimum 5 years' experience manufacturing specified product.
- B. Installer: Minimum 5 years' experience in similar types of work and be able to furnish a list ofprevious jobs and references if requested by Architect.
- C. Expansion Joints: Provide expansion joints as shown on the Drawings or if not shown, installat frequency and in accordance with details as recommended by the N.C.M.A. or B.I.A. Confirm locations and frequency with Architect before beginning work.

1.5 ENVIRONMENTAL REQUIREMENTS

A. In hot weather, above 99 degrees F with less than 50 percent relative humidity, protectmasonry construction from direct exposure to sun and wind.

- B. Cold Weather Requirements: IMIAC Recommended Practices and Specifications for ColdWeather Masonry Construction.
- 1.6 DELIVERY AND STORAGE
 - A. Deliver and store materials in accordance with the requirements of Section 01 60 00.
 - B. Store mortar materials on dunnage in a dry place.
 - C. During freezing weather, protect masonry units with tarpaulins or other suitable material.
 - D. Protect reinforcement and accessories from elements.
 - E. Store masonry units above ground on level platforms which allow air circulation understacked units. Cover stored masonry units with tarps or other means to shed water.
 - F. Cover and protect masonry units against wetting prior to use.
 - G. Handle units on pallets or flatbed barrows.
 - H. Do not permit free discharge from conveyor units or transporting in mortar trays.

PART 2 PRODUCTS

2.1 CONCRETE MASONRY UNIT MANUFACTURERS

- Acceptable Manufacturers: Subject to compliance with requirements indicated, provideproducts of one of the following:
 - 1. Trinity Industries.
 - 2. Featherlite.
 - 3. TXI.
- B. Substitutions: Under provisions of Section 01 25 00.

2.2 CONCRETE MASONRY UNITS

- A. ASTM C 90, 1900 psi, normal weight, Type I, moisture-controlled units.
- B. Sizes: Modular sized to 8 inch and 12" wide by 8 inch high by 16 inch long; provide specialunits for 90 degree corners, bond beams, 45 degree corners, lintels, and bullnosed corners.

2.3 BRICK MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements herein, provide productsfrom one of the following:
 - 1. Acme Brick.
 - 2. U.S. Brick.
 - 3. Elgin-Butler.
 - 4. Boral Henderson Clay Products.
- B. Substitutions: Under provisions of Section 01 25 00.

2.4 BRICK UNITS

- A. Face Brick: ASTM C 216, Type FBS, Grade SW;
- B. Basis of Design: Acme, Glacier White, Velour Textile, Modular Size Perla East GatePlant.
- C. Special Shapes: Of same brick types as above, shaped to profile indicated including solids,45 degree corners, 45 degree soldiers; surface texture on face and ends.

2.5 MANUFACTURERS - REINFORCEMENT, ANCHORAGES, AND ACCESSORIES

- A. Acceptable Manufacturers: Subject to compliance with requirements herein, provide productsfrom one of the following:
 - 1. Dur-O-Wal, Inc. Arlington Heights, IL.
 - 2. Heckmann Building Products, Inc., Chicago, IL.
 - 3. Hohmann &Barnard, Inc., Hauppauge, NY.
- B. Substitutions: Submit in accordance with Section 01631.

2.6 REINFORCEMENT AND ANCHORAGES

- A. Adjustable Veneer Anchors:
 - 1. Type: Adjustable design, hot dipped galvanized, 14 gage steel anchor plate with 3/16inch diameter double legged pintle tie.
 - 2. Size: Tie to extend to within 1 inch of outside face of masonry.
 - 3. Finish: ASTM A153, Class B-2, minimum 1.50 ounce per sq ft zinc coating.
 - 4. Fasteners: Self-drilling, self-tapping, No. 10 screw with cadmium or zinc coated finish; criteria to meet anchor manufacturer's requirements; length to suit Project conditions. Two fasteners minimum per plate.
 - 5. Acceptable product: D/A 213, Dur-O-Wal.
- B. Horizontal Joint Reinforcing:
 - 1. Type: Standard truss design, fabricated from ASTM A82 cold-drawn steel wire.
 - Side rods: Two or more continuous 9 gage deformed side rods butt welded in sameplane to continuous diagonal 9 gage plain cross rod at 16 inches on centers maximum.
 - 3. Size: Standard length 10 to 20 feet; side rods spaced approximately 2 inches lessthan width of partition or wall in which placed.
 - 4. Finish: Exterior walls; ASTM A153, Class B-2, (minimum 1.5 ounce per sq ft zinccoating) hot-dip galvanized.
 - 5. Provide prefabricated tee and corner units.
 - 6. Acceptable product: Dur-O-Truss, Dur-O-Wal.
- C. Reinforcing Bars: Deformed steel, ASTM A615, Grade 60.
- D. Expansion Joint Fillers:
 - 1. Closed cell neoprene complying with ASTM D1056, Class RE41.
 - 2. Compatible with sealant.
 - 3. Self adhering on one side; 50 percent minimum compressibility.
 - 4. Size: Thickness to suit joint size; depth to allow sealant application.

- 5. Locations: Vertical expansion joints, horizontal joints at head of masonry terminatingbelow shelf angles, beams, or slabs; other locations as detailed.
- 6. Acceptable product: D/A 2010 and 2015 by Dur-O-Wal.
- E. CMU Control Joint Strips:
 - 1. Preformed rubber compound to fit standard sash block.
 - 2. ASTM D2000, Designation 2AA-805.
 - 3. Hardness: 80.
 - 4. Neoprene self-sealing edge, sized to fit block width.
 - 5. Acceptable product: D/A 2001, Dur-O-Wal.
- 2.7 MASONRY FLASHINGS
 - A. Rubberized Asphalt: 40 mil thick, laminated composition of rubberized asphalt and crosslaminated polyethylene.
 - 1. Acceptable Products:
 - a. Perm-A-Barrier Wall Flashing by W.R. Grace Construction Products Division.
 - b. 400 Through Wall Flashing by Polyguard.

2.8 ACCESSORIES

- A. Control Joints: Preformed rubber material. Width slightly less than wall thickness to allow forsealant material.
- B. Joint Sealant: Refer to Section 07 9000.
- C. Asphalt saturated felt, No. 15, ASTM D226, Type I.
- D. Nailing Strips: Western softwood, preservative treated, sized to masonry joints.
- E. Weep Holes: Honeycomb cellular type, equal to Hohmann & Barnard model QV-Quadro-Vent.
- F. Rebar Positioners: Size and type required to accurately place reinforcing steel inbondbeams.
- G. Cleaner: Verify with masonry manufacturer that cleaner specified is acceptable.
 - 1. Acceptable Products subject to manufacturer's approval:
 - a. "Deox" Chemical Cleaner by National Chemsearch Corp.
 - b. "Sure Klean" by Process Solvent Co., Inc.
- H. Cavity Drainage Material: 1-inch-(25-mm-) thick, freedraining mesh; made frompolyethylene strands and shaped to avoid being clogged by mortar droppings.
 - 1. Acceptable Products:
 - a. Mortar Net; Mortar Net USA, Ltd.
 - b. Mortar Stop; Polytite Manufacturing Corp.

2.9 MASONRY CELL INSULATION

- A. Loose-granular Fill Insulation: Perlite, ASTM C549, Type II or Type IV.
- B. Molded-Polystyrene Insulation Units: Rigid Thermal, ASTM C578, type I by Korfil or equal.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Verify items provided by other Sections of work are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.
- D. Beginning of installation means installer accepts existing conditions.

3.2 PREPARATION

- A. Supply metal anchors to Section 03 30 00 for placement in concrete. Direct correctplacement.
- B. Verify items provided by other Sections of work are properly sized and located.
- C. Establish lines, levels, and coursing. Protect from disturbance.
- D. Provide temporary bracing during erection of masonry work. Maintain in place until buildingstructure provides permanent bracing.
- E. Scaffolding:
 - 1. Provide, erect, maintain, move, and finally remove scaffolding and staging required formasonry installation.
 - 2. Construct and maintain scaffolding in compliance with applicable ordinances, laws,rules and regulations.
 - 3. Sufficiently substantial to support workmen and necessary materials and equipment.
 - 4. Provide adequate guard rails for protection of property, workmen, and passersby.
- F. Wet clay masonry units prior to laying if required to reduce excessive absorption of mortarmoisture by the unit.
- G. Do not wet concrete masonry units.

3.3 COURSING

- A. Place masonry to lines and levels indicated.
- B. Maintain masonry joints to uniform width of 3/8 inches. Make vertical and horizontal jointsequal, of uniform thickness, tightly tucked.
- C. Lay concrete masonry units in running bond. Course one block unit and one mortar joint toequal 8 inches. Form concave mortar joints on exposed work and flush joints on work to receive subsequent wallcoating.
- D. Lay clay brick in running bond. Form concave mortar joints.

3.4 PLACING AND BONDING

- Lay masonry in full bed of mortar, properly jointed with other work. Buttering corners of jointsand deep or excessive furrowing of mortar joints are not permitted.
- B. Fully bond intersections, and external and internal corners.

- C. Do not shift or tap masonry units after mortar has taken initial set. Where adjustment mustbe made, remove mortar and replace.
- D. Remove excess mortar on surface and in cavities.
- E. Perform job site saw cutting with proper tools to provide straight unchipped edges. Takecare to prevent breaking masonry unit corners or edges.
- F. Cut mortar joints of block units flush where resilient base is scheduled, cavity insulation vaporbarrier adhesive is applied or bitumen dampproofing is applied.
- G. Isolate masonry partitions from vertical structural framing members with a control joint.
- H. Tie new to existing masonry walls with appropriate reinforcing and "toothing" where indicated.

3.5 TOLERANCES

- A. Alignment of Columns: Maximum 1/4 inch from true line.
- B. Variation from Unit to Adjacent Unit: 1/32 inch maximum.
- C. Variation from Plane of Wall: 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.
- D. Variation from Plumb: 1/4 inch per story non-cumulative 1/2 inch in two stories or more.
- E. Variation from Level Coursing: 1/8 inch in 3 feet; 1/4 inch in 10 feet; 1/2 inch maximum.
- F. Variation of Joint Thickness: 1/8 inch in 3 feet.
- G. Maximum Variation from Cross Sectional Thickness of Walls: Plus or minus 1/4 inch.

3.6 REINFORCEMENT AND ANCHORAGES

- A. Install horizontal joint reinforcement 16 inches on center typically and 8 inches at intersection f walls.
- B. Place masonry joint reinforcement in first and second horizontal joints above and belowopenings. Extend 16 inches minimum each side of opening.
- C. Place joint reinforcement continuous in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Place reinforcing bars supported and secured against displacement. Maintain positionwithin 1/2 inch of true dimension.
- F. Verify that anchorages embedded in concrete and attached to structural steel members are properly placed.
- G. Attach wall ties to wall studs for veneer construction at maximum 16 inches on center vertically and 16 inches on center horizontally. Place at maximum 3 inches on center eachway around perimeter of openings, within 12 inches of openings. Place at 8 inches on center at parapets.
- H. Reinforce joint corners and intersections with strap anchors 8 inches on center.

3.7 MASONRY FLASHINGS

- Extend flashings through exterior face of veneer, turn up minimum
 8 inches and seal ontoface of sheathing over stud framed back-up.
- B. Lap end joints minimum 6 inches and seal watertight per manufacturer's recommendation.
- C. Use flashing manufacturer's recommended adhesive and termination sealant.
- D. Create end dams at ends of window heads, at edges of curtain walls, and other vertical elements to channel water to nearest weep hole away from window mullions and other itemswhich might allow water to travel vertically.
- E. Wrap or otherwise isolate steel members (including lintels), electrical boxes, conduits, etc that are enclosed in or pass through masonry walls with No. 15 felt. Securely tie with wire at12 inches on center. Do not bond masonry to structural steel members.

3.8 LINTELS

- A. Install loose steel lintels as scheduled or shown.
- B. Install precast concrete lintels as scheduled.
- C. Install reinforced unit masonry lintels over openings where steel or precast concrete lintelsare not scheduled or shown. Construct lintels using grout filled solid bottom "U" shaped block and reinforcing. Maintain minimum 8 inch bearing on each side of opening. Place reinforcing near bottom of beam.
- Construct lintels using grout fill and reinforcing specified. Place two No. 4 reinforcing bars 1inch from bottom web, for openings up to 42 inches wide. Place two No. 5 reinforcing barsin same location for openings up to 78 inches wide. Reinforce larger openings as detailed.
- E. Use reinforcing bars of one piece lengths only.
- F. Place and consolidate grout fill without disturbing reinforcing.
- G. Allow lintels to reach strength before removing temporary supports.
- H. Set steel lintels dry on felt paper. Leave space at end of lintels to expand. Seal, not mortar, joint in front of lintel in accordance with Section 07 90 00.

3.9 GROUTED COMPONENTS

- A. Reinforce bond beams and pilasters as indicated on structural drawings.
- B. Lap splices minimum 36 bar diameters.
- C. Place and consolidate grout fill without disturbing reinforcing.
- D. At bearing points, fill masonry cores with grout minimum 12 inches from opening.
- E. Grout hollow metal frames with joint around frame uniform at 1/4 inch width.

3.10 WEEPS AND VENTS

A. Install weep holes in veneer at 24 inches on center horizontally for clay masonry and 32 inches on center for 16 inch long concrete masonry, above through-wall flashing, above shelfangles, and at bottom of walls.

B. After placement of flashing, fill bottom of cavity with cavity drainage material.

3.11 CAVITY WALL

- A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep holes.
- B. Build inner wythe ahead of outer wythe to receive cavity insulation air or vapor barrieradhesive.

3.12 CONTROL/EXPANSION JOINTS

- A. Do not continue horizontal joint reinforcing across control joints.
- B. Install resilient control joint in continuous lengths. Solvent weld butt and corner joints inaccordance with manufacturer's instructions.
- C. Size control joints in accordance with Section 07 90 00 for sealant performance, but in nocase larger than adjacent mortar joints in exposed face brick.
- D. Provide expansion joints where shown on the Drawings or as required/recommended byreferenced standards.
- E. No not lay masonry tight against any steel columns or beams. Provide at least 3/8 inchgap between walls and these elements.

3.13 BUILT-IN WORK

- A. As work progresses, build-in metal door frames, fabricated metal frames, window frames, wood nailing strips, anchor bolts, plates, and other items to be built in the work supplied byother Sections.
- B. Build-in items plumb and level.
- C. Bed anchors of metal door and glazed frames in mortar joints. Fill frame voids solid with mortar. Fill masonry cores with grout minimum 12 inches from framed openings.
- D. Do not build-in organic materials subject to deterioration.

3.14 CUTTING AND FITTING

- Cut and fit for chases, pipes, conduit, sleeves, and grounds.
 Cooperate with otherSections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting any area not indicated or where appearance orstrength of masonry work may beimpaired.
- C.
- D. .0Sleeve all pipe penetrating masonry walls.

3.15 CLEANING

- A. Remove excess mortar and smears.
- B. Replace defective mortar. Match adjacentwork.

- C. Clean soiled surfaces with a non-acidic solution which will not harm masonry or adjacentmaterials. Consult masonry manufacturer for acceptable cleaners. Leave surfaces thoroughly clean and free of all mortar and other soiling.
- D. Use non-metallic tools in cleaning operations.
- E. Do not clean brick in direct sunlight when temperatures are over 90 degrees F.

3.16 PROTECTION

- A. Protect finished installation under provisions of Section 01 50 00.
- B. Maintain protective boards at exposed external corners which may be damaged byconstruction activities.
- C. Provide protection without damaging completed work.
- D. At day's end, or stoppage of work, cover unfinished walls with a strong waterproof membranethat is securely anchored to prevent moisture infiltration.
- E. Keep expansion joint voids clear of mortar.

END OF SECTION 04 20 00

SECTION 04 20 01 BRICK VENEER MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clay Facing Brick.
- B. Mortar and Grout.
- C. Reinforcement and Anchorage.
- D. Flashings.
- E. Installation of Lintels.
- F. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 04 0511 Mortar and Masonry Grout.
- B. Section 07 9000 Joint Sealers: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

- A. TMS 402/602 Building Code Requirements and Specification for Masonry Structures; 2016.
- B. ASTM A153/A153M Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM C216 Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale); 2017a.
- D. BIA Technical Notes No. 7 Water Penetration Resistance Design and Detailing; 2017.
- E. BIA Technical Notes No. 28B Brick Veneer/Steel Stud Walls; 2005.
- F. BIA Technical Notes No. 46 Maintenance of Brick Masonry; 2017.

1.04 SUBMITTALS

- A. See Division 1 sections for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, and mortar.
- C. Samples: Submit four samples of facing brick units to illustrate color, texture, and extremes of color range.
- D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of the contract documents.
- B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 MOCK-UP

- A. Construct a masonry wall as a mock-up panel sized 8 feet long by 6 feet high; include mortar and accessories and structural backup in mock-up.
- B. Locate where directed.

C. Mock-up may remain as part of the Work, following approval.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

1.08 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 BRICK UNITS

 Facing Brick Basis of Design Manufacturer: ACME BRICK Blend Name: Windsor Park BL-4 Mod Vel Plant: TUP 665 ASTM C216, Type FBS Smooth Face, Grade SW

2.02 MORTAR AND GROUT:

As specified in Section 04 0511

2.03 REINFORCEMENT AND ANCHORAGE

- A. Masonry Veneer Anchors: Brick Veneer to Concrete Masonry Units:
 - 1. Basis of Design Manufacturer: Hohmann & Barnard, Inc: www.h-b.com/#sle.
 - 2. Basis of Design Product: 170-2X Truss Eye-Wire, adjustable reinforcement with 2x-Hook, manufactured by Hohmann & Barnard, Inc.
 - a. Sized to accommodate wall widths detailed on the drawings.
 - 3. Substitutions: See Section 01 2500 Substitution Procedures.
- B. Masonry Veneer Anchors: Brick Veneer to Cold Formed Metal Framing:
 - 1. Basis of Design Manufacturer: Hohmann & Barnard, Inc: www.h-b.com/#sle.
 - 2. Basis of Design Product: HB-213-2X, adjustable veneer anchor, manufactured by Hohmann & Barnard, Inc.
 - a. Sized to accommodate wall widths detailed on the drawings.
 - Substitutions: See Section 01 2500 Substitution Procedures.
- C. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.

2.04 FLASHINGS

3.

- A. Rubberized Asphalt Flashing: Self-adhering composite membrane, 40 mil thickness. Adhesive to be factory laminated to polyethylene sheeting.
 - 1. Basis of Design Manufacturer: Hohmann & Barnard, Inc: www.h-b.com/#sle.
 - Basis of Design Product: Textroflash, manufactured by Hohmann & Barnard, Inc.
 a. Width: As detailed on drawings.
 - 3. Substitutions: See Section 01 2500 Substitution Procedures.
- B. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane, or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.

2.05 ACCESSORIES

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.

- 1. Manufacturers:
 - a. Blok-Lok Limited: www.blok-lok.com/#sle.
 - b. Hohmann & Barnard, Inc: www.h-b.com/#sle.
 - c. WIRE-BOND: www.wirebond.com/#sle.
 - d. Substitutions: See Section 01 2500 Substitution Procedures.
- B. Joint Filler: Closed cell rubber; oversized 50 percent to joint width; self expanding; in maximum lengths available.
 - 1. Manufacturers:
 - a. Hohmann & Barnard, Inc: www.h-b.com/#sle.
 - b. WIRE-BOND: www.wirebond.com/#sle.
 - c. Substitutions: See Section 01 2500 Substitution Procedures.
- C. Weeps: Molded honeycomb grilles, insect resistant.
 - 1. Basis of Design Manufacturer: Hohmann & Barnard, Inc: www.h-b.com/#sle.
 - Basis of Design Product: Quadro-Vent, manufactured by Hohmann & Barnard, Inc.
 a. Size: 3/8" x 3-3/8" x 2-1/2".
 - 3. Substitutions: See Section 01 2500 Substitution Procedures.
 - 2. Color: To be selected by Architect from manufacturer's full range of colors.
- D. Cavity Mortar Control: High density polyethylene mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
 - 1. Panels to be installed at flashing locations.
 - 2. Basis of Design Manufacturer: Hohmann & Barnard, Inc: www.h-b.com/#sle.
 - 3. Basis of Design Product: Mortar Trap, manufactured by Hohmann & Barnard, Inc.
 - 4. Substitutions: See Section 01 2500 Substitution Procedures.
- E. Termination Bars: Stainless steel; compatible with membrane and adhesives.
 - 1. Basis of Design Manufacturer: Hohmann & Barnard, Inc: www.h-b.com/#sle.
 - 2. Basis of Design Product: T1 Termination Bar, manufactured by Hohmann & Barnard, Inc.
 - 3. Substitutions: See Section 01 2500 Substitution Procedures.
- F. Drip Edge: Stainless steel; compatible with membrane and adhesives.
 - 1. Basis of Design Manufacturer: Hohmann & Barnard, Inc: www.h-b.com/#sle.
 - 2. Basis of Design Product: DP Drip Plate, manufactured by Hohmann & Barnard, Inc.
 - 3. Provide factory fabricated stainless steel corners and end dams at inside and outside corners.
 - 4. Substitutions: See Section 01 2500 Substitution Procedures.
- G. Corners and End Dams: Provide factory fabricated stainless steel corners and end dams at inside and outside corners, below flashing.
 - 1. Basis of Design Manufacturer: Hohmann & Barnard, Inc: www.h-b.com/#sle.
- H. Lap Sealants and Tapes: As recommended by flashing manufacturer; compatible with membrane and adhesives.
- I. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Brick Units:
 - 1. Bond: As indicated for different locations.
 - 2. Coursing: Three units and three mortar joints to equal 8 inches.
 - 3. Mortar Joints: Concave.

3.03 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- C. Remove excess mortar as work progresses.
- D. Interlock intersections and external corners, except for units laid in stack bond.
- E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- F. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- G. Isolate top joint of masonry veneer from horizontal structural framing members or support angles with compressible joint filler.

3.04 WEEPS/CAVITY VENTS

A. Install weeps in veneer walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

3.05 CAVITY MORTAR CONTROL

- A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
- B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.
- C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

3.06 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

- A. Masonry Back-Up: Embed anchors to bond veneer at spacings vertically and horizontally that comply with applicable codes. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.
- B. Stud Back-Up: Embed anchors to bond veneer at spacings vertically and horizontally that comply with applicable codes. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center..

3.07 MASONRY FLASHINGS

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
 - 1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up at least 8 inches, minimum, to form watertight pan at non-masonry construction.

- 2. Remove or cover protrusions or sharp edges that could puncture flashings.
- 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Extend flashings to within 1/4 inch of exterior face of masonry.
- C. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.

3.08 LINTELS

A. Install loose steel lintels over openings.

3.09 CONTROL AND EXPANSION JOINTS

- A. Do not continue horizontal joint reinforcement through control or expansion joints.
- B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
- C. Size control joints as indicated on drawings; if not indicated, 3/4 inch wide and deep.
- D. Form expansion joint as detailed on drawings.

3.10 TOLERANCES

- A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- E. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
- F. Maximum clear distance at pipe, conduit and other masonry penetrations: Clear distance at any point not to exceed 1/8 inch from the surface of the penetrating component, when measured at any point.

3.11 CUTTING AND FITTING

- A. Cut and fit for pipes, conduit and other masonry penetrations. See 3.10, F of this section for allowable tolerances. Coordinate with other sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.12 CLEANING

- A. Remove excess mortar and mortar smears as work progresses.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution.
- D. Use non-metallic tools in cleaning operations.

3.13 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

SECTION 04 72 00 - CAST STONE MASONRY

PART 1 GENERAL

- 1.1 SUMMARY
 - Related Documents: Provisions established within the General and Supplementary General Conditions of the Contract and Division 1 - General Requirements are collectively applicableto this Section.
 - B. Section Includes:
 - 1. Cast stone sills, molding, special trim units.
 - 2. Reinforcement, anchorages and accessories.

1.2 SUBMITTALS

- A. Shop Drawings: Submit in accordance with Section 01 33 00. Indicate sizes, shapes,materials, reinforcement, joint details, locations and anchorage.
- B. Samples: Submit samples under provisions of Section 01 33
 00. Submit 2 samples of caststone finish for Architect's approval and selection of color and texture.
- C. Submit manufacturer's installation instructions under provisions of Section 01 33 00.

1.3 QUALITY ASSURANCE

- A. Manufacturer: Minimum 5 years' experience fabricating similar work. Submit list of recentcompleted projects if requested.
- B. Installer: Minimum 5 years' experience in similar types of work and be able to furnish a list ofprevious projects and references if requested by Architect.
- C. Manufactured Units: Meet requirements of FS SS-S- 721C.

1.4 CERTIFICATES

A. Submit manufacturer's certificates that materials meet or exceed specified requirements.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. In hot weather, above 99 degrees with less than 50 percent relative humidity, protectconstruction from direct exposure to the sun and wind.
- B. Cold Weather Requirements: IMIAC Recommended Practices and Specifications for ColdWeather Masonry Construction.
- 1.6 DELIVERY AND STORAGE
 - A. Deliver, store and handle materials in accordance with Sections 01 60 00.
 - B. After curing, store, stack and transport in a manner to prevent cracking, chipping, spalling, staining and other injuries.

- C. Store stone off ground and under cover.
- 1.7 PROTECTION
 - A. Protect stone to prevent concrete, asphalt, rainwater and other foreign material fromdefacing stone surfaces.

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
 - A. Acceptable Manufacturers: Subject to compliance with requirements herein, provideproducts from one of the following:
 - 1. Custom Castings.
 - 2. Architectural Cast Stone Corporation.
 - 3. T.X.I.
 - B. Substitutions: Under provisions of Section 01 25 13.
- 2.2 MATERIALS
 - A. Portland Cement: ASTM C 150, Type 1, in color selected by Architect.
 - 1. Acceptable Products:
 - a. Trinity Concrete Products.
 - b. Gifford Hill.
 - B. Course Aggregates: ASTM C 33, color as necessary to obtain final approved color of stone.
 - C. Sand: ASTM C 144.
 - D. Lime Putty: Hydrated lime, Type S, ASTM C 207.
 - E. Reinforcement Steel: ASTM A 615, Grade 60, domestic deformed steel bars, and ASTM A82 plain, cold-drawn steel. Hot dip galvanize after fabrication, per ASTM A 153.
 - F. Anchors: Type 303 stainless steel wire and rods, sizes as detailed.
 - G. Water: Clean and free from deleterious substances.
 - H. Clear Sealer:
 - 1. Acceptable Products:
 - a. NCP Klearseal by National Construction Products, Dallas, TX.
 - b. White Rock M-6-50-8 by Sonneborn Building Products Division.
 - c. Klere-Seal 900 by Pecora Corp.

2.3 MORTAR MIX

- A. Refer to Section 04 05 11 for mortar requirements.
- 2.4 FABRICATION
 - A. Reinforcement: Reinforce stone with wire and steel reinforcement bars as detailed or asnecessary for structural integrity.
 - B. Stone:
 - 1. Fabricate stone in accordance with referenced standards. Steam for 16 hours aftercasting.
 - 2. Compressive Strength: Minimum 6,500 psi at 28 days of age.

- 3. Moisture Absorption: Maximum 8 percent when tested according to ASTM C 97.
- 4. True to dimensions and profiles with sharp, straight edges and uniform curves.
- 5. Do not silicone coat stone.
- C. Sealer: Apply 2 coats of clear sealer to exposed surfaces of stone at rate of 200 square feetper gallon, per coat. Apply in accordance with manufacturer's direction. Allow first coat to dry before applying second coat. Do not coat mortar setting or joint surfaces with sealer.
- D. Anchors: Provide necessary dowel holes in stone.
- Ε. Finish:
 - 1. Exposed Surfaces: Uniformly textured, light buff colored finish, entirely free of pits, holes or form marks, to match approved sample.
 - 2. Similar in texture to sand finished limestone.
 - 3. Leave unexposed setting surfaces rough.

2.5 **FABRICATION TOLERANCES**

- Squareness: Not more than 1/8 inch in 6 feet out of square. Α.
- Β. Warpage: Not more than 1/8 inch per 6 feet of length.
- C. Location of Anchors and Inserts: Deviation of anchors or inserts from center line of locationshown on drawings not greater than plus or minus 3/8 inch.

PART 3 INSTALLATION

- 3.1 INSTALLATION
 - A. Set stainless steel anchor rods in setting bed.
 - Β. Set stone plumb, level and true in full beds of mortar.
 - C. Grout dowels into holes in stone and secure anchor with stainless steel tie wire.
 - D. Leave securely anchored and bonded.
- 3.2 JOINTS
 - A. Provide 3/8 inch wide joints. Fill joints with mortar as stone is set. Leave joints tightly tooledand slightly concave.
 - B. Refer to Section 04 05 11 and Section 04 20 00 for additional requirements.

3.3 INSTALLATION TOLERANCES

- Variation from unit to adjacent unit: 1/32 inch maximum. Α.
- Β. Variation from plane of wall: 1/4 inch in 10 feet, and 1/2 inch in 20 feet or more.
- C. Variation in joint thickness: 1/8 inch in 3 feet.

3.4 CONTROL/EXPANSION JOINTS

- Do not continue horizontal joint reinforcing across control joints. Α.
- Β. Install resilient control and expansion joint in continuous lengths in accordance with Section07 90 00.
- C. Provide expansion joints where indicated on the drawings.

3.5 PATCHING

A. Patching of minor defects will be permitted if performed with proper materials, by skilled craftsmen, as approved by Architect, and patched areas blend-in with surrounding areas sothat repair is not noticeable from viewing distance.

3.6 CLEANING

- A. After stones are installed, remove foreign matter from surface of stone using a stiff brush,mild cleanser and clear water.
- B. Use of acid is strictly prohibited.

END OF SECTION 04 72 00

SECTION 05 12 00 - STRUCTURAL STEEL

PART 1 – GENERAL

1.1 REFERENCED DOCUMENTS

A. The drawings and General Provisions of the Contract, including the General and Supplementary Conditions and Division Specification Sections, apply to work specified in this Section.

1.2 DESCRIPTION OF WORK

- A. Work Included: Furnish all labor, and materials, services, equipment and appliances required in conjunction with or properly incidental to furnishing, fabrication, delivery, and erection of structural steel complete, including, but not limited to, the following:
 - 1. Structural steel columns, girders, beams, angles, rigid frames, trusses, shelf angles, angle frames for opening in floors and roofs, galvanized cooling tower grillage, steel supports for elevator machines, steel hoist beams for elevator equipment, steel supports for elevator guide rails, steel plates, miscellaneous deck support angles, shop welded shear studs, connections and component parts.
 - 2. Qualification of welders.
 - 3. Shop prime coat of paint and field touch-up painting.
 - 4. Grouting of base plates.
 - 5. Temporary construction bracing.
 - 6. Fabrication/erection inspection and testing.
- B. Extent of structural steel work is shown on Drawings including schedules, notes and details to show sizes and locations of members, typical connections and types of steel required.
- C. Include all supplementary parts and members necessary to complete structural work, regardless of whether all such parts are definitely shown or specified and furnish all such bolts, gussets, plates, etc., as may be required for proper assembly of all items. Include miscellaneous deck support angles as required for proper support of metal floor deck around columns, gussets, openings, and obstructions.
- D. Connection Design:
 - 1. All typical beam to column and beam to beam connections are detailed and shown on the Construction Documents. The Contractor is to comply with these details.
 - 2. Where indicated, truss, bracing connections and special or non-typical structural steel beam connections shall be designed by the fabricator, in accordance with criteria on Drawings. Fabricator-designed connections shall be submitted together with complete calculations for review for acceptability by the Architect.
- E. Substitutions:
 - 1. Proposed substitutions of sections or modification of details, and reasons therefore, shall be submitted with shop drawings for review. Submitted substitutions must be clearly identified and noted as such. Approved substitutions, modifications, and necessary changes in related portions of work shall be coordinated by fabricator and shall be accomplished at no additional cost to Owner.
 - 2. Substitutions to the beam to column and beam to beam connections shown on the drawings will be reviewed for acceptability if submitted with calculations prepared by a licensed professional engineer.
- F. Responsibility for Errors: Fabricator shall be responsible for all errors of detailing, fabrications, and for correct fitting of structural steel members.

Mark Twain School for the Talented and Gifted Org# 220

- G. Templates: Shall be furnished by fabricator with instructions for setting of anchor bolts and bearing plates.
- H. Related Work Specified in Other Sections:
 - 1. Testing laboratory services for verification of quality: Section 01 41 00.
 - 2. Miscellaneous metal fabrications.
 - 3. Metal stairs.
 - 4. Finished painting.
 - 5. Grouting of base plates: Section 03 30 00.

1.3 QUALITY CONTROL

- A. Latest adopted edition of all standards referenced in this Section shall apply, unless noted otherwise. In case of conflict between Contract Documents and a referenced standard, Contract Documents shall govern. In case of conflict between Contract Documents and Building Code, more stringent shall govern.
- B. Contractor shall furnish fabrication/erection inspection and testing of all welds in accordance with AWS D.1.1, Chapter 6. Submit records of inspections and tests to Owner's testing laboratory for their review.
- C. Fabricator shall have developed a detailed fabrication procedural manual reflecting key quality control procedures used in fabrication process and shall provide a copy of the manual for examination by Owner's testing laboratory.
- D. Fabricator shall employ a competent technician, engineer or independent testing laboratory to inspect fabrication work to ensure compliance with Contact Documents and shall identify such inspector to Owner's testing laboratory. Inspector shall examine in the shop all welding, bolting, shear studs, painting, galvanizing, and straightness and alignment of fabricated members.
- E. Testing Laboratory Services for Verification of Quality: Refer to Section 01 41 00.
- F. All materials, fabrication procedures, and field erection are subject to verification inspection and testing by Owner's testing laboratory, in both shop and field. Such inspections and tests will not relieve Contractor of his responsibility for providing materials and fabrication procedures in compliance with specified requirements. Owner reserves the right to use ultrasonic or radiographic inspection to verify adequacy of all welds. Testing procedures and acceptance criteria shall be as specified in AWS D1.1. Promptly remove and replace materials or fabricated components which do not comply.
- G. Qualifications for Welding Work: Contractor shall be responsible for qualifying welding operators in accordance with AWS "Standard Qualification Procedure". Provide certification, to Owner's testing laboratory, that welders to be employed in work have satisfactorily passed AWS qualification tests within previous 12 months. If recertification of welders is required, retesting will be Contractor's responsibility.
- H. Qualifications of Welding Procedures: Contractor shall provide testing laboratory with welding procedures which are to be used in executing this work. Welding procedures shall be qualified prior to use in accordance with AWS D1.1, Part B.
- I. Comply with Provisions of the Following Codes, Specifications and Standards, in Addition to Building Code:
 - 1. AISC, "Code of Standard Practice for Steel Buildings and Bridges".

- 2. AISC, "Specification for Structural Steel Buildings", including "Commentary" and Supplements thereto, as issued.
- 3. AISC, "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts", Approved by the Research Council of Structural Connections for the Engineering Foundation.
- 4. AISC, "Specification for Architecturally Exposed Structural Steel".
- 5. AWS D1.1, "Structural Welding Code".
- 6. ASTM A6, "Specifications for General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use".
- 7. Industrial Fasteners Institutes, "Handbook on Bolt, Nut, and Rivet Standards".
- 8. Steel structure painting council:
 - a. Painting manual, Vol. 1, Good Painting Practice.
 - b. Painting manual, Vol. 2, Systems Specifications.
- J. Qualifications:
 - 1. Structural steel fabricator shall have not less than 10 years experience in fabrication of structural steel for buildings.
 - 2. Structural steel erector shall have not less than 5 years experience in erection of structural steel.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications and installation instructions, including laboratory test reports and other data, to show compliance with Specifications for the following products.
 - 1. Structural steel primer paint.
 - 2. Shrinkage-resistant grout.
 - 3. Shear studs.
- B. Mill Certificates: Submit for Architect's record certificates of mill analysis showing compliance with Specifications for the following products:
 - 1. Structural steel (each type).
 - 2. High-strength bolts (each type), including nuts and washers.
 - 3. Shear studs.
- C. Shop Drawings:
 - 1. All typical beam to column and beam to beam connections are detailed and shown on the Contract Documents. The Contractor is to comply with these connection details. If the Contractor would like to substitute a connection, it shall be submitted in accordance with the specified procedure for substitutions, with calculations prepared by a licensed professional engineer.
 - 2. Submit shop drawing of all structural steel, including complete details and schedules for fabrication and shop assembly of members, erection plans and details, procedures, and diagrams showing sequence of erection. Include details of cuts, connections, camber, holes, and other pertinent data. Indicate welds by standard AWS symbols and show size, length, and type of each weld.
 - 3. Submit design calculations for the non-typical beam, truss and bracing connections that are designed by the fabrication. Calculations shall bear seal of a Licensed Professional Engineer, licensed in the State of Texas. Calculations shall show applied loads and reference applicable piece mark from the shop drawings as well as location or mark from structural drawings.
 - 4. Structural steel members for which shop drawings have not been reviewed shall not be fabricated. Architect's review shall cover general locations, spacings and details of design. Omission from show drawings of any materials required by Contract Documents shall not relieve Contractor of responsibility of furnishing and installing such materials, even though such shop drawings may have been reviewed and returned.

Leslie A. Stemmons Elementary School Org# 210 5. Submit setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed by other trades.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time to not delay that work.
- B. Store materials to permit easy access for inspection and identification. Keep steel members off ground using pallets, platforms or other supports. Protected steel members and packaged materials from corrosion and deterioration.
- C. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.
- D. Support cambered members during shipment and handling in a manner which will not result in loss of camber.

1.6 JOB CONDITIONS

- A. Coordinate erection of structural steel with work of other trades.
- B. Do not install columns which have embeds or anchor bolts in concrete until concrete members have attained their 28 day compressive strengths.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Metal Surfaces, General: For fabrication of work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names, and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating and application of surface finishes.
- B. Steel:
 - 1. Wide flange (W) shapes, tees, splice plates and stiffener plates: ASTM A 992 (50 ksi yield).
 - 2. Other rolled shapes, plates, and bars: ASTM A 36 (36 ksi yield).
 - 3. Cold formed steel tubing (HHS): ASTM A 500, Grade B, (46,000 psi yield).
 - 4. Steel pipe: ASTM A 53, Type E or S, Grade B.
 - 5. All structural shapes within groups 4 and 5 of A.I.S.C. grouping for tensile property classification shall be supplied using killed steel.
 - 6. For ASTM A 6 (Groups 4 and 5) rolled shapes (spliced or otherwise) connected by full penetration welds provide material with Charpy V-Notch testing, in accordance with ASTM A 6, Supplementary Requirement S5. Impact test shall meet a minimum average value of 20 foot-pounds absorbed energy at 70° F and shall be conducted in accordance with ASTM A 673 and AISC Specifications for Structural Steel Buildings.
 - 7. For plates exceeding 2" thickness used in built-up members, which are spliced or connected by full penetration welds, provide material with Charpy V-Notch, testing in accordance with ASTM A 6, Supplementary Requirement S5. Impact test shall be conducted by producer in accordance with ASTM A 673, Frequency P and shall meet a minimum average value of 20 foot-pounds absorbed energy at 70° F.
- C. Bolts and Washers:

Leslie A. Stemmons Elementary School Org# 210 Dallas ISD Construction Services

- 1. Anchor bolts: Anchor bolts (or anchor rods) for anchoring to concrete shall conform to ASTM F1554, Grade 36, and to requirements for regular hexagon bolts and nuts of ANSI Standards B 18.2.1 and B18.2.2. Washers for anchor bolts shall be oversize.
- 2. All bolts for connections shall be high strength bolts conforming to ASTM A 325. Dimensions of bolt heads and nuts shall conform to requirements for heavy hexagon nuts of ANSI Standards B18.2.1 and B18.2.2. Nuts shall be ASTM A 563 materials.
- 3. Washers: Flat and smooth circular hardened washers conforming to requirements of ASTM F 436. Beveled washers for S shapes and channels shall be square or rectangular, taper in thickness, and smooth. Washers for use with high-strength bolts shall be hardened.
- 4. Direct tension indicator washers for high-strength bolts in friction connections shall conform to ASTM F 959, Type A 325.
- 5. Tension control (twist off) bolts may, at Contractor's option, be used in lieu of conventional high-strength bolts. Tension control bolts shall conform to ASTM F 1852 with A 325 marking.
- Drilled expansion anchor bolts shall be one of the following (no substitutions): Wej-it Bolt, Wej-it Corporation, Tulsa, OK Kwik Bolt, Hilti Fastening Systems, Tulsa, OK. Trubolt, Ramset Fastening Systems, Paris, KY.
- D. Welding electrodes shall conform to requirements of Specifications of American Welding Society. Use E70 electrodes. For high-strength, low-alloy steel, provide electrodes, welding rods, and filler metals equal in strength and compatible in appearance with parent metal jointed.
- E. Shear studs shall be shear connectors with proper ferrules and accessories, especially designed to create composite deck action between concrete deck and supporting beam. Steel for studs shall conform to requirements of Specifications for Steel Bars, Carbon, Cold Finished Standard Quality, ASTM A 108, Grades 1015-1020, with a minimum tensile strength of 60,000 psi. Studs shall be of uniform diameter, heads shall be concentric and normal to shaft and weld end shall be chamfered, welds shall be solid flux.
- F. Primer Paint:
 - 1. Standard shop coat of red oxide primer, meeting requirements of "SSPC-Paint 13" or Federal Specification "TT-P-636", applied to a dry film thickness of 2.0 mils, or
 - 2. Tnemec 10-99G (Green) Primer or Carboline "Rustamore 29" (Gray) Primer, applied to a dry film thickness of not less than 2.5 mils.
 - 3. Epoxy primer for exterior exposed steel (not noted to be galvanizied) Tnemec "Series 66-1211 Hi-Build Epoxoline" Primer or Carboline "Carboline 885" applied to a dry film thickness of 3 to 5 mils.
 - 4. For architecturally exposed steel primer as specified in Division 9 or, if not specified, as recommended by manufacturer of finish coat specified in Division 9.
- G. Non-shrink Grout: Premixed, non-shrinking, non-metallic grout. Compressive strength in 28 days shall be 5000 psi minimum, but in no case less than specified strength of base concrete. Grout shall conform to ASTM C 1107, Grade B when tested at fluid consistency.
- H. Zinc-coating: For galvanized steel shall conform to ASTM A 123, threaded products shall conform to ASTM A 153, Class C and sheet steel shall conform to ASTM A 591.
- I. Use "ZRC" cold galvanizing compound, as manufactured by ZRC Chemical Products, Quincy, Mass.
- J. Slide Bearings: If required, shall be reinforced teflon, factory prebonded to steel plates with initial static coefficient of friction not exceeding 0.06 at interface, over a working stress range of 500 to 2000 psi. Bearing shall be one of the following:
 - 1. "Fluorogold" slide bearings, by Fluorocarbon Co., Pine Brook, N.J.
 - 2. "Con-Slide" slide bearings, by Con-Serv, Inc., East Hampton, N.J.

2.2 FABRICATION

- A. Shop Fabrication and Assembly:
 - 1. Fabricate and assemble structural assemblies in the shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings.
 - 2. Provide camber in members where indicated. Specified camber applies at jobsite, just prior to erection, lying down flat so that member weight has no effect. Contractor shall take necessary precautions to prevent or compensate for camber loss during shipment. Measured camber in members up to 50'-0" long shall be within a tolerance of -0" to +1/2" from amount specified. For members greater than 50'-0" long, both positive and negative tolerance may increase 1/8" for every 10'-0" of length in excess of 50'-0". Members with a field measured camber outside of specified tolerance shall be returned to shop.
 - 3. If heat is used to camber steel beams, it shall be carefully controlled and applied in a manner which will not alter the material properties of the member, and only in the presence of the testing laboratory. Follow AISC recommendations for heat cambering.
 - 4. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.
 - 5. Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of marking, burrs, and other defects.
 - 6. Splicing of structural steel members is prohibited without prior approval of Architect. Any member having a splice not shown and detailed on approved shop drawings shall be rejected.
 - 7. Members in compression joints which depend on contact bearing shall have bearing surfaces milled to a common plane. Members to be milled shall be completely assembled before milling.
 - 8. Plates shall be free of gross internal discontinuities such as ruptures and delaminations. Plates shall comply with ASTM A 578, Level 1.
 - 9. Mill tolerances: Comply with ASTM A 6.
 - 10. Fabrication tolerances: Comply with AISC Code of Standard Practice.
- B. Connections:
 - 1. Weld or bolt shop connections, as indicated on Drawings.
 - 2. Bolt field connections, except where welded connections or other connections are indicated. Provide specified threaded fasteners for all principal bolted connections. Holes for bolted connections shall be drilled or punched at right angles to member. Slope of surfaces under bolt head and nut shall not exceed 1:20. Provide beveled washers where slopes exceed 1:20. Bolt holes shall have a diameter not greater than 1/16" larger than nominal bolt diameter. Do not flame cut holes or enlarge by burning. Provide washers over all slotted holes in an outer ply.
 - 3. High-strength bolted construction: Install in accordance with AISC, "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts", (RCRBSJ)
 - 4. Welded construction: Comply with AWS Structural Welding Code for procedures, appearance and quality of welds and methods used in correcting welding work. Assemble and weld built-up sections by methods which produce true alignment of axes without warp. Welds not specified shall be continuous fillet welds designed to develop full strength of member. No combination of bolts and welds shall be used for stress transmission at the same face of any connections.

Leslie A. Stemmons Elementary School Org# 210

- 5. Heavy shapes (ASTM A6, groups 4 and 5, and built-up sections containing plates thicker than 2"): Comply with all special requirements for welding heavy shapes continued in the AISC Specification and in AWS Structural Welding Code.
- 6. Clean completed welds prior to inspection. Slag shall be removed from completed welds, and adjacent base metal shall be cleaned by brushing or other suitable means. Tightly adherent splatter remaining after cleaning is acceptable unless its removal is required for the purpose of nondestructive testing.
- 7. For high-strength, low-alloy steels follow welding procedures recommended by steel producer for exposed and concealed connections.
- Base plates: Hole sizes for anchor bolts may be oversized to facilitate erection as follows: Bolts 3/4" to 7/8" diameter - 5/16" oversize Bolts 1" to 2" diameter - 1/2" oversize

Use oversize or plate washers under nut at all oversized holes in base plates. Washers must be large enough to cover entire hole. Washer thickness shall be at least 1/8 of bolt diameter.

- C. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Shop weld shear connectors, shaped as shown, to beams and girders in composite construction which does not support metal deck. Use automatic end welding of headed stud shear connectors in accordance with manufacturer's printed instructions Apply before galvanizing where galvanized members are called for.
 - Installation of shear connectors: End weld in shop, in accordance with Article 31 of AWS Code and Specifications of shear stud manufacturer. After installation, each ceramic ferrule shall be removed prior to placement of concrete. Adequate welding power must be available for studs being welded.
 - 2. All areas to which studs are to be attached shall be cleaned of rust, oil, grease, and paint. When mill scale is sufficiently thick to cause difficulty in obtaining proper welds removed by grinding or sand blasting.
- D. Steel Wall Framing: Select members which are true and straight for fabrication. Straighten as required to provide uniform, square, and true members in completed wall framing.
- E. Holes for Other Work: Provide holes required for securing other work to structural steel framing and for passage of other work through steel framing members, as shown on final shop drawings. Provide threaded nuts welded to framing and other specialty items as indicated to receive other work. Cut, drill or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.
- F. Zinc-coating: Following Steel Shall be Galvanized:
 - 1. Cooling tower grillage and supports, including fasteners.
 - 2. Cooling tower screen support members and braces.
 - 3. Masonry shelf angles.
 - 4. Exposed railing.
- G. Architecturally Exposed Structural Steel: Shall be straight and true. Select or straighten members to meet permissible variations of ASTM A6, subject to tolerances of AISC Code of Standard Practice, Section 10. Exposed surfaces shall be smooth, free of embedded scale, trademarks, roll imperfection marks and other irregularities. Fill any depressions with weld metal of the same composition as the parent metal. Grind welds and raised marks smooth and flush with adjacent surfaces. See 05125 for additional information.

2.3 SHOP PAINTING

- A. General: Shop paint structural steel, except members or portions of members to receive a galvanized coating or members to be embedded in concrete or mortar. Paint embedded steel which is partially exposed on exposed portions and initial 2" of embedded areas only.
 - 1. Do not paint surfaces which are to be welded.
 - 2. Do not paint surfaces which are scheduled to receive sprayed-on fireproofing.
 - 3. Do not paint surfaces of exposed high-strength, low-alloy steel members (weathering steel).
 - 4. Do not paint top surface of beams which support composite metal floor deck.
 - 5. Apply 2 coats of paint to surfaces which are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.
- B. Surface Preparation: After inspection and before shipping, clean steel to be painted. Remove loose rust, mill scale, spatter, and slag or flux deposits. Clean in accordance with Steel Structure Painting Council (SSPC) as follows:
 - 1. SP-2, "Hand Tool Cleaning" or SP-3, "Power Tool Cleaning" (for members in enclosed, air conditioned spaces)
 - 2. SP-6, "Commercial Blast Cleaning". (for members exposed to weather, in non conditioned spaces, in crawl spaces, all members exposed to view, including those designated as AESS)
 - 3. SP-10, Near-White Blast Cleaning. (for high-strength, low-alloy steel surfaces to avoid uneven oxidation.)
- C. Painting: Immediately after surface preparation apply structural steel primer paint in accordance with manufacturer's instructions, at a rate to provide a uniform dry film thickness as specified. Use painting methods which results in full coverage of joints, corners, edges and exposed surfaces.

PART 3 - EXECUTION

3.1 INSPECTION

A. Erector must examine areas and conditions under which structural steel work is to be installed, and notify Contractor of conditions detrimental to proper and timely completion work.

3.2 SURVEY

A. Employ a registered professional engineer or public surveyor, experienced in survey work, to establish permanent bench marks as shown and as necessary for accurate erection of structural steel. Check elevations of concrete and masonry bearing surfaces and locations of anchor bolts and similar devices before erection work proceeds, report discrepancies to Architect. Do not proceed with erection until corrections have been made, or until compensating adjustments to structural steel work have been agreed upon with Architect.

3.3 ERECTION

- A. General: Comply with AISC Specifications and Code of Standard Practice, and as herein specified.
- B. Temporary Shoring and Bracing:
 - 1. Provide adequate shoring and bracing to safely withstand all loads to which structure may be subjected during construction process including wind loads, dead loads, construction material, and equipment loads. Such bracing shall remain in place as long as required for safety.

Leslie A. Stemmons Elementary School Org# 210 Dallas ISD Construction Services

August 4, 2024

- 2. As erection progresses, make a sufficient number of permanent welded or bolted connections to withstand erection stresses and maintain stability.
- 3. Design of temporary shoring and bracing shall be responsibility of Contractor.
- C. Temporary Planking; Provide planking and working platforms, as necessary, to effectively complete work.
- D. Anchor Bolts: Furnish anchor bolts and other connectors required for securing structural steel to foundations and other in-place work. Furnish templates and other devices as necessary for presetting bolts and other anchors in accurate locations. Refer to Division 3 of these Specifications for anchor bolt installation requirements in concrete, and Division 4 for masonry installation.
- E. Setting Bases and Bearing Plates: Clean concrete and masonry bearing surfaces of bondreducing materials and roughen to improve bond to surfaces. Clean bottom surface of base and bearing plates.
 - 1. Set loose and attached base plates and bearing plates, for structural members, on wedges or other adjusting devices.
 - 2. Tighten anchor bolts after supported members are positioned and plumbed. Do not remove wedges or shims but if protruding, cut off flush with edge of base or bearing plate prior to packing with grout.
- F. Slide Bearing Plates: Shall be permanently affixed to member and support, respectively, by welding or bolting as indicated. Member faces shall be aligned and leveled so as to maintain full and level contact between surfaces before completing installation. Use tapered shims where required for leveling.
- G. Field Assembly:
 - Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming a part of a complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 2. Level and plumb individual members of structure within tolerances defined by AISC Code for Standard Practice, unless closer tolerances are required for proper fitting of adjoining or enclosing materials, in which case the most stringent shall apply.
 - 3. Set horizontal members with their natural camber (or specified camber) up.
 - 4. Exposed-to-view faces of members designated as architecturally exposed structural steel shall be plumbed, leveled and aligned to a tolerance not to exceed the amount permitted for structural steel, unless adjoining materials dictate a tighter tolerance.
 - 5. Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.
 - 6. Splice members only where indicated and accepted on final shop drawing.
 - 7. Where parts cannot be assembled or fitted properly, as a result of errors in fabrication or of deformation due to handling or transportation, such condition shall be immediately reported to Architect, along with proposed method of correction. Straightening of bends or warps shall be done by approved methods. Bent or damaged heat-treated parts will be rejected.
 - 8. Fastening of splices in compression members shall be done after abutting surfaces have been brought completely into contact.
- H. Erection Bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds and grind smooth at exposed surfaces. On non-exposed welded construction, erection

Leslie A. Stemmons Elementary School Org# 210 Dallas ISD Construction Services bolts shall be tightened securely and left in place, or if removed, holes shall be filled with plug welds.

- I. Bolted Connections:
 - 1. High-strength bolts shall be installed in conformance with "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts".
 - 2. A 307 bolts and high-strength (A 325 and A 490) bolts noted to be "snug-tight" shall be tightened using a few impacts of an impact wrench or the full effort of a man using an ordinary spud wrench, bringing plies into snug contact.
 - 3. High-strength bolts which are not specifically designated to be "snug-tight" shall be tightened to provide at least the minimum tension shown in Table 4 of "Specification for Structural Joints using ASTM A 325 and A 490 Bolts". Tightening shall be done by turn-of-the-nut method, with direct tension indicators, or by properly calibrated wrenches.
 - 4. Bolted parts shall fit solidly together when assembled. All joint surfaces shall be free of burrs, dirt and other foreign material that would prevent solid seating of parts.
 - 5. Bolts tightened by calibrated wrench or torque control shall have a hardened washer under the element (nut or bolt head) turned in tightening.
 - 6. Hardened washers shall be placed over slotted holes in an outer ply. Hardened beveled washers shall be used where outer face of bolted parts has a slope greater than 1:20 with respect to bolt axis.
- J. Field Welding: Comply with As Structural Welding Code and AISC Specification for Structural Steel Buildings. Pay particular attention to surface preparation, preheating, sequence, and continuity of welds. Where heavy shapes are to be welded, comply with all special requirements of AISC Specification and AWS Structural Welding Code.
- K. Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
- L. Do not enlarge unfair holes in members by burning or by use of drift pins, except in secondary bracing members. Ream holes that must be enlarged to admit bolts.
- M. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in structural framing. Cutting will be permitted only on secondary members which are not under stress, as acceptable to Architect. Finish gas-cut sections equal to a sheared appearance when permitted.
- N. Touch-up Painting; Immediately after erection, touch-up areas of hot-dip galvanized members where galvanizing has been abraded during shipping and erection and where it has been removed or damaged due to welding. Apply specified cold galvanizing compound in accordance with manufacturer's instructions, to a minimum dry film thickness of 20 mils.

3.4 CLEANUP

A. Clean up all debris caused by work of this Section, keeping the area clean and neat at all times.

END OF SECTION 05 12 00

SECTION 05 5000 - METAL FABRICATIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated steel items may include, but are not limited to the following:
 - 1. Steel ladders.
 - 2. Loose bearing and leveling plates.
 - 3. Loose steel lintels.
 - 4. Shelf and relieving angles.
 - 5. Steel framing and supports for aluminum storefront panels.
 - 6. Steel framing and supports for countertops.
 - 7. Steel framing and supports for mechanical and electrical equipment.
 - 8. Steel framing and supports for windows and storefronts.
 - 9. Steel framing and supports for applications where framing and supports are not specified in other Sections.
 - 10. Miscellaneous metal trim.
 - 11. Metal floor plate and supports.
 - 12. Pipe bollards.

1.02 REFERENCES

- A. ANSI A14.3 American National Standard for Ladders -- Fixed -- Safety Requirements; Current Edition.
- B. ASME A17.1 Safety Code for Elevators and Escalators.
- C. ASTM A 36/A 36M Standard Specification for Carbon Structural Steel; Current Edition.
- D. ASTM A 53/A 53M Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; Current Edition.
- E. ASTM A1011/A1011M 14 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; Current edition.
- F. ASTM A 123/A 123M Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; Current Edition.
- G. ASTM A 283/A 283M Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; Current Edition.
- H. ASTM A 325 Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; Current Edition.
- I. ASTM A 325M Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Tensile Strength (Metric); Current Edition.
- J. ASTM A 500 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; Current Edition.
- K. AWS D1.1 Structural Welding Code Steel; American Welding Society; Current Edition.
- L. SSPC-Paint 15 Steel Joist Shop Primer; Society for Protective Coatings; Current Edition.
- M. SSPC-Paint 20 Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; Current Edition.

05 5000-1

1.03 SUBMITTALS

- A. See Division 1 Sections for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS
- D. Product data sheet or MSDS indicating VOC emissions in grams/Liter (g/L). Provide referenced standard VOC limit for products applied within building envelope.

1.04 QUALITY ASSURANCE

A. Design metal fabrications to resist imposed loads under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State of Texas.

PART 2 - PRODUCTS

2.01 MATERIALS - STEEL

- A. Steel Sections: ASTM A 36/A 36M.
- B. Steel Tubing: ASTM A 500, Grade B cold-formed structural tubing.
- C. Plates: ASTM A 283 / A283M.
- D. Pipe: ASTM A 53/A 53M, Grade B Schedule 40, black finish.
- E. Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, galvanized to ASTM A 153/A 153M where connecting galvanized components.
- F. Welding Materials: AWS D1.1; type required for materials being welded.
- G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I Inorganic, complying with VOC limitations of authorities having jurisdiction.
- I. Provide material with maximum amount of recycled content available that achieves performance requirements of this Section,

2.02 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FINISHES - STEEL

- A. Prime paint all steel items. Comply with Division 1 Sections for "Indoor Air Quality Requirements."
 - 1. Exceptions: Galvanize items to be embedded in concrete or masonry.
 - 2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
 - 3. Exceptions: Provide galvanized components where indicated on the drawings.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: Two coats.
- E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A 123/A 123M requirements.
- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A 123/A 123M requirements.

2.04 PREFABRICATED STEEL LADDERS

- A. Prefabricated Ladders: Welded metal unit complying with ANSI A14.3; factory fabricated to greatest degree practical and in the largest components possible, conforming to drawing details. Include safety cages where shown.
 - 1. Manufacturers:
 - a. Industrial Ladder & Scaffolding, Inc: www.anyladder.com/sle.
 - b. O'Keeffe's Inc: www.okeeffes.com/sie.
 - c. Substitutions: See Section 016000 Product Requirements.
 - 2. Components: Manufacturer's standard rails, rungs, treads, handrails, returns, wire mesh panels, platforms, cages and safety devices complying with the drawings and requirements of the materials article of this section.
 - 3. Materials: Carbon steel; ASTM A1011/A1011M, Grade 36, minimum.
 - 4. Shop finish: Prime painted, except where galvanized components are indicated on the drawings.
- B. Finish: Field painted after fabrication.
 - 1. Field paint stairs, guardrails and components.
 - 2. Do not paint galvanized surfaces.
 - 3. Provide nonslip surfaces on top of each rung by coating with abrasive material metallically bonded to rung by a proprietary process.

2.05 LOOSE BEARING AND LEVELING PLATES

- A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.
- B. Galvanize plates after fabrication.

2.06 LOOSE STEEL LINTELS

- A. Fabricate loose structural-steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
- B. Weld adjoining members together to form a single unit where indicated.
- C. Size loose lintels to provide bearing length at each side of openings equal to one-twelfth of clear span, but not less than 8 inches(200 mm), unless otherwise indicated.
- D. Galvanize loose steel lintels located in exterior walls.

- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

- A. Unless otherwise noted, all miscellaneous steel items are to be concealed from view.
- B. Install items plumb and level, accurately fitted, free from distortion or defects.
- C. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- D. Field weld components indicated.
- E. Perform field welding in accordance with AWS D1.1.
- F. Obtain approval prior to site cutting or making adjustments not scheduled.
- G. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 ERECTION TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION 05 50 00

SECTION 05 5213 - PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall mounted handrails,
- B. Free-standing railings at steps.
- C. Balcony railings and guardrails,

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 Cast-in-Place Concrete: Placement of anchors in concrete.
- B. Section 09 2116 Gypsum Board: Placement of backing plates in stud wall construction.
- C. Section 09 9000 Paints and Coatings.

1.03 REFERENCE STANDARDS

- A. ADA Standards Americans with Disabilities Act (ADA) Standards for Accessible Design; current edition.
- B. ASTM A53/A53M Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; current edition.
- C. ASTM A123/A123M Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; current edition.
- D. ASTM A500/A500M Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; current edition.
- E. ASTM E935 Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; current edition.
- F. ASTM E985 Standard Specification for Permanent Metal Railing Systems and Rails for Buildings; current edition.
- G. SSPC-Paint 20 Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; current edition.

1.04 SUBMITTALS

- A. See Division 1 Sections for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of= fasteners, and accessories.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of ASTM E985 and applicable local code.
- B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 75 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.
- Concentrated Loads: Design railing assembly, wall rails, and
 attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.

Mark Twain School for the Talented and Gifted Org# 220

05 5213-1

PIPE AND TUBE RAILINGS CSP 207459

Dallas ISD Construction Services

- D. Allow for expansion and contraction of members and building movement without damage to connections or members.
- E. Dimensions: See drawings for configurations and heights.
 - 1. Top Rails and Wall Rails: Meet all applicable code requirements.
 - 2. Intermediate Rails: Round, diameter as indicated on drawings.
- F. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
 - 1. For anchorage to concrete, provide inserts to be cast into concrete, for bolting anchors.
 - 2. For anchorage to masonry, provide brackets to be embedded in masonry, for bolting anchors.
 - 3. For anchorage to stud walls, provide backing plates, for bolting anchors.
 - 4. Posts: Provide adjustable flanged brackets.
- G. Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.
- H. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jursidiction.

2.02 STEEL RAILING SYSTEM

- A. Steel Tube: ASTM A500/A500M, Grade B cold-formed structural tubing.
- B. Steel Pipe: ASTM A53/A53M, Grade B Schedule 80, black finish.
- C. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.
- D. Exposed Fasteners: No exposed bolts or screws.
- E. Straight Splice Connectors: Steel concealed spigots.
- F. Provide shop primed components.
 - 1. Field paint railing systems in accordance with requirements of Section 09 9000 Paints and Coatings.

2.03 FABRICATION

- A. Accurately form components to suit specific project conditions and for proper connection to building structure.
- B. Fit and shop assemble components in largest practical sizes for delivery to site.
- C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.
- D. Welded Joints:
 - 1. Exterior Components: Continuously seal joined pieces by intermittent welds and plastic filler. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
 - 2. Interior Components: Continuously seal joined pieces by intermittent welds and plastic filler.
 - 3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease

PIPE AND TUBE RAILINGS

exposed edges to small uniform radius.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C. Install railings in compliance with ADA Standards for accessible design at applicable locations.
- D. Anchor railings securely to structure.
- E. Field weld anchors as indicated on drawings. Touch-up welds with primer. Grind welds smooth.
- F. Conceal anchor bolts and screws whenever possible.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION 05 52 13

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Preservative treated wood materials.
- B. Fire retardant treated wood materials.
- C. Miscellaneous framing and sheathing.
- D. Concealed wood blocking, nailers, and supports.

1.2 REFERENCE STANDARDS:

- A. ASTM A153/A153M Standard Specification for Zinc Coating (Hot- Dip) on Iron and Steel Hardware; Current Edition.
- B. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials; Current Edition.
- C. AWPA U1 Use Category System: User Specification for Treated Wood; American Wood Protection Association; Current Edition.
- D. PS 20 American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); Current Edition.

1.3 SUBMITTALS

- A. See Division 1 Sections for submittal procedures.
- B. Product Data: Provide technical data on wood preservative materials and application instructions.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. Species: Douglas Fir-South, unless otherwise indicated
 - 2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service

for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

3. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Boards: Standard or No. 3.

2.3 SHEET MATERIALS

- A. Communications Room Mounting Boards: PS 1 A-C plywood A side out; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84; free of defects (knots and voids shall be considered a defect) to be installed covering all walls. The plywood shall be 4 feet by 8 feet and be installed 24 inches above finished floor. Plywood shall be mounted with the A side exposed to the interior of the room and the C side against the wall. Backboards shall be painted with Architect selected color, leaving the UL fire-rating symbol unpainted and visible.
- B. Electrical Rooms: Do not install plywood panels in electrical rooms.
- C. Wall Sheathing: Plywood, PS-1, Grade C-C Exterior Exposure; fire treated.

2.4 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere with 100% recycled content.
 - 2. Anchors: Expansion shield and lag bolt type for anchorage to solid masonry or concrete, recycled content 100%

2.5 FACTORY WOOD TREATMENT

- A. All interior rough carpentry items are to be fire retardant treated.
- B. Treated Lumber and Plywood: Comply with requirements of AWPA U1 Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 - 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
 - 2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

- C. Fire Retardant Treatment:
 - 1. Manufacturers:
 - a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
 - b. Hoover Treated Wood Products, Inc: www.frtw.com.
 - c. Osmose, Inc: www.osmose.com.
 - d. Substitutions: See Section 01 6000 Product Requirements.
 - Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. All interior rough carpentry items are to be fire retardant treated.
 - c. Treat rough carpentry items as indicated.
 - d. Do not use treated wood in applications exposed to weather or where the wood may become wet.
- D. Preservative Treatment:
 - 1. Manufacturers:
 - a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
 - b. Viance, LLC: www.treatedwood.com.
 - c. Osmose, Inc: www.osmose.com.
 - d. Substitutions: Refer to applicable Division 1 sections.
 - Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
 - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 - b. Treat lumber in contact with roofing, flashing, or waterproofing.
 - c. Treat lumber in contact with masonry or concrete.
 - d. Treat lumber less than 18 inches above grade.
 - e. Treat lumber in other locations as indicated.

PART 3 EXECUTION

3.1 PREPARATION

- A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.
- B. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

3.2 INSTALLATION – GENERAL

ROUGH CARPENTRY CSP 207459 August 16, 2024

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.
- D. 1/2" plywood sheet blocking at classrooms.

3.3 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fire blocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
- C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

3.4 INSTALLATION OF CONSTRUCTION PANELS

- A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 - 2. Here boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
 - 3. Install adjacent boards without gaps.

3.5 INSTALLATION OF WOOD SHEATHING

A. Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws or staples.

3.6 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
- B. Allow preservative to dry prior to erecting members.

3.7 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

C. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.8 CLEANING

- A. Waste Disposal:
 - 1. Comply with applicable regulations.
 - 2. Do not burn scrap on project site.
 - 3. Do not burn scraps that have been pressure treated.
 - 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION 06 10 00

SECTION 06 20 00 - FINISH CARPENTRY / MILLWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Finish carpentry items.
- B. Wood casings and moldings.
- C. Hardware and attachment accessories.

1.02 REFERENCE STANDARDS

- A. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. AWI/AWMAC/WI (AWS) Architectural Woodwork Standards.
- C. AWMAC/WI (NAAWS) North American Architectural Woodwork Standards, U.S. Version 3.1
- D. AWPA U1 Use Category System: User Specification for Treated Wood.
- E. HPVA HP-1 American National Standard for Hardwood and Decorative Plywood.
- F. PS 1 Structural Plywood.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with plumbing rough-in, electrical rough-in, and installation of associated and adjacent components.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.04 SUBMITTALS

- A. See Division 1 Sections for submittal procedures.
- B. Product Data:
 - 1. Provide data on fire retardant treatment materials and application instructions
 - 2. Provide instructions for attachment hardware and finish hardware.
- C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
 - 1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
 - 2. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
- D. Samples: Submit two samples of finish plywood, 24 x 24 inch in size illustrating wood grain and specified finish.
- E. Samples: Submit two samples of wood trim 18 inch long.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
 - 1. Company with at least one project within the past 5 years with value of woodwork within 20 percent of cost of woodwork for this project.
 - a. Single Source Responsibility: Provide and install this work from single fabricator.

1.06 DELIVERY, STORAGE, ANDHANDLING

A. Protect work from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

2.02 WOOD-BASED COMPONENTS

- A. Wood fabricated from old growth timber is not permitted.
- B. Provide sustainably harvested wood, certified or labeled as specified in Section 01 6000 Product Requirements.
- C. Wood fabricated from timber recovered from riverbeds or otherwise abandoned is permitted, unless indicated otherwise, and provided it is clean and free of contamination, identify source; provide lumber re- graded by an inspection service accredited by the American Lumber Standard Committee, Inc. (ALSC).

2.03 LUMBER MATERIALS

A. Hardwood Lumber: White Oak species, rift sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.

2.04 SHEET MATERIALS

- A. Softwood Plywood, Not Exposed to View: Any face species, medium density fiberboard core; PS 1 Grade A-B, glue type as recommended for application.
- B. Softwood Plywood, Exposed to View: Face species as indicated, plain sawn, medium density fiberboard core; PS 1 Grade A-B, glue type as recommended for application.
- C. Hardwood Plywood: Face species as selected by Architect, rift sawn, book matched, medium density fiberboard core; HPVA HP-1, Front Face Grade AA, Back Face Grade 1, glue type as recommended for application.

2.05 FASTENINGS

- A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.
- B. Fasteners: Of size and type to suit application.
- C. Concealed Joint Fasteners: Threaded steel

2.06 ACCESSORIES

- A. Lumber for Shimming and Blocking: Softwood lumber of Douglas Fir species.
- B. Primer: Alkyd primer sealer.
- C. Wood Filler: Solvent base, tinted to match surface finish color.

2.07 WOOD TREATMENT

A. Factory-Treated Lumber: Comply with requirements of AWPA U1 - Use Category System for pressure impregnated wood treatments determined by use categories, expected service conditions, and specific applications.

- B. Fire Retardant Treatment (FR-S Type): Chemically treated and pressure impregnated; capable of providing flame spread index of 25, maximum, and smoke developed index of 450, maximum, when tested in accordance with ASTM E84.
- C. Wood Preservative by Pressure Treatment (PT Type): Provide AWPA U1 treatment using waterborne preservative with 0.25 percent retainage.
- D. Provide identification on fire retardant treated material.
- E. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.
- F. Redry wood after pressure treatment to specified percent moisture content

2.08 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. Fit exposed sheet material edges with 3/8 inch matching hardwood edging. Use one piece for full length only.
- C. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.09 SHOP FISHING

- A. Sand work smooth and set exposed nails and screws.
- B. Apply wood filler in exposed nail and screw indentations.
- C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

- A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated
- B. Set and secure materials and components in place, plumb and level.
- C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.03 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION 06 20 00

06 20 00-4

SECTION 06 41 00 - PLASTIC LAMINATE CLAD CABINETS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Custom fabricated cabinet units, plastic laminate clad.
- B. Countertops.
- C. Cabinet hardware.
- D. Preparation for installing utilities.

1.02 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) Architectural Woodwork Standards; current edition.
- B. BHMA A156.9 American National Standard for Cabinet Hardware; Builders Hardware Manufacturers Association; current edition (ANSI/BHMA A156.9).
- C. HPVA HP-1 American National Standard for Hardwood and Decorative Plywood; Hardwood Plywood & Veneer Association; current edition (ANSI/HPVA HP-1).
- D. NEMA LD 3 High-Pressure Decorative Laminates; National Electrical Manufacturers Association; current edition.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
 - 1. Minimum Scale of Detail Drawings: 1-1/2 inch to 1 foot.
 - 2. Provide the information required by AWI/AWMAC/WI (AWS).
 - 3. Include certification program label.
- C. Product Data: Provide data for hardware accessories.
- D. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.
- E. Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
 - 1. Company with at least one project in the past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.07 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PLASTIC LAMINATE CLAD CABINETS CSP 207459 August 16, 2024

PART 2 PRODUCTS

2.01 CABINETS

- A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI//AWMAC/WI (AWS) for Custom Grade.
- B. Plastic Laminate Faced Cabinets: Custom grade. Veneer core exterior plywood; ³/₄ inch thick.
 - 1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, through color, colors as scheduled, finish as scheduled.
 - 2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, colors as scheduled, finish as scheduled.
 - 3. Post-Formed Horizontal Surfaces: HGP, 0.039 inch nominal thickness, through color, colors as scheduled, finish as scheduled.
 - 4. Post-Formed Vertical Surfaces: VGP, 0.028 inch nominal thickness, through color, colors as scheduled, finish as scheduled.
 - 5. Cabinet Liner: CLS, 0.020 inch nominal thickness, through color, colors as scheduled, finish as scheduled.
 - 6. Shelves: HGL, 0.39 inch nominal thickness, through color, colors as scheduled, finish as scheduled
 - 7. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

2.02 LAMINATE MATERIALS

- A. Manufacturers:
 - 1. Basis of Design: Wilsonart, LLC: www.wilsonart.com.
 - a. Colors and patterns as described in Drawings on Finish Key.
 - 2. Substitutions: See Section 01 6000 for substitution procedures.
- B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

2.03 COUNTERTOPS

A. Countertops: Specified in Section 12 3600 - Countertops.

2.04 ACCESSORIES

- A. Adhesive: Type recommended by AWI/AWMAC to suit application.
- B. Fasteners: Size and type to suit application.
- C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized finish in concealed locations and stainless steel finish in exposed locations.
- D. Concealed Joint Fasteners: Threaded steel.
- E. Grommets: Standard plastic grommets for cut-outs, in color to match adjacent surface.

2.05 HARDWARE

- A. Hardware: BHMA A156.9, types as indicated for quality grade specified.
- B. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards or multiple holes for pin supports and coordinated self rests, satin chrome finish, for nominal 1 inch spacing adjustments.
- C. Door and Drawer Pulls: Basis of Design: "U" shaped wire pull, finish selected by Architect. 4 inch centers.
- D. Cabinet Locks: Keyed cylinder, three keys per lock.
 - 1. Locks to be keyed alike in each room or area, or as otherwise directed by Owner.

PLASTIC LAMINATE CLAD CABINETS CSP 207459 August 16, 2024

- E. Drawer Slides:
 - 1. Type: Full extension.
 - 2. Static Load Capacity: Heavy Duty grade; 100 pounds.
 - 3. Mounting: Side mounted.
 - 4. Stops: Integral type.
 - 5. Features: Provide self closing/stay closed type.
 - 6. Products:
 - a. Accuride International, Inc: www.accuride.com.
 - b. Grass America Inc: www.grassusa.com.
 - c. Hettich America, LP: www.hettichamerica.com.
 - d. Knape & Vogt Manufacturing Company: www.knapeandvogt.com.
 - e. Substitutions: See Division 1 Sections for substitution procedures.
- F. Hinges: European style concealed self-closing type, for full overlay doors.
 - 1. Products:
 - a. Grass America Inc: www.grassusa.com.
 - b. Hardware Resources: www.hardwareresources.com.
 - c. Hettich America, LP; Sensys: www.hettichamerica.com.
 - d. Julius Blum, Inc: www.blum.com.
 - e. Substitutions: See Division 1 Sections for substitution procedures.
- G. Concealed countertop support brackets: Pre-manufactured steel brackets, sized to support countertops, attached to vertical supports within the wall partition.

2.06 FABRICATION

- A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Locate counter butt joints minimum 2 feet from sink cut-outs.
 - 1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
 - 2. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- E. Mechanically fasten back splash to countertops at 16 inches on center.
- F. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

- A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- B. Use fixture attachments in concealed locations for wall mounted components.

- C. Use concealed joint fasteners to align and secure adjoining cabinet units.
- D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- E. Secure cabinets to floor using appropriate angles and anchorages.

3.03 ADJUSTING

- A. Test installed work for rigidity and ability to support loads.
- B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

SECTION 0719 00-WATER REPELLENTS

PARTI GENERAL

- 1.01 SUMMARY
 - A. Section Includes:
 - I. Water and graffiti resistant treatment applied to exterior exposed masonry walls.
 - B. Related Sections:
 - I. Section 01 33 00 Submittal Procedures.
 - 2. Section 04 01 IO- Unit Masonry Cleaning.

1.02 REFERENCES

- A. The date of the standard is that in effect as the date of receipt of bids for the project.
- B. ASTM International (ASTM):
 - I. C67- Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
 - 2. CI 40- Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
 - 3. 02369- Standard Test Method for Volatile Content of Coatings.
 - 4. 06490- Standard Test Method for Water Vapor Transmission of Non-Film Forming Treatments Used on Cementitious Panels.
 - 5. 06532- Standard Test Method for Evaluation of the Effect of Clear Water Repellent Treatments on Water Absorption of Hydraulic Cement Mo,tar Specimens.
 - 6. 07089- Standard Practice for Determination of the Effectiveness of Anti-Graffiti Coating for Use on Concrete, Masonry and Natural Stone Surfaces by Pressure Washing.
 - 7. E96- Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.

1.03 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 01 General Requirements specification sections.
- B. Submit product data including detailed test results of materials applied to surfaces similar to requirements of this Section.
- C. Submit manufacturer's instructions for methods and application procedures.
- D. Submit manufacturer's certification indicating water and graffiti-resistant treatment conforms to or exceeds requirements stated herein.

1.04 QUALITY ASSURANCE

- A. The Contractors involved with work covered by this Section shall have had a minimum of five (5) years experience using specified techniques for water and graffiti-resistant treatment application.
- B. Tradesman must be competent and experienced and shall demonstrate reasonable care during performance of operations described in this Section.
- C. Tests and Approvals:
 - I. Sample Area:
 - a. Contractor shall apply a test area of wall surface from four square feet in size for inspection and approval by the Owner's Representative after treatment has cured. Test area shall be available for comparison during the specified scope of work.

Water Repellents CSP 207459 August 16, 2024

07 19 00

- b. Samples of adjacent materials shall be tested for possible reaction with the water and graffiti-resistant treatment. Such samples shall be available for inspection by the Owner's Representative.
- 2. If any part of this work shall be found defective (because of improper preparation of surfaces or application of treatment) at any time before the final acceptance of the item, the Contractor shall, at his own expense, make good such defect to the satisfaction of the A/E.

I.OS PROJECT CONDITIONS

- A. Protection:
 - 1. Contractor shall provide, at all times, covered access to premises and necessary utilities, space for storage of material and equipment, etc.
 - 2. All activities shall be in compliance with local and governmental regulations and codes.
 - 3. The surface and atmospheric temperature should be at least 40 degrees Fahrenheit. and rising during application and for eight hours following. Surface and air temperatures should not exceed 90 degrees Fahrenheit.
 - 4. Surfaces should be dry.
 - 5. Apply only in well ventilated areas.
 - 6. All caulking (sealants) should be applied a minimum of 24 hours prior to application, or as required by sealant manufacturer, whichever is greater, before application of water and graffiti-resistant treatment.
 - 7. The Contractor shall require applicators to observe safety precautions as outlined on containers and labels. It is the responsibility of the Contractor to provide well ventilated areas for all workmen as well as to observe safety precautions as stipulated on labels and instructions of all materials used, and as required by governing authorities during application and drying.

1.06 WARRANTY

A. Warranty: Manufacturer's warranty that water repellant will repel water and will allow water vapor out of substrate for not less than ten (I0) years commencing on Date of Substantial Completion.

PART2 PRODUCTS

- A. Water Repellent Treatment:
 - I. Use clear-d_i ing, penetrating, solvent-based silicone for weatherproofing masonry materials and protecting them f^rom graffiti attacks.
 - 2. Physical and Performance Properties:
 - a. Total Solids per ASTM D 2369: Nine (9) percent.
 - b. Comply with national, state, and district AIM VOC regulations.
 - c. Water Absorption Reduction (Brick) per ASTM C 67: Greater than 96 percent.
 - d. Water Absorption Reduction per ASTM C 140:
 - I) Heavy Weight CMU: Greater than 89 percent.
 - 2) Split Face CMU: Greater than 95 percent.
 - e. Water Vapor Transmission per ASTM E96:
 - I) Limestone: Greater than 86 percent.
 - 2) Sandstone: Greater than 95 percent.
 - 3) Concrete Block: Greater than 95 percent.
 - 4) Mortar: Greater than 95 percent.

- f. Water Vapor Transmission WVT per ASTM D 6490: Minimum 93 percent retention.
- g. Cleanability Level 2 per ASTM D7089.
- 3. Approved Products:
 - a. <u>"Sure Klean Weather Seal Blok-Guard & Graffiti Control 9"; PROSOCO, Inc.</u> (800-255-4255) (Basis of Design).
 - b. ASTM D 6490: Minimum 82 percent retention.
 - c. Cleanability Level 2 per ASTM D7089.

PART 3 EXECUTION

3.01 PREPARATION

- A. Verify surfaces to receive water and graffiti-resistant treatments are clean, free of efflorescence, oil, grease, or other foreign matter detrimental to application.
- B Remove loose particles and foreign matter. Remove grease or oil with a solvent, effective alkaline cleaner, or detergent as recommended by water and graffiti-resistant treatment manufacturer.
- C. Allow surfaces to dry prior to application.
- D. Protect all surrounding areas as recommended by the manufacturer or as directed by the Architect.
 - 1. Windows: Windows shall be protected from contact with materials by masking with polyethylene or other approved techniques.
 - 2. All polished stone, metal, or non-masonry surfaces shall be protected f^rom contact with the material by masking with polyethylene.
 - 3. Masonry surfaces must be in good repair. All new masonry construction surfaces must be allowed to cure for a minimum of 28 days prior to application. Surfaces must be completely dry.
- E. Verify all windows, exterior intakes and air conditioning vents are covered and air handling equipment is shut down during application and until vapors have dissipated.

3.02 WATER REPELLENT APPLICATION

- A. Test each surface and/or material to be treated to ensure compatibility and desired water and graffiti-resistant treatment results. The surface to be treated must be clean and f^{*}ee of all foreign matter and as dry as possible to ensure proper penetration of water and graffiti-resistant treatment.
- B. Do NOT dilute water and graffiti- resistant treatment.
- C. Proceed with application of water and graffiti-resistant treatment in an orderly manner once application rate has been tested; work from bottom to top of each scaffold width and f^rom one end of each elevation to the other.
- D. Apply water and graffiti-resistant treatment to dry surfaces that comply with manufacturer's written instructions; use brush or spray application methods, at Contractor's option.
- E. Prefen-ed method of application is with low pressure, spray equipment. Use roller or brush for small scall applications or when spray applications are not appropriate. Apply in coverage rate as recommended by manufacturer for type of material.
- F. Spray Application:
 - I. Uniformly saturate water and graffiti-resistant treatment using the "wet-on-wet" application method from bottom up, creating a 6 to 8 inch rundown below the spray contact point. Apply in accordance with manufacturer recommendation.

- 2. Let the first application penetrate for 2 to 3 minutes. Brush out heavy runs and drips to prevent build up. Do not spray apply at pressures exceeding 50 psi.
- 3. Reapply a second coat of water and graffiti-resistant treatment for heavily textured and porous surfaces.
 - a. Apply once first coat is dry to touch, or within [one][two] hour[s] of first coat. Allowing more than [one][two] hour[s] between coats reduces the effectiveness of the second coat.
- G. Roller or Brush Application:
 - 1. Uniformly saturate the surface with water and graffiti-resistant treatment. Avoid excessive overlapping. Brush out heavy runs and drips to prevent build up.
 - 2. Reapply second coat of water and graffiti-resistant treatment for maximum protection.
 - a. Apply once fi^rst coat is dry to touch, or within [one][two] hour[s] of first coat. Allowing more than [one][two] hour[s] between coats reduces the effectiveness of the second coat.

3.03 PROTECTION

- A. Protect adjacent surfaces not scheduled to receive treatment. If applied on unscheduled surfaces, remove immediately, by manufacturer approved method.
- B. Protect treated surfaces from rain for at least 6 hours after application.
- C. Correct damage by cleaning, as approved by A/E.

END OF SECTION 07 19 00

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES AND WINDOWS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Non-fire-rated steel doors and frames.
- B. Fire-rated steel doors and frames.
- C. Thermally insulated steel doors.
- D. Accessories, including glazing and hollow metal windows.

1.2 REFERENCES

- A. ANSI/ICC A117.1 American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; current edition.
- B. ANSI A250.8 SDI-100 Recommended Specifications for Standard Steel Doors and Frames;current edition.
- C. ANSI A250.10 Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; current edition.
- D. Americans with Disabilities Act, Title III.
- E. TEXAS ACCESSIBILITY STANDARDS (TAS) of the Architectural Barriers Act Article 9102, Texas Civil Statutes
- F. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-IronAlloy-Coated (Galvannealed) by the Hot-Dip Process; current edition.
- G. DHI A115 Series Specifications for Steel Doors and Frame Preparation for Hardware; Doorand Hardware Institute; current edition (ANSI/DHI A115 Series).
- H. NAAMM HMMA 840 Installation and Storage of Hollow Metal Doors and Frames; The NationalAssociation of Architectural Metal Manufacturers; current edition.
- I. NAAMM HMMA 860 Guide Specifications for Hollow Metal Doors and Frames; The NationalAssociation of Architectural Metal Manufacturers; current edition.
- J. NAAMM HMMA 861 Guide Specifications for Commercial Hollow Metal Doors and Frames;The National Association of Architectural Metal Manufacturers; currentedition.
- K. NFPA 80 Standard for Fire Doors and Fire Windows; National Fire Protection Association; current edition.
- L. NFPA 252 Standard Methods of Fire Tests of Door Assemblies; National Fire ProtectionAssociation; current edition.

- M. UBC Std. 7-2, Part II Test Standard for Smoke- and Draft-control Assemblies; International Conference of Building Officials; current edition.
- N. UL (BMD) Building Materials Directory; Underwriters Laboratories Inc.; current edition.
- O. FEMA 320 and 361 guidelines and ANSI ICC500-2014 standard

1.3 SUBMITTALS

- A. See Division 1 Sections for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.
- C. LabelCompliance: Doors requiring fire labeling or sound transmission labeling, list fire and sound resistance ratings of doors provided.
- D. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any. General Contractor is responsible for verifying wall thickness to ensure frame thickness is properly submitted and installed.
- E. Installation Instructions: Manufacturer's published instructions, including anyspecial installation instructions relating to this project.
- F. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum five years documented experience and must be a member of steel door institute (SDI).
- B. Maintain at the project site a copy of all reference standards dealing with installation.
- C. For all metal door and frames: Obtain field inspection from manufacturer to determine corrective measures for:
 - 1. Frame or door damage
 - 2. Frame or door scratches
 - 3. Frame or door stains
 - 4. Frame or door alignment
- D. Manufacturer inspection report must be satisfied prior to requests to Owneror Architect for punch list inspection services.

1.5 DELIVERY, STORAGE, AND PROTECTION

- A. Store in accordance with NAAMM HMMA 840.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
 - A. Steel Doors and Frames:
 - 1. Ceco Door Products: www.cecodoor.com.
 - 2. Curries: www.curries.com
 - 3. Republic Builders Products: www.republicdoor.com.
 - 4. Steelcraft: www.steelcraft.com.
 - 5. Substitutions: Refer to applicable Division 1 sections.

2.2 DOORS AND FRAMES

- A. Requirements for All Doors and Frames:
 - 1. Accessibility: Comply with ANSI/ICC A117.1, Americans with Disabilities Act and Texas Accessibility Standards.
 - 2. Door Top Closures: Flush with top of faces and edges.
 - 3. Door Edge Profile: Beveled on both edges.
 - 4. Door Texture: Smooth faces.
 - 5. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.
 - 6. Hardware Preparation: In accordance with DHI A115 Series, withreinforcement welded in place, in addition to other requirementsspecified in door grade standard.
 - 7. Finish: Factory primed, with factory pantone color finish.
 - 8. Paladin[™] PW Glass Light Series Tornado Doors.
- B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with all the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.3 STEEL DOORS

- A. Exterior Doors to meet steel door institute (SDI) 100, grade 3, Extra Heavy Duty, 16 gauge or better, steel, foamed core with welded seams. Frames to be 16 gauge. If doors exceeds 36"width, specify 14 gauge door/frame.
 - 1. Grade: 3, extra heavy duty 16 gauge door/frames.
 - 2. Core: Foamed core with wield seams.
 - 3. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653,with manufacturer's standard coating thickness.
- B. Interior Doors, Non-Fire-Rated to meet steel door institute (SDI) 100, grade 2, heavy duty, 18 gauge or better, steel, foamed core with welded seams. Frames to be 18 gauge or better. If door exceeds

36" width, specify 16 gauge door/frames.:

- 1. Grade: Grade 2, 18 gauge, 16 gauge if door exceeds 36" width.
- 2. Core: Foamed core with wield seams.
- 3. Thickness: 1-3/4 inches.
- C. Interior Doors, Fire-Rated:
 - 1. Fire Rating: As indicated on Door and Frame Schedule, with temperature rise ratings as required by code, tested in accordance with NFPA 252.
 - a. Provide units listed and labeled by UL.
 - b. Attach fire rating label to each fire rated unit.
 - 2. Smoke and Draft Control Doors: In addition to required fire rating, comply with air leakage requirements of UBC Std 7-2, Part II; with "S" label; if necessary, provide additional gasketing or edge sealing.
 - 3. Hollow Metal Manufacturers to be members of the SDL.

2.4 STEEL FRAMES

- A. General:
 - 1. Comply with the requirements of grade specified for corresponding door.
 - 2. Finish: Same as for door; Factory primed, with factory pantone color finish.
 - 3. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
 - 4. Frames in Masonry Walls: Size to suit masonry coursing as indicated on drawings.
 - 5. Frames Wider than 48 Inches: Reinforce with steel channel fitted tightly into frame head, flush with top.
- B. Exterior Door Frames: Face welded, seamless with joints filled.
 - Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A 653/A 653M, with manufacturer's standard coating thickness.
 - 2. Weatherstripping: Separate, see Section 08 71 00.
- C. Interior Door Frames, Non-Fire-Rated: Fully welded type.
 - 1. Terminated Stops: Provide at all interior doors; closed endstop terminated at floor line at 90 degree angle.
- D. Interior Door Frames, Fire-Rated: Fully welded type.
 - 1. Fire Rating: Same as door, labeled.
- E. Frames for Interior Glazing or Borrowed Lights: Construction and face dimensions to match door frames, and as indicated on drawings.

2.5 ACCESSORY MATERIALS

- A. Grout for Frames: Portland cement grout of maximum 4-inch slump for hand troweling; thinner pumpable grout is prohibited.
- B. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

2.6 FINISH MATERIALS

- A. Primer: Rust-inhibiting, complying with ANSI A250.10, door manufacturer's standard.
- B. All metal doors and frames are to receive shop primer per manufacturer's standard.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.

3.2 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, withbituminous coating, prior to installation.

3.3 INSTALLATION

- A. Install in accordance with the requirements of the specified door grade standard and NAAMM HMMA 840.
- B. In addition, install fire rated units in accordance with NFPA 80.
- C. Coordinate frame anchor placement with wall construction. Provide minimum 3 anchors per jamb.
- D. Grout frames in masonry and concrete construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.
- E. Coordinate installation of hardware.
- F. Coordinate installation of glazing.

3.4 ERECTION TOLERANCES

- A. Clearances between door and frame: As specified in ANSI A250.8.
- B. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

3.5 ADJUSTING

A. Adjust for smooth and balanced door movement.

3.6 SCHEDULE

A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION 08 11 13

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 GENERAL

1.1 SUMMARY

- A. Related Documents: General and Supplementary Conditions of the Contract, Division 1 - General Requirements, and Drawings are applicable to this Section.
- B. Section Includes:
 - 1. Flush wood doors; flush and flush glazed configuration; fire rated and non-rated.

1.2 SUBMITTAL

- A. Submit under provisions of Section 01 33 00.
- B. Shop Drawings: Illustrate door opening criteria elevations, sizes, types, swings, undercuts required, special beveling, and special blocking for hardware, identify cutoutsfor glazing.
- C. Product Data: Indicate door core materials and construction; veneer species, type and characteristics; factory machining criteria, factory finishing criteria.
- D. Samples: Submit 2 samples of door construction, 12 x 12 inch in size cut from bottomcomer of door.
- E. Samples: Submit [2samples of door veneer 12 x 12 inch in size illustrating [wood grain,stain color, and sheen.
- F. Manufacturer's Installation Instructions: Indicate special installation instructions.

1.3 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain doors from single manufacturer to ensure uniformity inquality, appearance and construction.
- B. Perform work in accordance with AWi Quality Standard Section 1300, Custom Grade.
- C. Finish doors in accordance with AWi Quality Standard Section 1500, grades identifiedin schedule.
- D. Provide only 5 ply architectural doors.
- E. Qualifications
 - 1. Manufacturer: Company specializing in manufacturing the Products specified in thissection with minimum 3 years documented experience.

1.4 REGULATORY REQUIREMENTS

- A. Fire Door Construction: Conform to ASTM E 152, NFPA 252, and UL 10C.
- B. Installed Fire Rated Door Assembly Conform to NFPA 80 for fire rated class as scheduled.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products to site under provisions of Section 01620.
- B. Package, deliver and store doors in accordance with AWi Section 1300. Protect doors with resilient packaging. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges if stored more than one week. Break

seal on-siteto permit ventilation.

- C. Comply with manufacturer's instructions and with requirements of NWWDA pamphlets"Recommended Handling and Finishing Instructions for Wood Fire Doors" and "How toStore, Handle, Finish, Install and Maintain Wood Doors."
- D. Deliver to site after wet construction operations are completed and dry and buildinghas reached average prevailing relative humidity.
- E. Deliver in manufacturer's original unopened protective covering or container, clearly marked with manufacturer's name, brand name and identifying door opening number oncovering.
- F. Storage:
 - 1. Store in clean, dry, ventilated area protected from sunlight.
 - 2. Avoid extreme heat, cold, dryness or humidity.
 - 3. Store flat over level surface above floor on wood blocking.
 - 4. Under bottom door and over top of stack, furnish plywood or corrugated cardboardfor protection.
- G. Handling: Do not drag doors across one another or across other surfaces.

16 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.
- 1.7 COORDINATION
 - A. Coordinate work under provisions of Section 01 30 00.
 - B. Coordinate the work with door opening construction, door frame and doorhardware installation.

1.8 WARRANTY

- Provide warranty under provisions of Section 01 70 00 to the following term: А
- Β. Life of Installation: Interior doors..
- C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, telegraphing core construction.
- D. Include hanging, installation of hardware and refinishing which may be required due torepair or replacement of defective doors.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements indicated, provideproducts of one of the following:

- 1. Marshfield Door Company.
- 2. Eggers Industries.
- 3. Algoma Hardwoods, Inc.
- B. Substitutions: Under provisions of Section 01 60 00.
2.2 DOOR TYPES

i. Flush Interior Doors: 1-3/4 inches thick; solid core construction. Fire rated as indicated.

2.3 DOOR CONSTRUCTION

- A. Core (Solid, Non-Rated): AWi Section 1300, Type SCLC Structural Composite Lumber Core.
- B. Core (Solid, Fire Rated): AWi Section 1300, Type SCLC Structural Composite Lumber Core.

2.4 FLUSH DOOR FACING

A. Veneer Facing - Flush Interior Doors: AWi Custom quality; red oak species wood, plainedslices, with book matched grain, end matched transoms, for transparent finish.

2.5 ADHESIVE

A. Facing Adhesive: Type II -water resistant.

2.6 ACCESSORIES

A. Glazing Stops: Rolled steel shape, mitered corners; prepared for countersink styletamper proof screws, capable of meeting fire ratings scheduled.

2.7 FABRICATION

- A. Fabricate non-rated doors in accordance with AWi Quality Standards requirements.
- B. Fabricate fire rated doors in accordance with AWi Quality Standards and to UL requirements. Attach fire rating label to door.
- C. Astragals for Fire Rated Double Doors: Steel, Z shaped, overlapping and recessed at faceedge, specifically for double doors.
- D. Provide lock blocks at lock edge and top of door for closer for hardware reinforcement.
- E. Vertical Exposed Edge of Stiles: Of same species as veneer facing for transparent finish.
 - 1. Provide double 2 ¹/₂" wide hardware stiles.
- F. Fit door edge trim to edge of stiles after applying veneer facing.
- G. Bond edge banding to cores.
- H. Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware. Provide solid blocking for through boltedhardware.
- I. Factory pre-fit doors for frame opening dimensions identified on shop drawings.
- 2.8 FINISH
 - A. Shop finish following items in accordance with AWi Section 01 57 21:
 - 1. Transparent Finish: AWi System Number 2; and as follows NOTE: All materials in following Finish Systems are applications of one coat unlessindicated otherwise. Products are those as manufactured by Sherwin Williams Co. as a standard.
 - a. AWi Finish System No. 2-Catalyzed Lacquer

(cabinets, doors, baseboards, and stairs

- Stain S64 Series Wiping Stains. 1)
- 2) Vinyl Washcoat - T67F3 Vinyl Sealer 24% (Reduced 1:6).
- Filler D70T1 Natural Filler. 3)
- 4) Vinyl Sealer- T67F3 Vinyl Sealer 24%.
- 5) Topcoat-T77 Series Catalyzed Lacquer- low gloss.

PART 3 EXECUTION

- 3.1 **EXAMINATION**
 - A. Verify frame opening conditions under provisions of Section 01 41 00.
 - Β. Verify that opening sizes and tolerances are acceptable.
 - C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for sizeor alignment.

3.2 INSTALLATION

- Install doors in accordance with manufacturer's instructions. Α.
- Β. Install fire rated and non-rated doors in accordance with AWi Quality Standard, NFPA 80and to Warnock Hersey requirements.
- C. Trim non-rated door width by cutting equally on both jamb edges.
- D. Trim door height by cutting bottom edges to a maximum of 3/4 inch.
- E. Trim fire door height atbottom edge only, in accordance with fire rating requirements.
- F. Pilot drill screw and bolt holes.
- Machine cut for hardware. Core for handsets and cylinders. G.
- H. Coordinate installation of doors with installation of frames specified in Section 08 11 13and hardware specified in Section 08 51 13.
- Ι. Coordinate installation of glass and glazing.

3.3 INSTALLATION TOLERANCE

- Conform to AWi requirements for fit and clearance tolerances. A.
- Maximum Diagonal Distortion (Warp): 1/8 inch measured with straight Β. edge or taught string, corner to corner, over an imaginary 36 by 84 inch surface area.
- C. Maximum Vertical Distortion (Bow): 1/8 inch measured with straight edge or taught string, top to bottom, over an imaginary 36 by 84 inch surface area.
- D. Maximum Width Distortion (Cup): 1/8 inch measured with straight edge or taught string, edge to edge, over an imaginary 36 by 84 inch surface area.
- ADJUSTING Ε.

Adjust door for smooth and balanced door movement.

END OF SECTION 08 14 16

SECTION 08 31 00 - ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall access door and frame units.

1.02 REFERENCE STANDARDS

- A. ITS (DIR) Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- B. UL (FRD) Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.03 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
- C. Shop Drawings: Indicate exact position of all access door units.
- D. Manufacturer's Installation Instructions: Indicate installation requirements.
- E. Project Record Documents: Record actual locations of all access units.

PART 2 PRODUCTS

2.01 ACCESS DOOR AND PANEL APPLICATIONS

- A. Walls, Unless Otherwise Indicated:
 - 1. Material: Stainless steel, Type 304.
 - 2. Size: 12 x 12 inches, unless otherwise indicated.
 - 3. Tool-operated spring or cam lock; no handle.
 - 4. In All Wall Types: Surface mounted face frame and door surface flush with frame surface.
 - 5. In Gypsum Board: Drywall bead frame with door surface flush with wall surface.
 - 6. In Plaster: Drywall bead frame with door surface flush with wall surface.
 - 7. In Masonry: Surface mounted frame with door surface flush with frame surface.
- B. Walls in Wet Areas:
 - 1. Material: Stainless steel, Type 304.
 - 2. Size: 12 x 12 inches, (24 x 24 in group restrooms) unless otherwise indicated.
 - 3. Tool-operated spring or cam lock; no handle.
 - 4. In All Wall Types: S urface mounted face frame and door surface flush with frame surface.
 - 5. In Gypsum Board: Drywall bead frame with door surface flush with wall surface.
 - 6. In Plaster: Drywall bead frame with door surface flush with wall surface.
 - 7. In Masonry: Surface mounted frame with door surface flush with frame surface.
 - 8 In Tile: Recessed cover to accept matching ceramic tile.
- C. Fire Rated Walls: See drawings for wall fire ratings.
 - 1. Material: Stainless steel, Type 304.
 - 2. Size: 12 x 12 inches, unless otherwise indicated.
 - 3. Insulated, double skin door panel.
 - 4. Tool-operated spring or cam lock; no handle.
- C. Floor Access Doors:
 - 1. Bilco KD 2, with safety posts.

2.02 WALL UNITS

A. Manufacturers:

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ACCESS DOORS AND PANELS CSP 207459 August 16, 2024

- 1. Acudor Products Inc: <u>www.acudor.com</u>.
- 2. The Bilco Company: www.bilco.com
- 2. Cendrex, Inc: www.cendrex.com.
- 3. Karp Associates, Inc: www.karpinc.com.
- 4. Milcor by Commercial Products Group of Hart & Cooley, Inc: www.milcorinc.com.
- B. Access Doors: Factory fabricated door and frame units, fully assembled units with corner joints welded, filled, and ground flush; square and without rack or warp; coordinate requirements with assemblies units are to be installed in.
 - 1. Style: Exposed frame with door surface flush with frame surface.
 - a. In Gypsum Board: Use drywall bead type frame.
 - b. In Plaster: Use plaster bead type frame.
 - 2. Door Style: Single thickness with rolled or turned in edges.
 - 3. Frames: 16 gage, 0.0598 inch, minimum.
 - 4. Double-Skinned Hollow Steel Door Panels: 16 gage, 0.059 inch, minimum, on both sides and all edges.
 - 5. Units in Fire Rated Assemblies: Fire rating as required by applicable code for the fire rated assembly in which they are to be installed.
 - a. Provide products listed and labeled by UL or ITS (Warnock Hersey) as suitable for the purpose specified and indicated.
 - 6. Stainless Steel Finish: No. 4 brushed finish.
 - 7. Hardware:
 - a. Hardware for Fire Rated Units: As required for listing.
 - b. Hinges for Non-Fire-Rated Units: Concealed, constant force closure spring type.
 - c. Latch/Lock: Tamperproof tool-operated cam latch.
 - d. Gasketing: Extruded neoprene, around the perimeter of the door panel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings are correctly sized and located.

3.02 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings. Secure rigidly in place.
- C. Position units to provide convenient access to the concealed work requiring access.

END OF SECTION

SECTION 08 4313 - ALUMINUM ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Section Includes: Thermally broken aluminum entrances and storefront systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.

1.02 REFERENCES

- A. AAMA 503 Voluntary Specification for Field Testing of Metal Storefronts, Curtain Walls and Sloped Glazing Systems; current edition.
- B. AAMA 2605 Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels; current edition.
- C. AAMA 1503 Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; American Architectural Manufacturers Association; current edition.
- D. ASTM B 221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; current edition.
- E. ASTM E 283 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; current edition.
- F. ASTM E 330 Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; current edition.
- G. ASTM E 331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; current edition.
- H. ASTM E 1105 Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; current edition.

1.03 SYSTEM DESCRIPTION

A. Storefront System Performance Requirements:

- 1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures required by applicable design codes.
- 2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft2 at a static air pressure cifferential of 6.24 psf.
- 3. Water Resistance: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 8 psf as defined in AAMA 501.
- 4. Uniform Load: A static air design load of 20 psf shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

Mark Twain School for the Talented and Gifted $\operatorname{Org\#} 220$

08 43 13-1

Dallas ISD Construction Services

August 16, 2024

- 5. Thermal Transmittance (U-factor): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than:
 - a. Glass to Exterior 0.47 (low-e) or 0.61 (clear)
 - b. Glass to Center 0.44 (low-e) or 0.61 (clear)
 - c. Glass to Interior 0.41 (low-e) or 0.56 (clear)
 - 6. Condensation Resistance (CRF): When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than:
 - a. Glass to Exterior 70 frame and 69 glass (low-e) or 69 frame and 58 glass (clear).
 - b. Glass to Center 62 frame and 68glass (low-e) or 63 frame and 53 glass (clear).
 - c. Glass to Interior 56 frame and 67 glass (low-e) or 54 frame and 58 glass (clear).
- B. Entrance Performance Requirements:
 - 1. Air Infiltration: For single acting offset pivot or butt hung entrances in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 6.24 psf for single doors and 1.567 psf for pairs of doors. A single 3'0" x 7'0" entrance door and frame shall not exceed 0.50 cfm per linear foot of perimeter crack. A pair of 6'0" x 7'0" entrance doors and frame shall not exceed 1.0 cfm per linear foot of perimeter crack.
 - 2. Structural: Corner strength shall be tested per manufacturer's dual moment load test procedure and certified by an independent testing laboratory to ensure weld compliance and corner integrity.

1.04 SUBMITTALS

- A. General: Prepare, review, approve, and submit specified submittals in accordance with Division= 1 sections. Provide product data, shop drawings, and samples. Provide manufacturers written= installation instructions.
- B. Quality Assurance/Control Submittals:
 - 1. Test Reports: Submit certified test reports showing compliance with specified performance= characteristics.

1.05 WARRANTY

- A. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for entrance system as follows:
 - 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer. In addition, welded door corner construction shall be supported with a limited lifetime warranty for the life of the door under normal use.
- B. The Warranties submitted under this Section shall not deprive the Owner of other rights or remedies that the Owner may have under other provisions of the Contract Documents and the laws of governing jurisdictions and is in addition to and runs concurrently with other warranties made by the Contractor under requirements of the Contract Documents.

1.06 MOCK-UP

A. Construct mock-up of storefront system in conformance with requirements of Division1 sections.

1.07 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installer Qualifications: Installer experienced to perform work of this section who has

08 4313-2 ALUMINUM FRAMED STOREFRONTS

specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.

- 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.08 DELIVERY, STORAGE, ANDHANDLING

- A. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle framing material and components to avoid damage. Protect fram ng material against damage from elements, construction activities, and other hazards before, during and after framing installation.

PART 2 - PRODUCTS

2.01 BASIS OF DESIGN - FRAMING FOR INSULATED GLAZING

- A. Drawings and specifications are based on manufacturer's literature from the Kawneer Company Inc. unless otherwise indicated. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of Division 1 sections governing product substitutions.
- B. Acceptable Product/Framing System: Kawneer Aluminum Storefront Systems.
 - 1. Product: Trifab® VG 451T (thermal) Framing System
 - 1. Framing Member Profile: 2" x 4-1/2" nominal dimension; Center Glazed (Type B); Shear Block Fabrication.
 - 2. Finish/Color: See 2.06 Finishes.
 - 3. See Division 1 sections for product substitution requirements.
- C. Acceptable Product/Entrance System: Kawneer Aluminum Entrance Systems.
 - 1. Product: Series 500 Standard Wall.
 - a. Material Standard: ASTM B221, 6063 alloy and temper.
 - b. Major portions of the door members to be 0.188" nominal in thickness and glazing molding to be 0.05" thick.
 - c. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of entrance members are nominal and in compliance with Aluminum Standards and Data, published by The Aluminum Association.
 - d. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.
 - e. Provide adjustable glass jacks to help center the glass in the door opening.
 - f. Vertical Stile: 5 inch.
 - g. Top Rail: 5 inch.
 - h. Bottom Rail: 10 inch.
 - 2. Finish/Color; See 2.06 Finishes.
 - 3. See Division 1 sections for product substitution procedures.

08 4313-3 ALUMINUM FRAMED STOREFRONTS

- D. Other Acceptable Manufacturers.
 - 1. EFCO Corporation; www.efcocorp.com
 - 2. Trulite Glass and Aluminum Solutions, LLC; www.trulite.com
 - 3. See Division 1 sections for product substitution procedures.

2.02 BASIS OF DESIGN -- FRAMING FOR MONOLITHIC INTERIOR GLAZING

- A. Drawings and specifications are based on manufacturer's literature from the Kawneer Company Inc. unless otherwise indicated. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of Division 1 sections governing product substitutions.
- B. Acceptable Product/Entrance System: Kawneer Aluminum Entrance Systems.
 - 1. Product: Series Trifab VG450 Framing System (non-thermal)
 - a. Material Standard: ASTM B221, 6063 alloy and temper.
 - b. Framing Member Profile: 1-3/4" x 4-1/2" nominal dimension.
 - c. Center Glazed.
 - 2. Finish/Color: See 2.06 Finishes,

2.03 BASIS OF DESIGN -- SWINGING DOORS

- A. Drawings and specifications are based on manufacturer's literature from the Kawneer Company Inc. unless otherwise indicated. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of Division 1 sections governing product substitutions.
- B. Exterior Doors: Medium stile, insulated glazing, thermally-broken. Provide doors compatible with the approved storefront framing system.
- C. Interior Doors: Medium stile, monolithic glazing, non-thermally -broken. Frovide doors compatible with the approved storefront framing system.
- D. Other Acceptable Manufacturers.
 - 1. EFCO Corporation; www.efcocorp.com
 - 2. Trulite Glass and Aluminum Solutions, LLC; www.trulite.com
 - 3. See Division 1 sections for product substitution requirements.

2.04 MATERIALS

- A. Aluminum Framing and Components:
 - 1. Material Standard: ASTM B 221; 6063-T6 alloy and temper
 - 2. Member Wall Thickness: Each framing member shall provide structural strength to meet specified performance requirements.
 - 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

2.05 ACCESSORIES

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall be extruded EPDM rubber.
- C. Perimeter Anchors: Aluminum. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- D. Thermal Barrier:

- 1. Thermal break with a 1/4" separation consisting of a two part chemically curing, high density polyurethane which is mechanically and adhesively joined to aluminum storefront sections. Thermal Break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.
- E. Standard Entrance Hardware: Provide manufacturer's standard hardware components, unless specifically noted below. Provide the following for all doors.
 - 1. Weatherstripping:
 - a. Meeting stiles on pairs of doors shall be equipped with an adjustable astragalutilizing wool pile with polymeric fin.
 - b. The door weathering on a single acting offset pivot or butt hung door and frame (single or pairs) shall be comprised of a thermoplastic elastomer weathering on a tubular shape with a semi-rigid polymeric backing.
 - 2. Sill Sweep Strips: EPDM blade gasket sweep strip in an aluminum extrusion applied to the interior exposed surface of the bottom rail with concealed fasteners.
 - 3. Threshold: Extruded aluminum, one piece per door opening, with ribbed surface.
 - 4. Off-Set Pivots.
 - 5. Push / Pull Handles,
 - 6. Concealed vertical rods, top and bottom, with key cylinders in active leafs.
 - a. Acceptable panic device: To be determined.
 - b. Omit key cylinders in Vestibule doors not installed in an exterior wall.
 - c. Provide one (1) electric panic device for each pair of exterior doors
 - 7. Surface closer with parallel arms.
 - 8. Finish: Refer to 2.06, D.
 - 9. The finish hardware supplier shall be responsible for furnishing physical hardware to the entrance manufacturer prior to fabrication, and for coordinating hardware delivery requirements with the hardware manufacturer, the Contractor and the entrance manufacturer to insure the building project is not delayed.

2.06 RELATED MATERIALS

- A. Sealants: Section 07 9005 Joint Sealers.
- B. Glass: Section 08 8000 Exterior Glazing,
- C. Section 08 7100 Door Hardware, for additional hardware recuired,

2.07 FABRICATION

- A. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly. Enable installation and dynamic movement of perimeter seal.
- B. Accurately fit and secure joints and corners, Make joints flush, hairline and weatherproof,
- C. Prepare components to receive anchor devices, Fabricate anchors.
- D. Arrange fasteners and attachments to conceal from view.
- E. Entrance System Fabrication:
 - 1. Door corner construction shall consist of mechanical clip fastening, S GMA deep penetration plug welds and 1-1/8" long fillet welds inside and outside of all four corners. Glazing stops shall be hook-in type with EPDM glazing gaskets reinforced with non-stretchable cord.
 - 2. Accurately fit and secure joints and corners. Make joints hairline in appearance.

- 3. Prepare components with internal reinforcement for door hardware.
- 4. Arrange fasteners and attachments to conceal from view.

2.08 FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectura and Metal Products" for recommendations relative to applying and designating finishes.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.
- D. Factory Finishing: ASTM B221; 6063-T5 or 6063-T6 Alloy and Temper. Finish not less than .070" wall thickness.

2.09 SOURCE QUALITY CONTROL

- A. Source Quality: Provide aluminum framing specified herein from a single source.
 - Building Enclosure System: When aluminum framing is part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall system and related products, provide building enclosure system products from a single source manufacturer.
- B. Fabrication Tolerances: Fabricate aluminum framing in accordance with framing manufacturer's prescribed tolerances.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions installed under other sections are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive storefront system and sill plate is evel in accordance with manufacturer's acceptable tolerances.
 - 1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordir ate field measurements, fabrication schedule with construction progress to avoid constructiondelays.

3.02 FRAMING SYSTEM INSTALLATION

- A. General: Install framing system in accordance with manufacturer's instructions and AAMA storefront and entrance guide specifications manual.
- B. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
- C. Weathertight Construction: Install sill members and other members in a bed of sealant or with joint filler or gaskets, to provide weathertight construction. Coordinate installation with wall flashings and other components of construction.
- D. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

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08 4313-6 ALUMINUM FRAMED STOREFRONTS

- E. Provide alignment attachments and shims to permanently faster system to building structure.
- F. Align assembly plumb and level, free of warp and twist. Maintain assembly dimensional tolerances aligning with adjacent work.
- G. Set thresholds in bed of mastic and secure.
- H. Adjusting: Adjust operating hardware for smooth operation.
- J. Related Products Installation Requirements:
 - 1. Sealants: Section 07 9000 -- Joint Sealers.
 - 2. Glass: Section 08 8000 Exterior Glazing.

3.03 FIELD QUALITY CONTROL

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.
 - Testing: Testing shall be performed by a qualified independent testing agency. Refer to Division 1 Testing Section for payment of testing and testing requirements. Testing Standard per AAMA 503, including reference to ASTM E 783 for Air Infiltration Test and ASTM E 1105 Water Infiltration Test.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance regulrements or 0.09 cfm/ft2, which ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water peneliration pressure but not less than 6.24 psf.
- B. Manufacturer's Field Services: Provide manufacturer's field service consisting of product use recommendations and periodic site vis t for inspection of product installation in accordance with manufacturer's instructions.

3.04 PROTECTION AND CLEANING

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Sec. 14.

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement, cr other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

END OF SECTION 08 4313

SECTION 08 70 11 - DOOR HARDWARE

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Hardware for wood and hollow metal doors.
 - 2. Hardware for aluminum doors.
 - 3. Thresholds.
 - 4. Weatherstripping, seals and door gaskets.

1.2 REFERENCE STANDARDS

- A. BHMA 1301 Materials and Finishes Shop Drawings: Illustrate door opening criteria elevations, sizes,
- B. American National Standards Institute:
 - 1. ANSI A156.1 Butts and Hinges.
 - 2. ANSI A156.3 Exit Devices.
 - 3. ANSI A156.4 Door Controls Closers.
 - 4. ANSI A156.7 Template Hinge Dimensions.
 - 5. ANSI A156.13 Mortise Locks and Latches.
- C. NFPA 80 Fire Doors and Windows.

1.3 SUBMITALLS

- A. Hardware Schedule:
 - 1. Submit hardware supplier's typewritten copies of proposed finish hardware schedule for review.
 - 2. Schedules: Unless specifically stated, furnish six (6) copies of a completely detailed schedule of finish hardware (see DHI's Sequence and Format of the Hardware Schedule) for approval. Hardware schedule to be complete with Title Page, Door Index/Keying Schedule and Manufacturers legend. After "Approval" provide eight (8) copies, unless otherwise requested, of the corrected, revised and approved schedule for field use, distribution and files. Provide one (1) copy, complete with Catalog Cuts, marked "Installer's Copy" and deliver it to the job site.
 - 3. DO NOT order hardware until acceptable schedule has been received.
- B. Product Data:
 - 1. Manufacturer's cut sheets for each hardware item.
 - 2. Details for type strike plates, length of spindle, hand, backset and bevel of locks, hand and degree of opening for closers and other functions of mechanisms.
 - 3. Installation instructions and maintenance information.
 - 4. Copies of final hardware schedule reflecting changes made during construction.

C. Shop Drawings:

- 1. Push Plate: Indicate concealed fastening and graphics.
- 2. Thresholds: Indicate thickness of materials, method of anchoring and details of construction.

D. Samples:

- 1. If so requested by the Architect, provide a sample of any product or item requested, properly marked and tagged, for the opening for which it is intended. After examination and approval by the Architect, the sample shall be turned over to the General Contractor for incorporation into the project.
- E. Certifications: Upon request of Architect, submit hardware manufacturer's letter of compliance that products meet ANSI requirements and have been tested and are grades required by specification.
- F. Templates: When resubmitting "Approved" copies of the Hardware Schedule, provide a complete "Template List" covering the items scheduled. Further and upon request, provide copies of templates to manufacturers or trades, whose work includes preparation of their products, to receive hardware. Provide copies of all such transmittals to the contractor for his files.
- G. Maintenance Tools: Deliver hardware adjustment tools for each item of finish hardware.
- H. Operation and Maintenance Data: Provide manufacturer's parts list and maintenance instructions for each type of hardware supplied and necessary wrenches and tools required for proper maintenance of hardware.

1.4 QUALITY ASSURANCE

- A. Manufacturer's Representative: Furnish services of Architectural Hardware Consultant to prepare hardware schedule, keying, coordination with other trades, consultation with Architect and Owner, and on-site inspections.
- B. Fire Resistant Hardware: Comply with requirements of door and frame manufacturer for UL listed assembly; bear UL labels.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Marking and Packaging: All items of hardware shall be delivered to the jobsite in the manufacturer's original cartons or boxes. Each item of hardware shall be marked with the abbreviation set forth on the shop drawings to insure that the product reaches its installation destination without needing specific hardware product number knowledge.
- B. Delivery: The hardware supplier shall coordinate with the General Contractor in order to compile a mutually beneficial delivery schedule, which imposes no hardship on either party. If items of hardware are to be delivered to manufacturers or fabricators for installation on their portion of work, the General Contractor must be advised of such shipments, along with copies of shipping tickets and other documentation, thus transferring responsibility to the manufacturer/fabricator, for care of said hardware.

- C. Storage: No hardware is to be delivered to the jobsite until the contractor has provided a dry, secure area with adequate shelving to store the hardware. If requested by the contractor, the hardware supplier shall send a representative to the jobsite to assist in the checking-in and lay out of the hardware at the storage location. This must be done only when a representative of the contractor is present.
- D. Warranty: All warranties shall be that of the manufacturer as stated in the most recent product literature. Any evidence of misuse or abuse voids all warranties expressed or implied

1.6 WARRANTY

- A. Submit additional warranty on following items:
 - 1. Mortise Locks: Five year limited warranty.
 - 2. Door Closers: Ten year limited warranty.

PART 2 PRODUCTS

- 2.1 BUTT HINGES
 - A. Acceptable Manufacturers:
 - 1. Hager Hinge Company.
 - 2. McKinney Manufacturing Company.
 - 3. lves.
 - B. Non-Removable Pins: Provide butts with set screw in barrel making hinge non-removable when door is in closed position for exterior.
 - C. Wide Throw Hinges: Where necessary to clear trim or obstacles.

2.2 CONTINUOUS HINGES

- A. Acceptable Manufacturers:
 - 1. Hager Hinge Company.
 - 2. Pemko.
 - 3. Ives.
- B. Continuous hinges shall consist of three (3)-interlocking extrusions in a pin-less assembly applied to the full height of the door. All continuous geared hinges shall be manufactured to template screw locations and be non-handed. All mortise hinges and half mortise hinges shall cover and wrap the door edge completely. Doorframe heads shall be extended for clearance on full or half mortise hinges versus downsizing doors for ease of repair and replacement. All frames shall be properly reinforced per manufacturer's standards. Standard warranty shall be for the life of opening.

2.3 DOOR CONSTRUCTION

- A. Acceptable Manufacturers:
 - 1. Schlage Lock Company (no substitution).
- B. Mortise Locks and Latch Sets:
 - 1. Heavy duty construction with wrought cases, minimum case thickness of 0.093", ANSI A156.13.

- 2. Fronts: 8" x 1-1/4", adjustable to 1/8" in 2" with 2-3/4" backset.
- 3. Minimum projection of latch bolt: 3/4".
- 4. Minimum throw of dead bolt: 1".
- 5. Beveled, rounded or rabbeted faces where required.
- 6. Where lock stiles are too narrow for backsets of locks specified, furnish special backsets.
- C. Lever Handles and Escutcheons:
 - 1. Cast of forged brass or bronze material, levers supported by internal spring.
 - 2. On doors into hazardous areas which are accessible to physically handicapped persons, provide knurled lever contact surfaces.
 - 3. Locksets shall be provided with pressure release feature. When outside lever is locked, it is not ridged but will move freely without operating latch bolt or transferring torque to lock chassis.
 - 4. Schlage lever design "17".
 - 5. Use rose design "A" on new doors, use escutcheon design "N" on doors being reused.

D. Strikes:

- 1. Furnish locks and latches with wrought box strikes.
- 2. On single swing doors, provide latch strike plates with minimum lip projection necessary to project from trim.
- 3. On pair of doors with or without astragal, lip projection of latch strike plates shall not extend beyond face of lock style of inactive leaf.
- 4. Size: 4-7/8" x 1-1/4" x 3/32".

2.4 KEYING

- A. Factory construction master keyed locksets based on Best cylinders. Perform further keying as directed by Owner to match Owner's existing keying program.
- B. Permanent Cores: Furnish combinated cores so as not to breach security of existing system. CORMAX keying system must be guaranteed of no duplication of existing change keys, master keys or grandmaster keys located in this project. Provide new permanent cores for all new cylinder housings and locks as well as any existing locks that have been modified.
 - 1. ACCEPTABLE MANUFACTURERS---Best (no substitutions)
- C. Construction Cores: Furnish keyed brass construction cores installed in every cylinder and cylinder housing included in the project. Provide one construction key for each core. All temporary construction cores shall have a minimum of two levels such that a pass key can be issued to individual users limiting access to a single space with a second level "master" of all construction cores that can be issued to school principal and DISD Lock Department. Contractor shall provide master keys per the following schedule:
 - 1. Elementary Schools 6 master keys
 - 2. Middle Schools 8 master keys
 - 3. High Schools 12 master keys
 - 4. ACCEPTABLE MANUFACTURERS---Falcon (no substitutions)
- D. Index, tag and deliver permanent keys in sealed container to Owner.
- E. Contractor to provide installation of permanent cores.

2.5 EXIT DEVICES

- A. Acceptable Manufacturers:
 - 1. Von Duprin, Inc. (no substitution).
- B. Description:

1. Exit Devices and Mullions: Exit Devices shall be rim, mortise or vertical rod type as called for in the Hardware Schedule. All such devices shall be U.L. listed. Interior devices, (except vestibule doors), shall be furnished with lever handle trim, 996-L2, matching lock design unless specified as exit only function. Exterior doors and vestibule doors shall be furnished with VR trim unless specified as exit only function. XP devices shall be furnished at all exterior locations. Provide 330 series push bars at vestibule doors that do not require exit devices. Provide key removable mullions with stabilizers. All devices shall have published three-year warranty.

2.6 SURFACE MOUNTED DOOR CLOSERS

- A. Acceptable Manufacturers:
 - 1. LCN Closer Division (no substitution).
- B. Description:
 - Door closers shall be of cast iron material and be of rectangular designs and furnished with a full cover and thru-bolts. Provide heavy duty arms on exterior doors. They shall be furnished with backcheck, delayed action, hold-open and advanced backcheck as listed in the Hardware Schedule. Closers shall be mounted out of the line of sight wherever possible (i.e., room side of corridor doors, etc.) with parallel arm mounting on out swinging doors. Mount closers top jamb or on brackets and/or drop plates, where special conditions call for it.
- C. Arm Finish: Painted, aluminum enamel
- D. Closer Cover Finish: Sprayed enamel, color selected by Architect.

2.7 DOOR STOPS

- A. Acceptable Manufacturers:
 - 1. Rixson.
 - 2. Rockwood.
 - 3. Glynn-Johnson.
 - 4. Ives.
 - 5. Trimco.
- B. Door Stops and Holders: Where a door strikes a wall at approximately 90 degrees, a suitable door stop shall be provided, either a wall bumper or floor stop. Do not provide floor stops unless they are specifically listed in the hardware sets. If door does not strike a wall, an overhead stop shall be required. Provide Ives FS18L heavy duty floor stops only at exterior doors. Provide proper blocking for wall bumpers at stud walls and in frame and door for overhead stops.

2.8 FLUSH DOOR AND STRIKES

- A. Acceptable Manufacturers:
 - 1. Rockwood.
 - 2. Ives.
 - 3. Trimco
- B. Furnish flush bolts with dustproof strikes

2.9 SILENCERS

- A. Acceptable Manufacturers:
 - 1. Rookwood.
 - 2. lves.
 - 3. Trimco.
- B. Description: Preformed neoprene or rubber, gray.

Mark Twain School for the Talented and GiftedOrg # 220Dallas ISD Construction Services08 70 11-5

DOOR HARDWARE CSP 207459 August 16, 2024 C. Provide on interior metal door frames, except for frames for weather-stripped or smoke-sealed doors. Provide three silencers minimum for single doors and two for pairs of doors.

2.10 AIR OR SMOKE SEALS

A. Extruded silicone bulb-type with self-adhesive backing.

2.11 WEATHERE STRIPPING

A. Type: Silicone head and jamb pressure-sensitive gasket.

2.12 THRESHOLD

- A. Acceptable Manufacturers:
 - 1. NGP.
 - 2. Pemko Manufacturing Company.
 - 3. Zero Weatherstripping Company, Inc.
- B. Material: Two-piece grooved aluminum treads, for handicap access clear anodized finish, fabricated with mitered corners and returns.

2.13 DOOR BOTTOM SEAL

- A. Material: Neoprene bulb in aluminum channel.
- B. Acceptable Manufacturers:
 - 1. NGP.
 - 2. Pemko Manufacturing Company.
 - 3. Zero Weatherstripping Company, Inc.

2.14 PUSH AND PULLS

- A. Acceptable Manufacturers:
 - 1. Ives.
 - 2. Rockwood.
 - 3. Trimco Builders Hardware.

2.15 KICK PLATES

- A. Acceptable Manufacturers:
 - 1. Ives.
 - 2. Rockwood.
 - 3. Trimco Builders Hardware

2.16 KEY CABINET

- A. Provide key cabinet(s) as manufactured of sufficient capacity to handle all keys, plus 50 percent expansion Provide key control cross-reference chart and accountability (sign-out) tags. General Contractor shall install the key cabinet with cabinet set up by Best Access Systems
 - 1. ACCEPTABLE MANUFACTURERS: Telkee, Lund, Key Control

2.17 FABRICATION

A. Form surfaces true, smooth, and free from burrs; of uniform color, reasonably free from imperfections affecting appearance and serviceability. Dress portions of lock mechanism which come in contact or bear upon other parts to true, smooth surface.

- B. Drawings show swing or hand of each door. Finish each item of hardware for proper installation and operation of door swing.
- C. Manufacture hardware to conform to published templates, ANSI A156.7, and prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws except as specifically indicated.
- D. Furnish screws for installation with each hardware item. Provide Phillips flathead screws except as otherwise noted. Finish exposed screws to match hardware finish.
- E. Provide concealed fasteners for hardware units which are not exposed when door is closed, except to extent no standard manufacturer units of type specified are available with concealed fasteners.
- F. Provide appropriate nuts and thru-bolts with closers.
- G. Provide fasteners which are compatible with bolt unit fastened and substrate, and which will not cause corrosion or deterioration of hardware, base material, or fastener.

2.18 HARDWARE FINISHES

- A. Match finish of each hardware unit at each door or opening. Reduce differences in color and textures as much as possible where base metal or metal forming process is different for individual units of hardware exposed at same door or opening.
- B. Architect will determine of acceptability of match with samples and other hardware at each door. Units will be judged when held 2'-0" apart at 3'-0" distance.
- C. Finish designations used in schedules and elsewhere are those listed in Materials and Finished Standard 1301 by BHMA.

PART 3 EXECUTION

3.1 PREPARATION

- A. Hardware schedule should include thicknesses of door, hand and backset of hardware items, method of fastening and other detail requirements.
- B. Check Drawings and door schedule and provide required hardware for openings. Provide required hardware for labeled opening to conform with NFPA 80 and applicable building codes.
- C. Coordinate with door and frame manufacturers.
- D. Trim undesignated openings with hardware of equal quality and design to that specified for similar opening.

3.2 INSTALLATION

- A. Installation shall occur with a qualified installer with a minimum five (5) years' experience in the installation of commercial grade hardware. Manufacturer's instructions shall dictate templating and installation.
 - 1. Best Access Systems is to coordinate with DISD on keying system design, provide permanent cores, and key

cabinet set up.

- 2. All costs associated with Best's work shall be the responsibility of the General Contractor.
- 3. Installation of the permanent cores and keys shall be coordinated with the Owner. All work shall be provided by Best Access Systems or a subcontractor trained and approved by Best Access Systems. Installation of permanent cores shall be completed prior to Final Completion and paid for by the General Contractor.
- 4. Best Access Systems to deliver keys directly to the Owner with no 3rd party or General Contractor involvement. Contact Lock Supervisor, Steve Fickel at (972) 925-5239. Once the permanent cores are installed, the District assumes primary responsibility for the security of the building and its contents.
- 5. Best Access Systems to return construction cores to the General Contractor.
- 6. General Contractor to deliver to owner at end of project, any special installation tools, hex dogging keys, etc.
- 7. Renovations to existing facilities where existing doors are to be reused with new locking hardware may require the use of a metal wrap at the lock location to cover any exposed holes from previous lock prep. Existing door jambs shall be prepped to accept flush mounted ANSI strikes. Prep to factory specs.
- 8. Where existing doors are to be reused with new locking hardware, the district will determine if any deviation from the DISD standard of a mortise lock would be acceptable.
- 9. Install all door closers with thru-bolts and adjust after HVAC is in operation.
- 10. Install exit devices with sex, nuts and bolts through all doors.
- 11. Set thresholds in full bed of exterior grade caulk near interior and exterior edges.

3.3 ADJUSTING AND CLEANING

- A. Check and adjust each operating hardware item to ensure proper operating or function of unit.
- B. Lubricate moving parts as recommended by hardware manufacturer. Use graphite type lubrication if none other is recommended.
- C. Repair or replace defective materials or units which cannot be adjusted and lubricated to operate freely and smoothly. Reinstall items found improperly installed.
- D. At completion of the installation and before turnover of the project, make final adjustments to door closures and other items of hardware. Leave all hardware clean and fully operable. Should any item be found to be defective, it shall be repaired or replaced as directed.

3.4 FIELD QUALITY CONTROL

A. A final inspection shall take place by the hardware installer and hardware supplier to insure correct installation and operation, and check for any damaged or defective items. Observe and inspect that all hardware has been installed to its correct destination in proper working order.

3.5 MAINTANENCE

- A. Continued Maintenance Service: Approximately six months after acceptance of hardware in each area:
 - 1. Re-adjust every item of hardware to restore proper function of doors and hardware.
 - 2. Consult with and instruct Owner's personnel in recommended additions to maintenance procedures.
 - 3. Clean and lubricate operational items wherever installed.
 - 4. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units.

3.6 HARDWARE SCHEDULING

Hardware Group No. 210S1 EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	SET	CONST LATCHING BOLT	FB51P (ROD LENGTH AS REQ -C/L AT 72" AFF)	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	L9080L 17A	626	SCH
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	SFIC CONST. CORE	C607CCA	622	FAL
1	EA	PERMANENT CORE	IC7	626	BES
1	EA	OH STOP	900S SERIES SIZE & BKTS ASREQ (ACTIVE LEAF)	630	GLY
1	EA	SURFACE CLOSER	4040XP X TB X MTG BRKTS, PLATES AND SPACERS AS REQ (Active Leaf)	689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV (INACTIVE LEAF)	630	IVE
1	EA	SEALS	188S H & J (USE SILENCERS @NON- RATED DOORS)	BK	ZER
1	EA	ASTRAGAL	328AA (2 PCS - 1 SET) HEIGHTAS REQUIRED (OMIT @ NON- RATED DOORS)	AA	ZER

08 70 11-9

Hardware Group No. 551 EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM SECURITY	L9071L 17A	626	SCH
2	EA	MORTISE CYLINDER	1E74	626	BES
2	EA	SFIC CONST. CORE	C607CCA	622	FAL
2	EA	PERMANENT CORE	IC7	626	BES
1	EA	SURFACE CLOSER	4040XP X TB X MTG BRKTS, PLATES AND	689	LCN
			SPACERS AS REQ		
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	SEALS	188S H & J (USE SILENCERS @NON-	BK	ZER
			RATED DOORS)		

Hardware Group No. C201C EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	5BB1 4.5 X 4.5 CON TW8	652	IVE
1	EA	EU MORTISE LOCK	L9092LEU 17N CON 12/24 VDC	626	SCH
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	SFIC CONST. CORE	C607CCA	622	FAL
1	EA	PERMANENT CORE	IC7	626	BES
1	EA	SURFACE CLOSER	4040XP SCUSH X TB X MTG BRKTS, PLATES AND SPACERSAS REQ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	SEALS	188S H & J (USE SILENCERS @NON- RATED DOORS)	BK	ZER
1	EA	HARNESS (TO POWER SUPPLY)	CON-192P		SCH
1	EA	HARNESS (IN DOOR)	ALLEGION CONNECT TYPE &LENGTH AS REQ		SCH
1	EA	CREDENTIAL READER	CARD READER BY ANOTHERSECTION		
1	EA	DOOR CONTACT	679-05 TYPE AS REQ	WHT	SCE
1	EA	POWER SUPPLY	POWER SUPPLY FOR CARD READER BY ANOTHER SECTION		
1	EA	POWER SUPPLY	PS902 120/240 VAC -Coordinate power supply requirements with security.	LGR	SCE

Mark Twain School for the Talented and Gifted		DOOR HARDWARE
Org # 220		CSP 207459
Dallas ISD Construction Services	08 70 11-10	August 16, 2024

-INGRESS BY THE CARD READER OR KEY OVERRIDE. -FREE EGRESS BY LEVE

Mark Twain School for the Talented and Gifted Org # 220 Dallas ISD Construction Services 08 70 11-11

DOOR HARDWARE CSP 207459 August 16, 2024 Hardware Group No. 103 EACH TO HAVE:

OTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	OFFICE/ENTRY LOCK	L9050L 17A L583-363	626	SCH
1	EA	MORTISE CYLINDER	1E74	626	BES
1	EA	SFIC CONST. CORE	C607CCA	622	FAL
1	EA	PERMANENT CORE	IC7	626	BES
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	SEALS	188S H & J (USE SILENCERS @NON-RATED DOORS)	BK	ZER
1	EA	COAT AND HAT HOOK	508C	626	IVE

Hardware Group No. C710M EACH TO HAVE:

QTY 2	EA	DESCRIPTION CONT. HINGE	CATALOG NUMBER 112HD/224HD EPT LENGTH ASREQ	FINISH 628	MFR IVE
2 1	EA EA	POWER TRANSFER KEYED REMOVABLEMULLION	EPT10 CON KR4954 STAB HEIGHT AS REQ	689 689	VON VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-XP99-EO-CON LENGTHAS REQ	626	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-XP99-NL-OP-CON LENGTH AS REQ	626	VON
1 2 2 1 1 2	EA EA EA EA EA EA EA	RIM CYLINDER MORTISE CYLINDER SFIC CONST. CORE PERMANENT CORE 90 DEG OFFSET PULL DOOR PULL DOOR PULL SURFACE CLOSER	1E72 1E74 C607CCA IC7 8190-O 10" VR910 DT VR910 NL 4040XP SCUSH X TB X MTG BRKTS, PLATES AND SPACERSAS REQ	626 622 626 630 630 630 639	BES FAL BES IVE IVE IVE LCN
1	EA	SEALS	188S H & J (USE SILENCERS @NON-RATED	BK	ZER
1 1	EA SET	MULLION SEAL ASTRAGAL	8780N HEIGHT AS REQ MEETING STILE SEAL BY DOOR MANUFACTURER	ВК	ZER
2	EA	HARNESS (TO POWERSUPPLY)	CON-192P		SCH
2	EA	HARNESS (IN DOOR)	ALLEGION CONNECT TYPE &LENGTH AS REQ		SCH
1	EA	CREDENTIAL READER	CARD READER BY ANOTHERSECTION		

2	EA	DOOR CONTACT	679-05 TYPE AS REQ	WHT	SCE
1	EA	POWER SUPPLY	POWER SUPPLY FOR CARD READER BY		
			ANOTHER SECTION		
1	EA	POWER SUPPLY	PS902 120/240 VAC	LGR	SCE
			-Coordinate power supply requirements		
			with security.		

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08 70 11-13

DOOR HARDWARE CSP 207459 August 16, 2024 -INGRESS BY THE CARD READER OR KEY OVERRIDE. -FREE EGRESS BY THE PUSH PADS.

HARDWARE GROUP No. C714M EACH TO HAVE

QTY 2	EA	DESCRIPTION CONT. HINGE	CATALOG NUMBER 112HD/224HD EPT LENGTH ASREQ	FINISH 628	MFR IVE
2 1	EA EA	POWER TRANSFER KEYED REMOVABLEMULLION	EPT10 CON KR4954 STAB HEIGHT AS REQ	689 689	VON VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-XP99-EO-CON LENGTHAS REQ	626	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-XP99-NL-OP-CON LENGTH AS	626	VON
1 2 2 1 1 2	EA EA EA EA EA EA	RIM CYLINDER MORTISE CYLINDER SFIC CONST. CORE PERMANENT CORE DOOR PULL DOOR PULL SURFACE CLOSER	1E72 1E74 C607CCA IC7 VR910 DT VR910 NL 4040XP SCUSH X TB X MTG BRKTS, PLATES AND SPACERSAS REQ	626 622 626 630 630 689	BES BES FAL BES IVE IVE LCN
2 1 1	EA EA EA	KICK PLATE RAIN DRIP ASTRAGAL	8400 10" X 2" LDW B-CS 142A DW + 4" 328AA (2 PCS - 1 SET) HEIGHTAS REQUIRED	630 AA AA	IVE ZER ZER
1 1 2 1 2	EA EA EA EA EA	SEALS MULLION SEAL DOOR SWEEP THRESHOLD HARNESS (TO POWERSUPPLY)	328AA H & J 8780N HEIGHT AS REQ 39A LENGTH AS REQ 655A LENGTH AS REQ CON-192P	AA BK A A	ZER ZER ZER ZER SCH
2	EA	HARNESS (IN DOOR)	ALLEGION CONNECT TYPE &LENGTH AS REQ		SCH
1	EA	CREDENTIAL READER	CARD READER BY ANOTHERSECTION		
2 1	EA EA	DOOR CONTACT POWER SUPPLY	679-05 TYPE AS REQ POWER SUPPLY FOR CARD READER BY ANOTHER SECTION	WHT	SCE
1	EA	POWER SUPPLY	PS902 120/240 VAC -Coordinate power supply requirements with security.	LGR	SCE

-INGRESS BY THE CARD READER OR KEY OVERRIDE. -FREE EGRESS BY THE PUSH PADS.

END OF SECTION 08 70 11

SECTION 08 80 00 – GLAZING

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Glass and glazing materials for windows, and doors.
 - B. Glazing compounds and accessories.

1.2 REFERENCES

- A. 16 CFR 1201 Safety Standard for Architectural Glazing Materials, current edition.
- B. ASTM C 1036 Standard Specification for Flat Glass; current edition.
- C. ASTM C 1048 Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FTCoated and Uncoated Glass; current edition.
- D. ASTM C1172 Standard Specification for Laminated Architectural Flat Glass, current edition
- E. ASTM C 1193 Standard Guide for Use of Joint Sealants; current edition.
- F. ASTM E 1300 Standard Practice for Determining Load Resistance of Glass inBuildings; current edition.
- G. GANA (GM) GANA Glazing Manual; Glass Association of North America; current edition.
- H. GANA (SM) FGMA Sealant Manual; Glass Association of North America; current edition.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide glass and glazing materials for continuity of building enclosure vapor retarder andair barrier:
 - 1. In conjunction with materials described in Section 07 9000.
 - 2. To utilize the inner pane of multiple pane sealed units for the continuity of the airbarrier and vapor retarder seal.
 - 3. To maintain a continuous air barrier and vapor retarder throughout the glazedassembly from glass pane to heel bead of glazing sealant.
- B. Select type and thickness of exterior glass to withstand dead loads and wind loads actingnormal to plane of glass at design pressures calculated in accordance with applicable code.
 - 1. Use the procedure specified in ASTM E 1300 to determine glass type and thickness.
 - 2. Limit glass deflection to 1/200 or flexure limit of glass, whichever is less, with full recovery of glazing materials.
 - 3. Thicknesses listed are minimum.

1.4 SUBMITTALS

- A. See Division 1 Sections for submittal procedures.
- B. Product Data on Glass Types: Provide structural, physical and environmental characteristics,= size limitations, and special handling or installation requirements.
- C. Product Data on Glazing Compounds: Provide chemical, functional, and environmental= characteristics, limitations, special application requirements. Identify available colors.
- D. Samples of each glass type indicating color and tint properties, for Architect approval.
- E. Manufacturer's Certificate: Certify that glass meets or exceeds specified requirements

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with GANA Glazing Manual and FGMA Sealant Manual for glazing installation methods.
- B. Installer Qualification: Company specializing in performing the work of this section with minimum five years documented experience.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not install glazing when ambient temperature is less than 50 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.7 WARRANTY

- A. See Division 1 sections for additional warranty requirements.
- B. Provide a five (5) year warranty to include coverage for sealed glass units from sealfailure, interpane dusting or misting, and replacement of same.
- C. Provide a five (5) year warranty to include coverage for delamination of laminated glassand replacement of same.
- D. The Warranties submitted under this Section shall not deprive the Owner of other rights or remedies that the Owner may have under other provisions of the Contract Documents and the laws of governing jurisdictions and is in addition to and runs concurrently with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 PRODUCTS

2.1 FLAT GLASS MATERIALS

- A. Acceptable Manufacturers:
 - 1. Vitro Architectural Glass: www.vitroglazings.com.
 - 2. Guardian Industries Corp: www.guardian.com.
 - 3. Old Castle Glass Company. https://obe.com/
 - 4. Substitutions: Refer to applicable Division 1 sections.
- B. Safety Glass: Clear; fully tempered with horizontal tempering.
 - 1. Comply with ASTM C 1048, Condition A uncoated, Type I, transparent flat, Class1, Quality q3 glazing select.

2.2 SEALED INSULATING GLASS MATERIALS

- A. Acceptable Manufacturers:
 - 1. AFG Industries, Inc: www.afgglass.com.
 - 2. Guardian Industries Corp: www.guardian.com.
 - 3. Pilkington Building Products North America: http://buildingproducts.us.pilkington.com.
 - 4. Vitro Architectural Glass: www.vitroglazings.com.
 - 5. Substitutions: Refer to applicable Division 1 sections.

2.3 SEALED INSULATING VISION GLASS

- A. Applications: Exterior glazing unless otherwise indicated.
- B. Space between lites filled with air.

- C. Outboard Lite: Glass type meeting applicable codes; 1/4 inch minumum thickness.
 - 1. Tint: Solarban 90 Solar Control clear glass + clear low E
- D. Inboard Lite: Glass type meeting applicable codes; ¼ inch minumum thickness.
 1. Tint: Solarban 90 Solar Control clear glass + clear low E
- E. Basis of Design Glass Product: Vitro Architectural Glass Solarban 90(2).
 - 1. Substitutions Refer to applicable Division 1 sections.

2.4 SEALED INSULATING SPANDREL GLASS

- A. Outboard Lite: Glass type matching vision glass and meeting code requirements; matchvision glass tint.
 - 1. Coating: Low E (solar control type) on #2 surface.
- B. Inboard Lite: Glass type matching vision glass and meeting code requirements; clear.
 1. Coating: Ceramic frit on #4 surface.

2.5 GLAZING MATERIALS

- A. Manufacturers:
 - 1. Norton Performance Plastics Corp.
 - 2. Pecora Corporation: www.pecora.com.
 - 3. Tremco, Inc: www.tremcosealants.com.
 - 4. Substitutions: Refer to applicable Division 1 sections.
- B. Provide types for applicable setting method specified in GANA Glazing Manual and FGMA Sealant Manual except as specified otherwise. Do not use metal sash putty, nonskinning compounds, nonresilient preformed sealers or impregnated preformedgaskets.
- C. Materials Exposed to View and Unpainted: Black.
- D. Accessories: As required for complete installation. Include glazing points, clips, shims, angles, beads, gaskets and spacers. Provide primer-sealers and cleaners as recommended by glass and sealant manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that openings for glazing are correctly sized and within tolerance.
- B. Verify that surfaces of glazing channels or recesses are clean, freeof obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

3.2 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant.
- D. Install sealants in accordance with ASTM C 1193 and FGMA Sealant Manual.
- E. Install sealant in accordance with manufacturer's instructions.

3.3 INSTALLATION

- A. Install glass in accordance with recommendations and procedures in GANA Glazing Manual and FGMA Sealant Manual.
- B. Install glass in accordance with storefront frame manufacturer recommendations and instructions.
- C. Install glass with lines or waves horizontal.

3.4 CLEANING

- A. Remove glazing materials from finish surfaces.
- B. Remove labels after Work is complete.
- C. Clean glass and adjacent surfaces.

3.5 PROTECTION OF FINISHED WORK

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

END OF SECTION 08 80 00

SECTION 09 21 16 - GYPSUM BOARD

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Performance criteria for gypsum board assemblies.
 - B. Metal stud wall framing.
 - C. Metal channel ceiling framing.
 - D. Acoustic insulation.
 - E. Gypsum sheathing.
 - F. Cementitious backing board.
 - G. Gypsum wallboard.
 - H. Joint treatment and accessories.
 - I. Textured finish system.

1.2 REFERENCE STANDARDS

- A. ANSI A108.11 American National Standard for Interior Installation of Cementitious Backer Units; 2013.1.
- B. ANSI A118.9 American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2013.1.
- C. ASTM A653/A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013.
- D. ASTM C475/C475M Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2012.
- E. ASTM C514 Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2014).
- F. ASTM C645 Standard Specification for Nonstructural Steel Framing Members; 2014.
- G. ASTM C665 Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- H. ASTM C754 Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2011.
- I. ASTM C840 Standard Specification for Application and Finishing of Gypsum Board; 2013.
- J. ASTM C954 Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2011.
- K. ASTM C1002 Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014.
- L. ASTM C1047 Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2014a.
- M. ASTM C1177/C1177M Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2013.

- N. ASTM C 1178/1178M Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panels; current edition.
- O. ASTM C1280 Standard Specification for Application of Gypsum Sheathing; 2013.
- P. ASTM C1325 Standard Specification for Non-Asbestos Fiber- Mat Reinforced Cement Substrate Sheets; 2008b.
- Q. ASTM C1396/C1396M Standard Specification for Gypsum Board; 2014.
- R. ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an EnvironmentalChamber
- S. ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Lossof Building Partitions and Elements; 2009.
- T. ASTM E413 Classification for Rating Sound Insulation; 2010.
- U. GA-216 Application and Finishing of Gypsum Board; Gypsum Association; 2013.
- V. GA-600 Fire Resistance Design Manual; Gypsum Association; 2012.

1.4 SUBMITTALS

- A. See Division 1 Sections for submittal procedures.
- B. Product Data: Provide data on metal framing, gypsumboard, accessories, and joint finishing= system.
- C. Product Data: Provide manufacturer's data on partition head to structure connectors, showing= compliance with requirements.
- D. Test Reports: For stud framing products that do not comply with ASTM C645 or ASTMC754,= provide independent laboratory reports howing maximum stud heights at required spacing and=deflection.
- E. Samples: Submit two samples of gypsum board finished with proposed texture application, 12= by 12 inches in size, illustrating finish color and texture.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing gypsum board application and finishing, with minimum five yearsof documented experience.

PART 2 PRODUCTS

- 2.1 GYPSUM BOARD ASSEMBLIES
 - A. Provide completed assemblies complying with ASTM C840 and GA-216.
 - B. Fire Rated Assemblies: Provide completed assemblies complying with applicable code.
- 2.2 METAL FRAMING MATERIALS
 - A. Manufacturers Metal Framing, Connectors, and Accessories:
 - 1. Clarkwestern Dietrich Building Systems LLC: www.clarkdietrich.com.
 - 2. Marino: www.marinoware.com.
 - 3. Phillips Manufacturing Company: www.phillipsmfg.com.

- 4. Substitutions: Refer to applicable Division 1 sections.
- B. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf. Exception: Provide minimum 25 gauge studs at16 inches on center for toilet rooms, shower areas, bathtub surrounds and other wet area wells.
 - 1. Studs: "C" shaped with flat or formed webs with knurled faces.
 - 2. Runners: U shaped, sized to match studs.
 - 3. Ceiling Channels: C-shaped.
 - 4. Furring: Hat-shaped sections, minimum depth of 7/8 inch.
 - 5. Resilient Furring Channels: 1/2 inch depth, for attachment to substrate throughone leg only.
- C. Loadbearing Studs for Application of Gypsum Board: As specified in Section 05 40 00 Cold Formed Metal Framing.
- D. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
- E. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studswhile maintaining structural performance of partition.
 - 1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI SG02-1.
 - 2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.
 - 3. Provide components UL-listed for use in UL-listed fire-rated head of partition joint systems indicated on drawings.
 - 4. Deflection and Firestop Track:
 - a. Provide mechanical anchorage devices as described above that accommodate deflection while maintaining thefire-rating of the wall assembly.
 - b. Acceptable Products:
 - 1) FireTrak Corporation; Posi Klip.
 - 2) Metal-Lite, Inc.; The System.
 - 3) Substitutions: Refer to applicable Division 1 sections.
 - 5. Provide top track preassembled with connection devices spaced to fit stud spacing indicated on drawings; minimumtrack length of 12 feet.

2.3 BOARD MATERIALS

- A. Manufacturers Gypsum-Based Board:
 - 1. American Gypsum Company: www.americangypsum.com.
 - 2. CertainTeed Corporation: www.certainteed.com.
 - 3. Continental Building Products: www.continental-bp.com.
 - 4. Georgia-Pacific Gypsum: www.gpgypsum.com.
 - 5. National Gypsum Company: www.nationalgypsum.com.

- 6. USG Corporation: www.usg.com.
- 7. Substitutions: Refer to applicable Division 1 sections.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 - 2. Type: Type X.
 - 3. Thickness:
 - a. Vertical Surfaces: 5/8 inch.
 - b. Ceilings: 5/8 inch.
- C. Gypsum Wallboard; Fiberglass mat faced gypsum panels and moisture resistant core complying with ASTM D3273 tests. Sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces and ceilings, where windows, doors or roofs have not been installed and the board is likely to be exposed to moisture.
 - 2. Type: Type X.
 - 3. Thickness:
 - a. Vertical Surfaces: 5/8 inch.
 - b. Ceilings: 5/8 inch.
 - 4. Acceptable Product: National Gypsum eXP Interior Extreme.
 - 5. Substitutions: Refer to applicable Division 1 sections.
- D. Backing Board For Wet Areas: One of the following products:
 - 1. Application: Surfaces behind tile in wet areas including tub and shower surrounds and shower ceilings.
 - 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - 3. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
 - a. Thickness: 1/2 inch.
 - b. Products:
 - 1) National Gypsum Company; PermaBase Brand Cement Board.
 - 2) National Gypsum Company; PermaBase Flex Brand Cement Board.
 - 3) Substitutions: Refer to applicable Division 1 sections.
- E. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints inplace; ends square cut.
 - 1. Application: Vertical surfaces above tile, except in wet areas.
 - 2. Type: Type X, in locations indicated.
 - 3. Type X Thickness: 5/8 inch.
 - 4. Edges: Tapered.
- G. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Ceilings, unless otherwise indicated.
 - 2. Thickness: 5/8 inch.
 - 3. Edges: Tapered.
- H. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.

- 1. Application: Exterior sheathing, where indicated.
- 2. Glass Mat Faced Sheathing: Glass mat faced gypsumsubstrate as defined in ASTM C1177/C1177M.
- 3. Board Thickness: 1/2 inch.
- 4. Edges: V-shaped tongue and groove, for horizontal application.
- 5. Glass Mat Faced Products:
 - a. National Gypsum Gold Bond eXPSheathing.
 - b. Substitutions: Refer to applicable Division 1 sections.
- I. Shaftwall and Coreboard: Type X; 1 inch thick by 24 inches wide, beveled long edges, ends square cut.
 - 1. Paper Faced Type: Gypsum shaftliner board or gypsum coreboard as defined ASTM C1396/C1396M; water-resistantfaces.
 - 2. Products:
 - a. National Gypsum Company; Gold Bond Fire Shield Shaftliner.
 - b. Substitutions: Refer to applicable Division 1 sections.

2.4 ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced.
 - 1. Provide thickness to achieve STC 50 rating. See drawing details for locations and additional requirements.
- B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
 - 1. Products:
 - a. Franklin International, Inc.; Titebond GREENchoice Professional Acoustical Smoke and Sound Sealant: www.titebond.com.
 - b. Substitutions: Refer to applicable Division 1 sections.
- C. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
 - 1. Rigid Corner Beads: Low profile, for 90 degree outside corners and archways.
 - a. Product: Gordon Interior Specialties, Corner 901 SC.
 - 1) Locate where indicated on drawings.
- D. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
 - 1. Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
 - 2. Powder-type vinyl-based joint compound.
 - 3. Chemical hardening type compound.
 - 4. Manufacturers:
 - a. Continental Building Products: www.continental-bp.com.
 - b. Substitutions: Refer to applicable Division 1 sections.
- E. Textured Finish Materials: Latex-based compound; plain.
- F. Screws for Attachment to Steel Members Less Than 0.033 inch In Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self- piercing tapping type; cadmium plated for exterior locations.
- G. Screws for Attachment to Steel Members From 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws for application of gypsum board to loadbearing steel studs.
- H. Nails for Attachment to Wood Members: ASTM C514.
- I. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.2 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
 - 1. Level ceiling system to a tolerance of 1/1200.
 - 2. Laterally brace entire suspension system.
- C. Studs: Space studs at 16 inches on center.
 - 1. Extend partition framing as detailed on the drawings.
 - 2. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.
- D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- E. Standard Wall Furring: Install at concrete, masonry, and exterior column walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
- F. Furring for Fire Ratings: Install as required for fire resistance ratings indicated and to GA-600 requirements.
- G. Blocking: Install mechanically fastened steel sheet for support of:
 - 1. Framed openings.
 - 2. Wall mounted cabinets.
 - 3. Plumbing fixtures.
 - 4. Toilet partitions.
 - 5. Toilet accessories.
 - 6. Wall mounted door hardware.

3.3 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
 - 1. Provide thickness to achieve STC 50 rating. See drawing details for locations and additional requirements.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
 - 1. Place one bead continuously on substrate before installation of perimeter framing members.
 - 2. Place continuous bead at perimeter of each layer of gypsum board.
 - 3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.4 BOARD INSTALLATION

- A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Non-Rated: Install gypsum board perpendicular to framing, with ends and edges occurring over firm bearing.
- C. Double-Layer Non-Rated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Place second layer perpendicular to framing or furring

members. Offset joints of second layer from joints of first layer.

- D. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- E. Exterior Sheathing: Comply with ASTM C1280. Install sheathing horizontally, with edges butted tight and ends occurring over firm bearing.
 - 1. Seal joints, cut edges, and holes with water-resistant sealant.
- F. Cementitious Backing Board: Install over steel framing members where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.
- G. Installation on Metal Framing: Use screws for attachment of gypsum board.
- H. First 4'of gypsum drywall must be high impact gypsum at corridors and stairwells.
- I. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For nonrated assemblies, install as follows:
 - 1. Single-Layer Applications: Screw attachment.

3.5 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
 - 1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
 - 2. At exterior soffits, not more than 30 feet apart in both directions.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.6 JOINT TREATMENT

- A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, bedded and finished withchemical hardening type joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - 2. Level 3: Equipment rooms and service areas.
 - 3. Level 1: Concealed areas.
- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
- D. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.7 TEXTURE FINISHES

A. Apply finish texture coating by means that are in accordance with manufacturer's instructions and to match approved sample

3.8 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION 09 21 16
SECTION 09 22 16 - NON-STRUCTURAL METAL FRAMING

PART 1 GENERAL

- 1.1 SECTION INCLUDES
 - A. Metal furring and soffit framing.
 - B. Framing accessories.

1.2 REFERENCE STANDARDS

- A. ASTM C645 Standard Specification for Nonstructural Steel Framing Members.
- B. ASTM C754 Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum PanelProducts.
- C. ASTM C1002 Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or MetalPlaster Bases to Wood Studs or Steel Studs.
- D. SSPC-Paint 20 Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

1.3 SUBMITTALS

- A. See Division 1 Sections for submittal procedures.
- B. Shop Drawings:
- C. Indicate prefabricated work, component details, stud layout, framed openings, and anchorage to structure, type and location of fasteners, accessories, and items of other related work.
- D. Describe method for securing studs to tracks, splicing, and for blocking and reinforcement of framing connections.
- E. Product Data: Provide data describing framing member materials and finish, product criteria, load charts, and limitations.
- F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
 - A. Metal Framing, Connectors, and Accessories:
 - 1. CEMCO: www.cemcosteel.com.
 - 2. ClarkDietrich Building Systems: www.clarkdietrich.com.
 - 3. Jaimes Industries: www.jaimesind.com/#sle.

- 4. Marino: www.marinoware.com.
- 5. Simpson Strong Tie: www.strongtie.com.
- The Steel Network, Inc: www.SteelNetwork.com. 6.
- Substitutions: Refer to applicable Division 1 sections. 7.

2.2 FRAMING MATERIALS

- Framing System Components: ASTM C645; galvanized sheet steel, of size and A. properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at psf.
 - 1. Studs: C shaped with flat or formed webs with knurled faces.
 - 2. Runners: U shaped, sized to match studs.
 - 3. Ceiling Channels: C shaped.
 - 4. Furring: Hat-shaped sections, minimum depth of 7/8 inch.
- B. Tracks and Runners: Same material and thickness as studs, bent leg retainer notched to receive studs with provision for crimp locking to stud.
- C. Furring and Bracing Members: Of same material as studs; thickness tosuit purpose; complying with applicable requirements of ASTM C754.
- D. Fasteners: ASTM C1002 self-piercing tapping screws.
- E. Sheet Metal Backing: 0.036 inch thick, galvanized.
- F. Anchorage Devices: Powder actuated.
- G. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I Inorganic.

2.3 FABRICATION

- A. Fabricate assemblies of framed sections to sizes and profiles required.
- B. Fit, reinforce, and brace framing members to suit design requirements.
- Fit and assemble in largest practical sections for delivery to site, ready for installation. C.

PART 3 EXECUTION

3.1 **EXAMINATION**

- A. Verify existing conditions before starting work.
- 3.2 INSTALLATION OF FURRING
 - Furring: Install at spacing and locations shown on drawings. Lap splices a minimum of 6 A. inches.

SOFFIT FRAMING 3.3

- A. Install furring after work above or soffit is complete. Coordinate the location of hangers with other work.
- B. Install furring independent of walls, columns, and above-ceiling work.

- C. Securely anchor hangers to structural members. Space hangers as required to limit deflection to criteria indicated. Use rigid hangers at exterior soffits.
- D. Space main carrying channels as detailed on drawings, and not more than 6 inches from wall surfaces. Lap splice securely.
- E. Securely fix carrying channels to hangers to prevent turning or twisting and to transmit full load to hangers.
- F. Place furring channels perpendicular to carrying channels, not more than 2 inches from perimeter walls, and rigidly secure. Lap splices securely.
- G. Reinforce openings in suspension system that interrupt main carrying channels or furring channels with lateral channel bracing. Extend bracing minimum 24 inches past each opening.
- H. Laterally brace suspension system.

TOLERANCES 3.4

- Maximum Variation From True Position: 1/8 inch in 10 feet. A.
- Β. Maximum Variation From Plumb: 1/8 inch in 10 feet.

END OF SECTION 09 22 16

SECTION 09 22 36 - METAL LATH

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Metal lath for Portland cement plaster.
- B. Furring for metal lath.
- C. Metal ceiling framing.

1.2 RELATED REQUIREMENTS

A. Section 09 2400 - Portland Cement Plastering.

1.3 REFERENCE STANDARDS

- A. ASTM C841 Standard Specification for Installation of Interior Lathing and Furring; currentedition.
- B. ASTM C847 Standard Specification for Metal Lath; current edition.
- C. ASTM C1002 Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; current edition.

1.4 SUBMITTALS

- A. See Division 1 Sections for submittal procedures.
- B. Product Data: Provide data on furring and lathing components, structural characteristics, material limitations, and finish.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section a minimumfive years documented experience.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Metal Lath:
 - 1. Alabama Metal Industries Corporation: www.amico-lath.com.
 - 2. Cemco: www.cemcosteel.com.
 - 3. Clarkwestern Dietrich Building Systems LLC: www.clarkdietrich.com.
 - 4. Semco Southeastern Metals: www.semetals.com.
 - 5. Substitutions: Refer to applicable Division 1 sections.

2.2 FRAMING AND LATH ASSEMBLIES

- A. Provide completed assemblies with the following characteristics:
 - 1. Maximum Deflection of Vertical Assemblies: 1:360 under lateral point load of 100 lbs.

- 2. Maximum Deflection of Horizontal Assemblies: 1:240 deflection under dead loads andwind uplift.
- B. Fire Rated Assemblies: Provide components complying with requirements for fire rated assemblies specified in the section where the plaster finish is specified.
- 2.3 FRAMING MATERIALS
 - A. Furring Channels: Formed steel, minimum 0.020 inch thick, 3/8 inch deep by 7/8 inch high, splicing permitted; galvanized.
 - B. Main Ceiling Channels: Formed steel, asphalt coated, minimum 0.05 inch thick, 3/4 inch deep by 1-1/2 inch high, single piece, no splicing; galvanized.
 - C. Resilient Channels: Formed steel, minimum 0.020 inch thick; serrated face, flattened Z profile, splicing permitted; galvanized.
 - D. Hangers: Steel wire, of size and type to suit application, to support ceiling components in place to deflection limits as indicated.
 - E. Ceiling Hangers: Rolled steel sections, of size and type to suit application, to rigidly support ceiling components in place to deflection limits as indicated; galvanized.
 - F. Lateral Bracing: Formed steel, minimum 0.060 inch thick, size and length as required; galvanized.
- 2.4 LATH
 - A. Diamond Mesh Metal Lath: ASTM C847, galvanized; self-furring.
 - 1. Weight: To suit application, comply with deflection criteria, and as specified in ASTM C841for framing spacing.
 - 2. Weight: 3.4 lb/sq yd.
 - 3. Backed with treated paper.
 - B. Corner Mesh: Formed sheet steel, minimum 0.018 inch thick, perforated flanges shaped to permit complete embedding in plaster, minimum 2 inch size; same finish as lath.
 - C. Strip Mesh: Expanded metal lath, same weight as lath, 2 inch wide by 24 inch long; same finishas lath.
 - D. Beads, Screeds, Joint Accessories, and Other Trim: Depth governed by plaster thickness, maximum possible lengths.
 - 1. Material: Formed galvanized sheet steel, expanded metal flanges.
 - 2. Acceptable Manufacturer: Fry Reglet. www.fryreglet.com
 - 3. Channel Screeds: Model PCS 75-50, manufactured by Fry Reglet.
 - 4. Casing Beads: Square edges.
 - 5. Expansion Joints: Accordion profile with factory-installed protective tape, 2 inch wideflanges.
 - 6. Control Joints: Accordion profile with protective tape, 2 inch flanges.

2.5 ACCESSORIES

- A. Organic Felt Underlayment: Asphalt-saturated organic felt underlayment complying with ASTMD4869, Type II.
 - 1. Install 2 layers over thermal, air and water barrier system prior to metal lath installation.
- B. Access Panels: As specified in Section 08 31 00.
- C. Anchorage: Tie wire, nails, and other metal supports, of type and size to suit application; to rigidly secure materials in place, galvanized.
- D. Fasteners: Self-piercing tapping screws; ASTM C1002.
- E. Polyethylene Sheet: Clear, 6 mil thick.
- F. Tie Wire: Annealed galvanized steel.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that substrates are ready to receive work and conditions are suitable for application.
- C. For exterior plaster and stucco on stud walls, verify that weather barrier has been installed oversheathing substrate completely and correctly.
- D. Do not begin until unacceptable conditions have been corrected.
- E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactorypreparation before proceeding.

3.2 INSTALLATION - GENERAL

- A. Install 2 layers of organic felt prior to installation of lath and furring.
- A. Install lath and furring for Portland cement plaster in accordance with ASTM C1063.
- B. Install lath and furring for fire-rated assemblies in accordance with the requirements of theindicated assembly.

3.3 WALL FURRING

- A. Install furring channels horizontally; secure with fasteners on alternate channel flanges atmaximum 24 inches on center.
- B. Space furring channels maximum 16 inches on center, and not more than 4 inches away fromfloor and ceiling lines.
- C. Space resilient channels at maximum 24 inches on center. Place joints over framing members.

3.4 CEILING AND SOFFIT FRAMING

- A. Install furring after work above ceiling or soffit is complete. Coordinate the location of hangerswith other work.
- B. Install furring independent of walls, columns, and above-ceiling work.
- C. Securely anchor hangers to structural members or embed in structural slab. Space hangers asrequired to limit deflection to criteria indicated. Use rigid hangers at exterior soffits.
- D. Space main carrying channels at maximum 72 inch on center, and not more than 6 inches fromwall surfaces. Lap splice securely.
- E. Securely fix carrying channels to hangers to prevent turning or twisting and to transmit full loadto hangers.
- F. Place furring channels perpendicular to carrying channels, not more than 2 inches fromperimeter walls, and rigidly secure. Lap splices securely.
- G. Reinforce openings in suspension system that interrupt main carrying channels or furringchannels with lateral channel bracing. Extend bracing minimum 24 inches past each opening.
- H. Laterally brace suspension system.

3.5 CONTROL AND EXPANSION JOINTS

- A. Locate joints as indicated on drawings.
- B. Install control and expansion joints.

3.6 UNDERLAYMENT

A. Apply 2 layers of organic felt below areas to receive lath and plaster.

3.7 LATH INSTALLATION

- A. Apply metal lath taut, with long dimension perpendicular to supports.
- B. Lap sides of diamond mesh lath minimum 1-1/2 inches.
- C. Attach metal lath to metal supports using tie wire at maximum 6 inches on center.
- D. Attach metal lath to concrete using wire hair pins. Attach anchors to backup surface; space atmaximum 24 inches on center.
- E. Continuously reinforce internal angles with corner mesh, except where the metal lath returns 3inches from corner to form the angle reinforcement; fasten at perimeter edges only.
- F. Place corner bead at external wall corners; fasten at outer edges of lath only.
- G. Place base screeds at termination of plaster areas; secure rigidly in place.
- H. Place 4 inch wide strips of metal lath centered over junctions of dissimilar backing materials. Secure rigidly in place.
- I. Place lath vertically above each top corner and each side of door frames to 6 inches aboveceiling line.
- J. Place casing beads at terminations of plaster finish. Butt and align ends. Secure rigidly in place.
- K. Place additional strip mesh diagonally at corners of lathed openings. Secure rigidly in place.

3.8 TOLERANCES

- A. Maximum Variation from True Lines and Levels: 1/8 inch in 10 feet.
- B. Maximum Variation from True Position: 1/8 inch.

END OF SECTION 09 22 36

SECTION 09 24 00 - PORTLAND CEMENT PLASTERING

PART 1 GENERAL

- 1.1 SUMMARY
 - A. Related Documents: General and Supplementary Conditions of the Contract, Division 1 -General Requirements, and Drawings are collectively applicable to this Section.
 - B. Section Includes:
 - 1. Portland cement plaster system.
 - 2. Smooth surface finish.

1.2 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain cement plaster, stucco finish, lath, and trim from asingle manufacturer.
- B. Manufacturer: Company specializing in manufacture of cement plaster, stucco finish, lath, and trim with minimum 5 year's experience.
- C. Applicator: Company specializing in portland cement plaster work with 5 yearsdocumented experience on projects of this type.
- D. Apply cement plaster in accordance with PCA Portland Cement Plaster (Stucco) Manual, ACI 524R, and ASTM C926.
- E. Plastering shall be of highest quality and finish. Intersections of planes shall be sharp and accurate. Finished surfaces shall be uniform in texture and color throughout area, and freefrom imperfections.
- F. Plastering:
 - 1. Highest quality and finish.
 - 2. Intersections of Planes: Sharp and accurate.
 - 3. Finished Surfaces: Uniform in texture and color throughout area and free from imperfections.

1.3 SUBMITTAL

- Provide product data and color sample card on plaster materials, characteristics andlimitations of products specified, under provisions of Section 01 31 00.
- B. Submit manufacturer's installation instructions under provisions of Section 01 3100.
- C. Submit manufacturer's certificate under provisions of Section 01 40 00 that products [forfire resistance ratings] meet or exceed specified requirements.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, handle, and protect products in accordance with Section 01 60 00.
- B. Deliver products to job site:
 - 1. Without exposure to weather. In manufacturer's unopened container, packages, orbundles, clearly identified with name, brand, type, and grade.
- C. Store in dry, ventilated space off the ground.
- D. Protect materials from soiling, rusting, and damage.

1.5 PROJECT/SITE CONDITIONS

- A. Environmental Requirements: Comply with requirements of referenced plaster applicationstandards and recommendations of plaster manufacturer for environmental conditions before, during, and after plaster application.
- B. Weather Requirements:
 - 1. Cold Weather Requirements: Provide heat and protection, temporary or permanent, as required to protect each coat of plaster from freezing for at least24 hours after application. Distribute heat uniformly to prevent concentration of heat on plaster near heat sources; provide deflection or protective screens.
 - 2. Warm Weather Requirements: Protect plaster against uneven and excessive evaporation and from strong flows of dry air, both natural and artificial. Apply and cure plaster as required by climatic and job conditions to prevent dry out during cure period. Provide suitable coverings, moist curing, barriers to deflect sunlight and wind, or combinations of these, as required.
- C. Exterior Plaster: Apply plaster when substrate or ambient air temperature is 40 degrees F and rising [unless sand and mixing water are heated to 70 degrees F and temporary protection is provided to keep minimum 40 degrees F and rising in plastered areas for 24 hours minimum after set has occurred in accordance with PCA Portland Cement Plaster (Stucco) Manual]. Do not use frozen materials in mixes anddo not apply materials to frozen bases. Provide temporary protection and heat as required by ACI 524R and ASTM C 926.
- D. Interior Plaster: Maintain minimum 40 degrees F and rising in areas where plasterwork is to occur for not less than 48 hours before, during, and after application.
- E. Ventilation: Provide natural or mechanical means of ventilation to dry interior properly spaces after Portland cement plaster has cured.
- F. Protection
 - 1. Protect plaster from uneven and excessive evaporation during hot, dry weather.
 - 2. Protect finished surfaces installed prior to plastering by covering with suitabledrop cloths.
 - 3. Screen openings with plastic film when building is subject to hot, dry winds, orwhen temperature differentials of more than 20 degrees Fare present.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply plaster when substrate or ambient air temperature is less than 50 degrees F unless sand and mixing water are heated to 70 degrees F and temporary protection is provided to keep minimum 50 degrees F in plastered areas for 24 hours. Do not use frozen materials in mixes.
- B. Maintain minimum ambient temperature of 50 degrees F during and after installation of plaster.
- C. Protection
 - 1. Protect plaster from uneven and excessive evaporation during hot, dry weather.
 - 2. Protect finished surfaces installed prior to plastering bycovering with suitable dropcloths.

 Screen openings with plastic film when building is subject to hot, dry winds, ortemperature differentials of more than 20 degrees F are present.

1.7 COORDINATION

A. Openings and chases for heating, plumbing, and electrical ducts, pipes and conduits shall be built into plaster work as required. Consult other trades in advance and make provisions for their work to avoid cutting and patching.

PART 2 PRODUCTS

2.1 PLASTER MATERIALS

- A. Plaster Base and Intermediate Coat
 - 1. Portland Cement: ASTM C 150, Normal Type I portland.
 - a. Acceptable Products:
 - b. TXI Gray Portland Cement Type I.
 - 2. Lime: ASTM C 206, Type S.
 - 3. Aggregate: Natural sand in accordance with ASTM C 897.
 - 4. Water: Clean, fresh, potable and free of mineral or organicmatter which can affect plaster.
- B. Plaster Mix Reinforcement: Glass fibers, 1/2 inch nominal length, alkali resistant.
- C. Premixed Base and Intermediate Coat with Glass Fibers: Manufacturer's standard packaged blend of portland cement, ASTM C 150, Type I or III; hydrated lime, Type S, ASTM C 206; aggregate, ASTM C 897; glass fibers, 1/2 inch nominal length, alkali resistant.
 - 1. Acceptable Products:
 - a. Lone Star Fiberwall Base by TXITex/Star.
- D. Finish Coat
 - 1. Premixed Exterior (Stucco) Finishing Coat: Manufacturer's standard packaged blend of portland cement, ASTM C 150, Type I or III; hydrated lime, Type S, ASTMC 206; aggregate, ASTM C 897; integral color, mill mixed.
 - 2. Color: Selected by Architect from manufacturer's standard colors.
 - 3. Acceptable Products:
 - a. Lone Star Stucco by TXITex/Star.
- 2.2 CEMENT PLASTER MIXES
 - A. Mix and proportion cement plaster in accordance with PCA Plaster (Stucco) Manual, AC! 524R, ASTM C 926, and in accordance with manufacturer's instructions.
 - B. Mixes specified below are by volume, unless noted otherwise, and are suggestive only. Do not use shovel method of measurement. Vary mixes to meet local conditions, manufacturer's requirements, application requirements, or to obtain desired finish. Variations are permitted within limits specified in ASTM C926.
 - C. Do not re-temper or use material that has partially set. Do not use frozen,

caked or lumpymaterials. Clean mixer or mixing boxes of set of hardened materials before materials for a new batch are loaded. Mix each batch separately — thoroughly dry mix materials beforeadding water.

- D. Glass Fiber: Add to mix after ingredients have mixed 2 minutes minimum. Followmanufacturer's recommendations with maximum 2 pounds fiber per cubic foot of cementitious materials. Reduce amount of aggregate accordingly to maintain proper and consistent workability.
- E. Base (Scratch) Coat:
 - 1. 1 part portland cement.
 - 2. 1 part masonry cement.
 - 3. 6 parts aggregate.
 - 4. Glass Fibers: As specified above.
- F. Intermediate (Brown) Coat:
 - 1. 1 part portland cement.
 - 2. 1 part masonry cement
 - 3. 8 to 9 parts aggregate.
 - 4. Glass Fibers: As specified above.

2.3 PRE-PACKAGED MATERIAL MIXING

- A. Pre-Mixed Stucco Finish Coat: Mix with water in accordance with manufacturer's recommendations.
- 2.4 MIXING
 - A. Use mechanical mixers. Small batches of plaster mix may be accomplished by handmixing.
 - B. Mix only as much plaster as can be used prior to initial set.
 - C. Add color pigments in accordance with manufacturer's instructions. Ensure uniformity ofmix and coloration.
 - D. Mix materials dry, to uniform color and consistency, before adding water. Mix until plasterachieves uniform color and consistency.
 - E. Protect mixtures from frost, contamination, and evaporation.
 - F. Do not use frozen, caked, or lumped material. Discard material that has begun tostiffen.
 - G. Clean mixers, mixing boxes, and tools immediately after each batch. Keep mixers,boxes, and tools free and clean of previous mixes

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Grounds and Blocking and Accessories: Verify items within walls, soffits and other areas receiving plaster for other Sections of work are properly installed.
- C. Mechanical and Electrical: Verify services within walls are tested and approved.
- D. Verify that furring and structural elements are complete and tightly secured in place.
- E. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

- A. Protect surfaces near the work of this Section from damage or disfiguration. Protect fixtures, frames, inserts, and other adjacent work from rusting, soiling, or clogging dueto plastering.
- 3.3 APPLICATION GENERAL
 - A. Apply plaster in accordance with ASTM C 926, PCA Plaster Manual, and manufacturer's instructions. Utilize most stringent requirements if conflicts exist.
 - B. Apply plaster by machine or hand. Interrupt plaster only at junctions of plaster planes, at openings or at control joints.
 - C. Layout do permit completion of an entire surface in one application. Maintain a wetedge. Work to corners and joints, and do not allow material to set up within a distinct wall area.
 - D. Interrupt plaster at control joints. Tool through second and finish coat to produce "V"joint at intersection of frames and other items of metal or wood which act as plaster grounds.

	SOFFITS	WALLS	COLUMNS	
First Coat:	3/8 inch	1/2 inch	1/2 inch	
Second Coat:	1/4 inch	3/8 inch	1/4 inch	
Third Coat:	1/8 inch	1/8 inch	1/8 inch	

E. Nominal Plaster Thicknesses

- F. Scratch Coat (First Coat) Application.
 - 1. Apply scratch coat (first coat) with sufficient material and pressure to form keyson metal lath and bond on gypsum lath.
 - 2. Scratch or cross rake rough surface and allow to set firm and hard.
 - 3. Apply plaster screeds to scratch coat prior to application of brown coat.
 - 4. [Float base coat plaster scheduled to receive adhesive applied ceramic tile tosmooth, plumb surface within allowable tolerance for finished plaster surfaces.
- G. Brown Coat (Second Coat) Application
 - 1. Apply brown coat (second coat) to first coat bringing out to ground flat to truesurface and free of imperfections which would reflect in finish coat.
 - 2. Reconsolidate brown coat (second coat) by floating and roughen to assurebond with finish coat.
 - 3. Straighten to true surface with rod and darby (float) without application of water.
 - 4. Scratch or cross rake and leave rough, ready to receive finish coat (third coat).
- H. Finish Coat (Third Coat) Application
 - 1. Apply finish coat with texture and color as selected matching field sample.
 - 2. Apply finish coat to base coat which is set and partially dry or to

set dry andbase coat which has been dampened by application of water.

- 3. Avoid use of excessive amount of water.
- 4. Cut finish coat through full depth with trowel at intersection of plastered walls and plastered ceiling.
- 5. Tool through second and finish coats to produce "V" joint at intersection of frames or other items of metal or wood which act as plaster grounds.
- 6. Finish plaster with corners straight, plumb, sharp and exterior corners fitted with metal corner beads.
- I. Trowel Finish
 - 1. Scratch in finish coat with strong trowel pressure over base coat, double backand fill out to true, even surface.
 - 2. Allow finish plaster to firm up.
 - 3. Steel trowel applied and drawn plaster with clean water to smooth finish freefrom blemishes and irregularities.
 - 4. Avoid excessive working of surfaces.
- J. Removing plaster and protective materials from expansion beads and metal accessories. Remove plaster spatters and debris from other surfaces. Remove rubbish, debris, and scaffolds from spaces and leave broom clean.
- K. Curing: Immediately after applying and when set, spray surfaces with water to preventdrying and checking of finished surfaces. Moist cure for a minimum of 7 days.
- L. Water Curing
 - 1. Follow procedures recommended by Portland Cement Association.
 - 2. Cure minimum of 48 hours after all coats have set.
 - 3. Prevent premature dry-out.
- 3.4 ADJUSTING
 - A. Upon completion, point-up plaster around trim and other locations where plaster meetsdissimilar materials.
 - B. Cut out and patch defective or damaged plaster. Cut out and patch stained ordiscolored finish plaster.
 - C. Match patch of defective or damaged plaster to existing work in form, texture andcolor.
 - D. Obtain Architect's acceptance of plaster color and texture prior to scaffold removal.
 - E. Refer to Section 07175 for water repellent coating to be applied to plastered surfaces.
- 3.5 TOLERANCES
 - A. Maximum Variation from True Flatness: 1/8 inch in 10 feet as measured with a straightedge placed at any location on the surface.
- 3.6 PATCHING
 - A. Patch defects in workmanship and materials. Patches in finished areas shall matchadjacent surfaces.

3.7 CLEANING

A. Removing plaster and protective materials from expansion beads and

metal accessories. Remove plaster spatters and debris from other surfaces. Remove rubbish, debris, and scaffolds from spaces and leave broom clean.

END OF SECTION 09 24 00

SECTION 09 30 00 - TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Cementitious backer board as tile substrate.
- D. Transition strips.
- E. Ceramic trim.

1.02 SUBMITTALS

- A. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- B. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, control and expansion joints, and thresholds.

1.03 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing tile installation, with minimum of 5 years of documented experience.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.05 FIELD CONDITIONS

A. Do not install adhesives in an unventilated environment.

PART 2 PRODUCTS

2.01 TILE Manufacturers: All products by the same manufacturer.

1.Interceramic

- 2. American Olean; Div. of Dal-Tile International Corp.
- 3. Crossville Ceramics Company, L.P.
- 4.Daltile; Div. of Dal-Tile International Inc.
- 5.Lone Star Ceramics Company
- B. Glazed Wall Tile: ANSI A137.1 Surface Finish: High Gloss Edges: Cushioned Sizes and Shape: 4-inch square.
- C. Floor Tile ANSI A137.1 Size and Shape: 8-inch square. Surface Finish: Matte. High Gloss

2.02 TRIM AND ACCESSORIES

- A. Ceramic Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
 - 1. Applications: Use in the following locations:
 - a. Open Edges: Bullnose.
 - b. Inside Corners: Jointed.
 - c. Floor to Wall Joints: Cove base.
 - 2. Manufacturer: Same as for tile.
- B. Thresholds: Class A white marble, honed finish, beveled both sides, radiused from bevels to vertical planes, one piece for full width of door or opening.

2.03 ADHESIVE MATERIALS

- A. Manufacturers:
 - 1. Bonsal American, Inc; StayFlex 590: www.prospec.com
 - 2. Bostik Inc: www.bostik-us.com.
 - 3. Mapei Corporation: www.mapei.com.
 - 4. Substitutions: See Section 01 2500 Substitution Procedures.
- B. Organic Adhesive: ANSI A136.1, thinset bond type; use Type I in areas subject to prolonged moisture exposure.

2.04 GROUT MATERIALS

- A. Manufacturers:
 - 1. Bonsal American, Inc: www.prospec.com
 - 2. Bostik Inc: www.bostik-us.com.
 - 3. Custom Building Products: www.custombuildingproducts.com.
- B. Standard Grout: Any type specified in ANSI A118.6 or A118.7.
 - 1. Colors: To be selected by Architect from manufacturer's standard range.

2.05 MORTAR BED MATERIALS

- A. Pre-packaged mix of Portland cement, sand, latex additive, and water.
 - 1. Products:
 - a. LATICRETE International, Inc; LATICRETE 3701 Fortified Mortar Bed: www.laticrete.com/#sle.
 - b. Merkrete, by Parex USA, Inc; Merkrete Underlay C: www.merkrete.com/sle.
 - c. Proflex Products, Inc; MSI Mud Set Installation: www.proflex.us.
 - d. Substitutions: See Section 01 2500 Substitution Procedures.

2.06 ACCESSORY MATERIALS

- A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.
 - 1. Type: Fluid-applied.
 - 2. Thickness: 20 mils, maximum.
 - 3. Crack Resistance: No failure at 1/16 inch gap, minimum.
 - 4. Products:
 - a. LATICRETE International, Inc; LATICRETE Blue 92 Anti-Fracture Membrane: www.laticrete.com/#sle.
 - b. Merkrete, by Parex USA, Inc; Merkrete Fracture Guard: www.merkrete.com/sle.
 - c. Substitutions: See Section 01 2500 Substitution Procedures.

- B. Cementitious Backer Board: ANSI A118.9; High density, cementitious, glass fiber reinforced, 1/2 inch thick; 2 inch wide coated glass fiber tape for joints and corners.
- C. Cleavage Membrane Under Thick Mortar Bed:
 - 1. Material: 4 mil thick polyethylene film.
- D. Waterproofing Membrane at Floors: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
 - 1. Fluid or Trowel Applied Type:
 - a. Material: Synthetic rubber.
 - b. Thickness: 25 mils, minimum, dry film thickness.
 - c. Products:
 - 1) Custom Building Products; RedGard Crack Prevention and Waterproofing Membrane: www.custombuildingproducts.com.
 - 2) LATICRETE International, Inc; LATICRETE HYDRO BAN: www.laticrete.com/#sle.
 - 3) Merkrete, by Parex USA, Inc; Merkrete Hydro Guard 2000: www.merkrete.com/sle.
 - 4) Substitutions: See Section 01 2500 Substitution Procedures.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
- C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.
- D. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.

3.02 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- D. Install cementitious backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of dry-set mortar to a feather edge.
- E. Install tile backer board in strict accordance with manufacturer's instructions, using galvanized roofing nails or corrosion-resistant bugle head drywall screws. Bed fiberglass self-adhesive tape at all joints and corners with material used to set tiles.
- F. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.03 INSTALLATION - GENERAL

- A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1 through A108.13, manufacturer's instructions, and TCA Handbook recommendations.
- B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.
- E. Form internal angles square and external angles bullnosed.
- F. Install thresholds where indicated.
- G. Sound tile after setting. Replace hollow sounding units.
- H. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
- I. Allow tile to set for a minimum of 48 hours prior to grouting.

- J. Grout tile joints. Use standard grout unless otherwise indicated.
- K. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.04 INSTALLATION - FLOORS - MORTAR BED METHODS (QUARRY TILE)

A. Over exterior concrete substrates, install in accordance with TCNA (HB) Method F101, bonded, with standard grout.

- B. Over interior concrete substrates, install in accordance with TCNA (HB) Method F111, with cleavage membrane, unless otherwise indicated.
 - 1. Where waterproofing membrane is indicated, with standard grout or no mention of grout type, install in accordance with TCNA (HB) Method F121.
 - 2. Where epoxy or furan grout is indicated, but not epoxy or furan bond coat, install in accordance with TCNA (HB) Method F114, with cleavage membrane.
- C. Cleavage Membrane: Lap edges and ends.
- D. Waterproofing Membrane: Install as recommended by manufacturer and as specified in the section in which the product is specified.
- E. Mortar Bed Thickness: 5/8 inch, unless otherwise indicated.

3.05 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over interior concrete substrates, install in accordance with TCA Handbook Method F113, dryset or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
 1. Use uncoupling membrane under all tile unless other underlayment is indicated.

3.06 INSTALLATION - WALL TILE

- A. Over cementitious backer units on studs, install in accordance with TCA Handbook Method W244, using membrane at toilet rooms.
- B. Over gypsum wallboard on wood or metal studs install in accordance with TCA Handbook Method W243, thin-set with dry-set or latex-portland cement bond coat, unless otherwise indicated.
- C. Over interior concrete and masonry install in accordance with TCA Handbook Method W202, thin-set with dry-set or latex-portland cement bond coat.

3.06 CLEANING

A. Clean tile and grout surfaces.

3.07 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

SECTION 093016

QUARRY TILE FLOORING

PART 1- GENERAL

1.1 SECTION INCLUDES:

- A. Interior clay tile flooring.
- B. Setting materials.
- C. Joint sealant.
- D. Pointing joints.
- E. Temporary coating.

1.2 REFERENCES:

- A. ANSI A108.6 Ceramic Tile Installed with Chemical Resistant, Water Cleanable Tile-Setting and Grouting Epoxy.
- B. ANSI A108.10 Installation of Grout in Tile Work.
- C. ANSI A118.3 Chemical Resistant, Water Cleanable Tile- Setting and Grouting Epoxy and Water Cleanable Tile- Setting Epoxy Adhesive.
- D. ANSI A137.1 Recommended Standard Specifications for Ceramic Tile.
- E. ASTM C144 Aggregate for Masonry Mortar.
- F. ASTM C150 Portland Cement.
- G. ASTM C207 Hydrated Lime for Masonry Purposes.
- H. Tile Council of America (TCA) Ceramic Tile: The Installation Handbook.

1.3 SUBMITTALS:

- A. Procedures for Submittals: Section 01330.
- B. Product Data: Manufacturer's technical data sheets for each manufactured product.
- C. Samples:
 - 1. Submit three representative color and texture samples of each type tile and grout.
 - 2. Upon selection, submit tile mock-up mounted on a plywood backer board, illustrating tile patterns and colors, grout joint width and colors, and maximum co or variations anticipated. Size of mock-up to allow for at least 4 tiles (minimum of 12 x 12 inch).
- D. Quality Control Submittats: For information only,
 - 1. Certificates: Manufacturer's certification that materials meet specification requirements.
 - 2. Manufacturer's mixing instructions.

- E. Contract Closeout Submittals: Refer to Section 01701.
 - 1. Maintenance Data: Include complete instructions for care, cleaning and maintenance of tile and grout products.
- 1.4 QUALITY ASSURANCE:
 - A. Conform to ANSI Recommended Standard Specifications for Ceramic Tile A137.1.
 - B. Conform to TCA Ceramic Tile: The Installation Handbook.
- 1.5 DELIVERY, STORAGE, AND HANDLING:
 - A. Protect masonry materials during storage and construction against wetting by rain, snow or ground water and against soiling or intermixture with earth or other materials.
 - B. Protect grout and mortar materials from deterioration by moisture and temperature. Store in a dry, ventilated location above ground or in waterproof containers. Keep containers tightly closed and away from open flames.
- 1.6 ENVIRONMENTAL CONDITIONS:
 - A. Comply with mortar/grout manufacturer's printed directions for maintaining environmental conditions in installation areas during and after installation, including ambient temperatures and relative humidity, substrate temperature, and ventilation.
- 1.7 EXTRA MATERIALS:
 - A. At completion of project, deliver extra stock of materials used on project to Owner as follows 1. 50 sq. ft. of each type of tile.
 - 2. Six lineal feet of each type of base.
 - B. Store in location as directed by Owner.

PART 2- PRODUCTS

- 2.1 MANUFACTURERS:
 - A. Products of following manufacturers are acceptable subject to meeting specification criteria:
 1. Interceramic
 - 2. Dal Tile Corp., Dal-Quarry
 - 3. American Olean.
 - 4. Summitville Tiles, Inc.
 - B. Substitutions: Under provisions of Section 01631.
- 2.2 MATERIALS:
 - A. Quarry floor tile: Refer to Finish Schedule AE600
 - 1. Meeting following criteria:
 - a. Water absorption: ASTM C373: Less than 3%.
 - b. Bond Strength: ASTM C484: 253 psi minimum.
 - c. Coefficient of Friction: ASTM C1028: Greater than 84%.
 - d. Break Strength: ASTM C648: 545 lbs, minimum.
 - e. Acid Resistance: ASTM C650: Resistant.

Mark Twain School for the Talented and Gifted Org # 220 Dallas ISD Construction Services

093016

QUARRY TILE FLOORING CSP 207459 August 16, 2024

- B. Trimmers:
 - 1. Provide necessary caps, stops, returns, trimmers, and other shapes to complete clay tile installation.
 - 2. Color and finish to match floor tile.

2.3 SETTING MATERIALS:

- A. Leveling Bed:
 - 1. Portland Cement: ASTM C 150, Type I
 - 2. Aggregate: ASTM C 144
 - 3. Hydrated Lime: ASTM C207, Type S.
- B. Water: Clean, potable, free of deleterious materials which would impair strength or bond.
- C. Resin Mortar for Setting Bed: ANSI A108.6.
 - 1. Resin Type: Epoxy
 - 2. Filler Type: Carbon
- D. Resin Grout: ANSI A118.3
 - 1. Resin Type: Epoxy
 - 2. Filler Type: Carbon
 - 3. Color: To be selected by Architect.
- E. Temporary Coating: Protect exposed surface of tile units against adherence of mortar/grout by precoating with wax to produce a continuous film. Use wax which is approved by tile and mortar/grout manufacturer as being compatible with their materials and with cleaning method requirec to remove wax without damage to grout or tile.
- F. Expansion Joint Filler: Closed-cell foam polyethylene.
- G. Elastomeric Joint Sealant: Two-component, self-leveling sealant as specified in Section 07900.
- 2.4 MORTAR AND GROUT MIXES:
 - A. Mix and proportion setting bed mortars and grout materials in accordance with manufacturer's instructions.
 - B. In lieu of published mixing guidelines for setting bed mortar, use 1 part Portland Cement, 1/10 part hydrated lime by volume, 5 parts dry (6 parts damp) sand, and mix with water to obtain workable consistency.

PART 3 - EXECUTION

- 3.1 EXAMINATION AND PREPARATION:
 - A. Examine substrate surfaces to receive quarry tile flooring for compliance with requirements of the section in which substrate work is required and for existence of substrate conditions which do not comply with requirements of referenced quarry tile flooring installation standards or setting materials manufacturer. Do not proceed with quarry tile flooring installation until substrate conditions comply with these requirements.

- B. Apply wax in manner to avoid coating unexposed tile surfaces, handle tile to prevent waxed surfaces from contacting backs or edges of other units. If, despite these precautions, wax contacts bonding surfaces of tile, remove wax by burning it off with propane torch turned back to yellow flame.
- 3.2 INSTALLATION:
 - A. Thick Bed Method, Horizontal Surfaces (TCA F132 method):
 - 1. Apply slurry bond coat approximately 1/16 in. thick to substrate surface using flat trowel.
 - 2. Place thick bed mortar, 1-1/4 in. thick nominally onto slurry bond coat while coat is still wet and tacky.
 - 3. Spread prepared mortar approximately one-half desired bed thickness and then lay reinforcing mesh.
 - 4. Lap wire 3 in. and place additional mortar on top of wire to bring bed to required thickness.
 - 5. Rod and compact mortar with steel trowel.
 - Before placing tiles on green or wet screed bed, apply epoxy slurry bond coat approximately 1/16 in. thick to mortar using flat trowel in accordance with ANSI A108.6.
 - 7. Apply mortar skim coat to back of each tile or sheet of tile immediately prior to placing on bed.
 - 8. Place tiles in wet slurry coat before surface dries maintaining uniform joints.
 - 9. After each tile is laid, beat tile with wooden block or rubber mallet to level surface and embed tiles.
 - 10. Perform beating before mortar takes initial set.
 - 11. Pitch surface to drain where required.
 - 12. On hardened screed or mortar bed, install tiles by thin bed method.
 - 13. Sound tiles after setting. Replace hollow sounding tiles.
 - 14. Clean excess mortar or adhesive from surface of tile with wet cheese cloth (not a sponge) while mortar is fresh.
 - B. Install Portland cement leveling bed, sloped to drains. Place tile in resin setting bed, filling joints with grout using a squeegee.
 - C. Do not use tile with chips, cracks, voids, discolorations or other defects which are visible or will affect the finished appearance of the work.
 - D. Cut tile with motor-driven saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern required and to fit adjoining work neatly. Use full units without cutting wherever possible. Cutting with a hammer or chisel is not acceptable.
 - E. Layout:
 - 1. Lay out work so that full tile or joint is centered on each wall and no tile of less than half width need be used. Do not interrupt pattern through openings.
 - 2. No staggered joints will be permitted.
 - 3. Joints in tile shall align both directions.
 - 4. Align joints between floor and base tile.
 - 5. Make joints between sheets of tile exactly same width as joints within sheet.
 - 6. File edges of cut tile smooth and even.
 - F. Grouting:
 - 1. Allow tiles to set a minimum of 48 hours before tiling.
 - 2. Install in accordance with grout manufacturer's recommendations and ANSI A108.6 and TCA F132.
 - 3. Pack joints full and free before mortar takes initial set.
 - 4. Clean excess mortar from surface with wet cheesecloth as work progresses. Do not use hydrosponges.

Mark Twain School for the Talented and Gifted Org # 220 Dallas ISD Construction Services

- 5. Cure after grouting by covering with 4 mil plastic for duration as recommended by manufacturer.
- G. Install expansion joint filler where sealant type joints are required or indicated.
- H. Observe safety precautions recommended by manufacturer for mortar/grout materials and

cleaning solvents which are flammable or toxic. Provide temporary ventilation as required to remove vapors and fumes.

3.3 TOLERANCES:

- A. Joint Sizes: For applications in which joints are grouted after tile is set in place, provide a nominal joint width of 1/4 in. but not less than 3/16 in., unless approved by the Architect.
- B. Leveling: Do not exceed 1/32 in. tile-to-tile offset from flush and a tolerance of 1/8 in. in 10'-0" from level or slope as required, for finished surface of quarry tile flooring.
- C. Vary depth of setting bed as required to provide tile flooring flush with adjacent flooring materials.
- 3.4 REPAIR, POINTING, CLEANING AND PROTECTION:
 - A. Remove and replace units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminated evidence of replacement.
 - B. Pointing: During tooling of joints, enlarge voids or holes and completely fill with mortar or grout. For voids deeper than 1/8 in. and more than 1/8 in. wide, remove and re-lay tile units.
 - C. Cleaning: Remove excess mortar and grout from exposed tile surfaces, wash and scrub clean.
 - D. Provide final protection and maintain conditions in a manner acceptable to installer, which ensures tile flooring work being without damage or deterioration at time of Final Acceptance.

END OF SECTION

SECTION 09 50 00 - ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Related Documents: General and Supplementary Conditions of the Contract, Division 1
 - General Requirements, and Drawings are collectively applicable to this Section.
 - Section Includes:
 - 1. Suspended metal grid ceiling system and perimeter trim.
 - 2. Acoustical panels.
 - 3. Non-fire rated assembly

1.2 SYSTEM DESCRIPTION

B.

- A. Installed System: Conform to UL rating for ceiling/floor and ceiling/roof assembly, as follows:
 - 1. Fire Hazard Classification
 - 2. Maximum Flame Spread: UL (ASTM E84): 25.
 - 3. Smoke Developed: 10.
- B. Suspension system to rigidly secure acoustical ceiling system including integralmechanical and electrical components with maximum deflection of 1/360.

1.3 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacture of ceiling suspension system and ceiling tile with 10 years minimum experience.
- B. Installer: Company with 3 years minimum experience.
- C. Certificates
 - 1. Furnish certificate of fire endurance rating and flame spread index of firerating organization.
 - 2. Furnish certification of materials and systems conforming to specifications and fire endurance rating requirements.
 - 3. Submit manufacturer's certification that suspension system is capable of supporting light fixtures, grilles, and insulation.

1.4 REGULATORY REQUIREMENTS

A. Conform to applicable building code for referenced fire rated assembly and combustibility requirements for materials.

1.5 SUBMITTALS

- A. Submit product data under provisions of Section 01 30 00.
- B. Provide product data on metal grid system components, acoustic units.
- C. Submit samples under provisions of Section 01 30 00.
- D. Submit 2 samples, 8 by 12 inches in size, illustrating material and finish of each acoustic units.
- E. Submit 2 samples each, 12 inches long, of suspension system main runner, crossrunner, edge trim.

F. Submit manufacturer's installation instructions under provisions of Section 01 30 00.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after installation.

1.7 DELIVERY, STORAGE AND HANDLING

A. CStore tile and panel cartons open at each end to stabilize moisture content.

1.8 PROJECT CONDITIONS

- A. Do not install acoustical ceilings until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Schedule installation of acoustic units after interior wet work is dry.
- C. Humidity: 20-40 percent prior to, during, and after installation.
- D. Temperature: 61 degrees F minimum, prior to, during, and after installation.

1.9 EXTRA STOCK

- A. Provide extra quantity of acoustic units.
- B. Provide extra panels equal to 2 percent of total for each type used.
- C. Store in designated location as directed by Owner.

1.10 COORDINATION

A. Coordinate installation with other trades and make provisions for their work to prevent cutting and patching.

1.11 GUARANTEE

A. The installation of the acoustical material shall be guaranteed to be tight and remain in place for 2 years after final acceptance of the building. Any loose or falling materials shall be replaced by Contractor at his own expense.

PART 2 PRODUCTS

2.1 MANUFACTURERS - SUSPENSION SYSTEM

- A. Acceptable Manufacturers: Subject to compliance with requirements indicated, provide products of one of the following:
 - 1. Armstrong Fine Fissured 1728 with exposed tee configuration
 - 2. Certainteed Fine Fissured HHF-147 with exposed tee configuration
 - 3. USG Radar ClimaPlus 2215 (FC) with exposed tee configuration
 - 4. Formation
 - 5. Soundscape
 - B. Substitutions: Under provisions of Section 01 60 00.
 - C. Products specified herein are those of Armstrong Corporation as a standard of quality.

2.2 SUSPENSION SYSTEM MATERIALS

A. Standard Exposed Tee Grid

- 1. Intermediate duty system, complying with ASTM C 635, non-fire rated.
- 2. Commercial quality cold-rolled steel with galvanized coating except provide aluminum grid in kitchens and serveries.
- 3. All components die cut and interlocking.
- 4. Exposed grid surface width: 15/16 inch.
- 5. Cope cross runners to lay flush with main runners, except at edge moldings.
- 6. Finish on exposed surfaces: Baked-on white enamel, satin finish [matching ceiling panel color
- 7. Acceptable product: Certainteed and USG.
- B. Grid Accessories: Stabilizer bars, furring clips, splices, edge moldings hold down clips and closure strips as necessary to complete and complement suspended ceiling grid system.
- C. All components die-cut and interlocking
- D. Support Channels and Hangers: Galvanized steel; size and type to suit application, to rigidly secure acoustic ceiling system including integral mechanical and electrical components with maximum deflection of 1/360.

2.3 MANUFACTURERS - ACOUSTIC UNITS

- A. Acceptable Manufacturers: Subject to compliance with requirements herein, provideproducts from one of the following:
 - 1. Armstrong World Industries.
 - 2. CertainTeed.
 - 3. USG Company.
- B. Substitutions: Under provisions of Section 01 25 00.
- C. Products specified below are by ArmstrongWorld Industries, as a standard of quality.

2.4 ACOUSTIC UNIT MATERIALS

- A. Acoustic Panels (Type 1): Conforming to the following
 - 1. Size: 24 by 24 inches.
 - 2. Thickness: 5/8 inches.
 - 3. Composition: Fiberglass.
 - 4. Light Reflectance: 0.85 percent.
 - 5. NRC Coefficient: 0.55
 - 6. CAC Coefficient: 0.35.
 - 7. Flame Spread: A.
 - 8. Edge: Square.
 - 9. Surface Color: White.
 - 10. Surface Finish: Perforated, non-directional.
 - 11. Acceptable Products
 - a. Armstrong Fine Fissured 1728 with exposed tee configuration.
 - b. CertainTeed Fine Fissured HHF-147 with exposed tee configuration
 - c. USG Radar ClimaPlus 2215 (FC) with exposed tee configuration

2.5 ACCESSORIES

- A. Hanger Wire: Minimum 12 gage, galvanized, self-annealed, mild steel wire.
- B. Cove Lighting Diffusers
 - 1. 1/2 inch by 1/2 inch by 1/2 inch pressure injected molded acrylic egg cratelouver diffuser with silver finish.
 - 2. Acceptable Manufacturers:

- a. Artcrest Products Co., Inc.
- b. A.LP. Lighting Ceiling Products, Inc.
- c. American Louver Co.
- d. Scientific Lighting Products.
- 3. Cut and align diffusers to appear as one continuous unit without cross support.
- C. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that existing conditions are ready to receive work.
- B. Verify that layout of hangers will not interfere with other work.
- C. Beginning of installation means acceptance of existing conditions.

3.2 INSTALLATION-LAY-IN GRID SUSPENSION SYSTEM

- A. Install system in accordance with ASTM C 636, manufacturer's instructions and as supplemented in this Section, to produce a ceiling true to lines and levels, free from warpand soiled or damaged grid or panels.
- B. Install system capable of supporting imposed loads to a deflection of 1/360 maximum.
- C. Install after major above ceiling work is complete. Coordinate the location of hangerswith other work.
- D. Hang system independent of walls, columns, ducts, pipes and conduit. Hang wires directly from structure (not from fireproofing, fireproofing suspension members, andbridging or roof decks). Locate first hanger 6 inches from wall and space 4'-0" along carrying channel. Where carrying members are spliced, avoid visible displacement of faceplane of adjacent members.
- E. Where ducts or other equipment prevent the regular spacing of hangers, reinforcethe nearest affected hangers and related carrying channels to span the extra distance.
- F. Center system on room axis leaving equal border units, unless shown otherwise on the drawings. Do not leave tiles less than 1/2 length or width.
- G. Do not support fixtures or other components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads bysupplementary hangers located within 6 inches of each corner; or support componentsindependently.
- H. Do not eccentrically load system, or produce rotation of runners.
- Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths. Miter corners. Provide edge moldings at junctions with other interruptions. Field rabbett panel edges. Where round obstructions occur, provide preformed closers to matchedge molding. Provide prefabricated radius edge moldings around radius wall corners. Use maximum lengths, straight, true to line, and level.
- J. Form expansion joints as detailed. Form to accommodate plus or minus one inchmovement. Maintain visual closure.
- K. When extending existing acoustical ceiling within a room, match existing grid

pattern.Discontinuous grid patterns are prohibited.

3.3 **INSTALLATION - ACOUSTICAL UNITS**

- Install acoustical units in accordance with manufacturer's instructions. Α.
- В. Fit acoustic units in place, free from damaged edges or other defects detrimentalto appearance and function.
- C. Lay directional patterned units one way with pattern parallel to shortest room axis. Fitborder neatly against abutting surfaces.
- D. Install units after above ceiling work is complete.
- E. Install acoustic unit's level, in uniform plane, and free from twist, warp and dents.
- F. Cut panels to fit irregular grid and perimeter edge trim.
- G. Lay acoustic insulation for a distance of 48 inches both sides of acoustic partitions whereso designated.
- Η. Install hold-down clips to retain panels tight to grid system within feet of an exterior door.

3.4 TOLERANCES

- Variation from Flat and Level Surface: 1/8 inch in 10 feet. Α.
- Β. Variation from Plumb of Grid Members Caused by Eccentric Loads: Two degrees maximum.

3.5 ADJUSTING AND PATCHING

Replace damaged members of exposed suspension system. Replace Α. ceiling board andtile that is damaged, installed improperly, or shows visible signs of sagging.

3.6 CLEANING

Clean soiled areas of ceiling material with mild soap and water. Replace Α. ceiling board andtile damaged by improper cleaning.

END OF SECTION 09 50 00

SECTION 09 64 00 - RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Resilient base.
- B. Installation accessories.

1.02 REFERENCE STANDARDS

- A. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring;2017.
- B. ASTM F1066 Standard Specification for Vinyl Composition Floor Tile; 2004, with EditorialRevision (2014).
- C. ASTM F1861 Standard Specification for Resilient Wall Base; 2016.
- D. RFCI (RWP) Recommended Work Practices for Removal of Resilient Floor Coverings; 2011.

1.03 SUBMITTALS

- A. See Division 1 Sections for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance=characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Shop Drawings: Indicate seaming plans and floor patterns.
- D. Concrete Testing Standard: Submit a copy of ASTM F710.
- E. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer=and adhesive manufacturer that condition of sub-floor is acceptable.
- F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.04 DELIVERY, STORAGE, ANDHANDLING

- A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- B. Store all materials off of the floor in an acclimatized, weather-tight space.
- C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
- D. Do not double stack pallets.

RESILIENT FLOORING CSP 207459 August 16, 2024

1.05 FIELD CONDITIONS

A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditionsabove 55 degrees F.

PART 2 PRODUCTS

2.01 MATERIALS - VINYL COMPOSITION TILE FLOORING

A. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of applicable Division 1 section

2.02 MATERIALS - BASE

- A. Drawings and specifications are based on manufacturer's literature from the manufacturers shown on the drawings Finish Legend. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of Section 01600 – Product Requirements.
- B. Resilient Base: ASTM F 1861, Type TS rubber, vulcanized thermoset; top set, style as indicated on the drawings, and asfollows:
 - 1. Acceptable Product: As indicated in drawing finish schedules.
 - 2 Height: As indicated in drawing finish schedules.
 - 3. Thickness: As indicated in drawing finish schedules.
 - 4. Finish: Satin.
 - 5. Length: Roll.
 - 6. Preformed corners and end pieces are not allowed.
 - 7. Color: As indicated in drawing finish schedules.
- C. Substitutions: Refer to applicable Division 1 sections.

2.03 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
- C. Moldings, Transition and Edge Strips: Same material as flooring.
 - 1. Manufacturers:
- D. Sealer and Wax: Types recommended by flooring manufacturer.
 - 1. Six coats of DISD approved wax.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for resilient flooring installation by testing for moisture and pH.
 - 1. Test in accordance with ASTM F710.
 - 2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Remove existing resilient flooring and flooring adhesives; follow the recommendations of RFCI (RWP).
- B. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- C. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.
- D. Prohibit traffic until filler is fully cured.
- E. Clean substrate.
- F. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION – GENERAL

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Install in accordance with manufacturer's written instructions.
- C. Spread only enough adhesive to permit installation of materials before initial set.
- D. Fit joints and butt seams tightly.
- E. Set flooring in place, press with heavy roller to attain full adhesion.
- F. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- G. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
 - 1. Metal Strips: Attach to substrate before installation of flooring using stainless steel screws.
 - 2. Resilient Strips: Attach to substrate using adhesive.
- H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints

3.04 INSTALLATION - TILEFLOORING

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.
- B. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.

3.05 INSTALLATION - RESILIENT BASE

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches betweenjoints.
- B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
- C. Install base on solid backing. Bond tightly to wall and floor surfaces.
- D. Scribe and fit to door frames and other interruptions.

3.06 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION 09 64 00

Mark Twain School for the Talented and GiftedOrg # 220Dallas ISD Construction Services09 0

RESILIENT FLOORING CSP 207459 August 16, 2024

09 01 00-5
SECTION 09 68 13 TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

1.02 RELATED SECTIONS

A. Section 09 6500 - Resilient Flooring: Wall base finish.

1.03 REFERENCES

- A. CRI 104 Standard for Installation of Commercial Textile Floorcovering Materials; Carpet and Rug Institute; current edition.
- B. CRI (GLA) Green Label Testing Program Approved Adhesive Products; www.carpetrug.org;current edition.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate layout of joints, direction of carpet pile, and location of edge moldings.
- C. Product Data: Provide data on specified products, describing physical and performancecharacteristics; sizes, patterns, colors available, and method of installation.
- D. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet colorselected.
- E. Submit two, 12 inch long samples of edge strip.
- F. Manufacturer's Installation Instructions: Indicate special procedures.
- G. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile withminimum five years documented experience.
- B. Installer Qualifications: Company specializing in installing carpet with minimum five yearsexperience.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

1.07 EXTRA MATERIALS

- A. See Section 01 2500 Substitution Procedures, for additional provisions.
- B. Provide 25 each carpet tiles of each color and pattern selected.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Tarkett Commercial Flooring; www.commercial.tarkett.com

2.02 CARPET TILES

A. Carpet tiles are as scheduled on the Finish Schedule on the Drawings.:

2.03 ACCESSORIES

- A. Sub-Floor Filler: White premix latex; type recommended by flooring material manufacturer.
- B. Transition Strips: Provide low-profile metal transition strips, finish as selected by Architect. Provide at doorways where carpet terminates, and at open edges of carpet where adjacentfinish is a different height.
- C. Adhesives: Acceptable to carpet manufacturers, compatible with materials being adhered; CRI Green Label certified; in lieu of labeled product, independent test report showing compliance isacceptable.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive carpet tile.
- C. Verify that sub-floor surfaces are dust-free and free of substances which would impair bondingof adhesive materials to sub-floor surfaces.
- D. Verify that concrete sub-floor surfaces are ready for carpet tile installation by testing for moistureemission rate and alkalinity; obtain instructions if test results are not within limits recommended by carpet tile manufacturer and adhesive materials manufacturer.
- E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, andother defects with sub-floor filler.
- B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler iscured.
- C. Vacuum clean substrate.

3.03 INSTALLATION

- A. Install carpet tile in accordance with manufacturer's instructions and CRI 104.
- B. Blend carpet from different cartons to ensure minimal variation in color match.
- C. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

- D. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to buildinglines.
- E. Fully adhere carpet tile to substrate.
- F. Trim carpet tile neatly at walls and around interruptions.
- G. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

- A. Remove excess adhesive without damage, from floor, base, and wall surfaces.
- B. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09 90 00 - PAINTS AND COATINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints, stains, varnishes, and other coatings.

1.2 RELATED SECTIONS

- A. Section 05 50 00 Metal Fabrications: Shop-primed items.
- B. Division 23 Mechanical Identification: Painted identification.
 - 1. Reference Section 23 11 23 Facility Natural-Gas Piping
- C. Division 26 Electrical Identification: Painted identification.
- D. Division 04 Masonry
- E. Division 09 Finishes

1.3 REFERENCES

- A. ASTM D 16 Standard Terminology for Paint, Related Coatings Materials, and Applications; current edition.
- B. ASTM D 4442 Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; current edition.
- C. AWI/AWMAC (QSI) Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; current edition.

1.4 DEFINITIONS

A. Conform to ASTM D 16 for interpretation of terms used in this section.

1.5 SUBMITTALS

- A. See Section 01 33 00 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on all finishing products.
- C. Manufacturer's Instructions: Indicate special surface preparation procedures and substrate conditions requiring special attention
- D. Samples: Provide approval samples 24 inch x 24 inch of required specialty or "faux" finishes for Architect approval.

PAINTS AND COATINGS CSP 207459 August 16, 2024

1.6 MOCK-UPS

- A. Provide mockups of all painted or stained surfaces. Mock-up may remain in place following approval of the Architect.
- B. Provide adequate lighting for mock up review.
- C. Notify Owner and Architect minimum 72 hours prior to mock-up review.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.
- B. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years' experience.

1.8 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame and smoke rating requirements for products and finishes.

1.9 DELIVERY, STORAGE, ANDPROTECTION

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
- C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
- D. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.11 EXTRA MATERIALS

A. See applicable Division 1 sections, for additional provisions.

- B. Supply one gallons of each color; store where directed.
- C. Label each container with color in addition to the manufacturer's label.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Paints:
 - 1. Basis of Design Manufacturer: Sherwin Williams: www.sherwin-williams.com.
 - 2. Other Acceptable Manufacturers:
 - a. Glidden (glidden.com)
 - b. Kelly Moore (kellymoore.com)
 - 3. Substitutions permitted under provisions of Division 1 sections.
- B. Stains:
 - 1. Base Manufacturer: Sherwin Williams: www.sherwin-williams.com.
 - 2. Other Acceptable Manufacturers:
 - a. Olympic Stains: www.olympic.com.
 - 3. Substitutions permitted under provisions of Division 1 sections.

2.2 PAINTS AND COATINGS - GENERAL

- A. Paints and Coatings: Ready mixed, except field-catalyzed coatings. Prepare pigments:
 - 1. To a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
 - 2. For good flow and brushing properties.
 - 3. Capable of drying or curing free of streaks or sags.
 - 4. Low-VOC as defined by current CHPS design criteria.
 - 5. Accent colors are acceptable, but palette and scheduled locations require approval from Dallas ISD Construction Services
 - 6. Architect shall determine existing painted surface is able to properly receive the schedule primers and paints. Specifications shall require contractor to confirm during submittal phase.

2.3 PAINT SYSTEMS - EXTERIOR

- A. Concrete & Masonry (Excluding Flatwork)
 - 1. Clear Finish Weather/Water Repellant Seal 3.2. Metal (Aluminum, Galvanized)
 - 2. Industrial Clear Gloss Finish 3 Coat Latex System 3.3. Metal (Doors, Handrails, Metal Steps)
 - 3. Gloss Finish 3 coat Alkyd Industrial Enamel System with Alkyd Universal Primer

- B. Wood
 - 1. Gloss Finish 3 Coat Latex System
 - 2. Semi-Gloss Finish 3 Coat Latex System
- C. Architectural PVC, Plastic, Fiberglass
 - 1. Semi-Gloss Finish 3 Coat Acrylic Latex System
- D. Drywall (Exterior Soffits, Gypsum Board, or Exterior Drywall)
 - 1. Semi-Gloss Finish 3 Coat Acrylic Latex System
- 2.4 PAINT SYSTEMS INTERIOR
 - A. Concrete Surfaces & Unglazed Brick:
 - 1. Semi-Gloss Finish 3 Coat Latex System
 - 2. Semi-Gloss Finish 2 Coat Epoxy System (Water/Wet Areas)
 - B. Concrete Masonry
 - 1. Semi-Gloss Finish 3 Coat Latex System
 - 2. Semi-Gloss Finish 3 Coat Epoxy System (Water/Wet Areas)
 - C. Masonite, Insulation or Metal at Ceilings:
 - 1. Eggshell Finish 2 Coat Dryfall Waterborne System
 - D. Metal (Miscellaneous, Gas Piping & Ornamental Iron)
 - 1. Semi-Gloss Finish 3 Coat Enamel System 2.5. Metal (Structural)
 - Semi-Gloss Finish 3 Coat Industrial Enamel System 2.6. Metal (Ceiling & Ductwork)
 - 3. Eggshell Finish 2 Coat Dryfall Waterborne System
 - E. Wood (Walls, Ceilings, Doors, Trim)
 - 1. Gloss or Satin Finish 4 Coat Stain and Varnish System
 - F. Wood (Conditions where Stain and Varnish System are not possible)1. Semi-Gloss Finish 3 Coat Enamel System
 - G. Drywall (Walls, Ceiling, etc.)
 - 1. Semi-Gloss Finish 3 Coat Enamel System w/Light Sand Texture
 - 2. Semi-Gloss Finish 3 Coat Enamel System w/ Epoxy Primer and Light Sand Texture(All wet areas surfaces)

2.5 ACCESSORY MATERIALS

- A. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified; commercial quality.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive Work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Plaster and Gypsum Wallboard: 12 percent.
 - 2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
 - 3. Interior Wood: 15 percent, measured in accordance with ASTM D 4442.
 - 4. Exterior Wood: 15 percent, measured in accordance with ASTM D 4442.

3.2 PREPARATION

- A. Surface Appurtenances: Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
- B. Surfaces: Correct defects and clean surfaces which affect work of this section.
- C. Marks: Seal with shellac those which may bleed through surface finishes.
- D. Impervious Surfaces: Remove mildew by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- E. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
- F. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.
- G. Insulated Coverings to be Painted: Remove dirt, grease, and oil from canvas and cotton.
- H. Aluminum Surfaces to be Painted: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

- I. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- J. Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.
- K. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
- L. Interior Wood Items to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.
- M. Interior Wood Items to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.
- N. Exterior Wood to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.
- O. Metal Doors to be factory painted.

3.3 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- E. Sand wood surfaces lightly between coats to achieve required finish.
- F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface
- H. Touch-up painting to be conducted full height, from corner to corner. Spot touch-up is not allowed.

3.4 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Refer to Division 23 and Division 26 for schedule of color coding of equipment, duct work, piping, and conduit.
- B. Paint shop-primed equipment, where indicated.
- C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- D. Finish equipment, piping, conduit, and exposed duct work in utility areas in colors according to the color coding scheme indicated
- E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.5 FIELD QUALITY CONTROL

A. See applicable Division 1 sections for general requirements for field inspection.

3.6 CLEANING

A. Collect waste material which may constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.7 SCHEDULE - SURFACES TO BE FINISHED

- A. Do Not Paint or Finish the Following Items:
 - 1. Items fully factory-finished unless specifically noted.
 - 2. Fire rating labels, equipment serial number and capacity labels.
 - 3. Stainless steel items.
- B. Mechanical and Electrical: Use paint systems defined for the substrates to be finished.
 - 1. Paint all insulated and exposed pipes occurring in finished areas to match background surfaces, unless otherwise indicated.
 - 2. Paint shop-primed items occurring in finished areas.
 - 3. Paint interior surfaces of air ducts and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of Eggshell black paint to visible surfaces.
 - 4. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.
- C. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

END OF SECTION 09 90 00

Mark Twain School for the Talented and Gifted Org # 220 Dallas ISD Construction Services

09 00 00-8

PAINTS AND COATINGS CSP 207459 August 16, 2024

SECTION 10 11 01 - VISUAL DISPLAY BOARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Markerboards and Tackboards.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Blocking and supports.

1.03 REFERENCE STANDARDS

- A. ANSI A208.1 American National Standard for Particleboard; 1999.
- B. ASTM A 424 Standard Specification for Steel, Sheet, for Porcelain Enameling; 2009a.
- C. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials; 2010.

1.04 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data on markerboard, tackboard, tackboard surface covering, trim, and accessories.
- C. Manufacturer's printed installation instructions.
- D. Maintenance Data: Include data on regular cleaning, stain removal.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.

1.06 WARRANTY

- A. See Section 01 7800 Closeout Submittals, for additional warranty requirements.
- B. Provide five year warranty for markerboard to include warranty against discoloration due to cleaning, crazing or cracking, and staining.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Visual Display Boards:
 - 1. MooreCo, Inc\Best-Rite: www.moorecoinc.com.
 - 2. Claridge Products and Equipment, Inc: www.claridgeproducts.com.
 - 3. Polyvision Corporation (Nelson Adams): www.polyvision.com.
 - 4. Substitutions: See Section 01 60 00 Product Requirements.

2.02 VISUAL DISPLAY BOARDS

- A. Markerboards: Porcelain enamel on steel, laminated to core.
 - 1. Color: White.
 - 2. Metal Face Sheet Thickness: 0.024 inch (24 gage).

VISUAL DISPLAY BOARDS CSP 207459 August 16, 2024

- Core: MDF, 7/16" thick, laminated to face sheet.
 Frame: T5 tempered factory 6303 alloy grade, 201-R satin anodized finish.

- 5. Include map rail, flag holder (1 per board), and continuous solid blade-type aluminum marker tray, with ribbed sections.
- 5. Size: As indicated on drawings.
- B. Tackboards: Fine-grained, homogeneous natural cork.
 - 1. Cork Thickness: 1/4 inch thick self-healing cork.
 - 2. Backing: Hardboard, 1/4 inch thick, laminated to tack surface.
 - 3. Surface Burning Characteristics: Flame spread index of 25, maximum, and smoke developed index of 450, maximum, when tested in accordance with ASTM E 84.
 - 4. Size: As indicated on drawings.
 - 4. Frame: T5 tempered factory 6303 alloy grade, 201-R satin anodized finish.
 - 6. No projections beyond the frame.

2.03 MATERIALS

- A. Porcelain Enameled Steel Sheet: ASTM A 424, Type I, Commercial Steel, with fired-on vitreous finish.
- B. Foil Backing: Aluminum foil sheet, 0.005 inch thick.
- C. Adhesives: Type used by manufacturer.

2.04 ACCESSORIES

- A. Chalk Tray: Aluminum, manufacturer's standard profile one piece full length of chalkboard, molded ends; concealed fasteners, same finish as frame.
- B. Mounting Brackets: Concealed.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that internal wall blocking is ready to receive work and positioning dimensions are as indicated on shop drawings.
- C. Verify flat wall surface for frameless adhesive-applied boards.

3.02 INSTALLATION

- A. Install boards in accordance with manufacturer's instructions.
- B. Install with top of chalk tray at 30 inches above finished floor.
- C. Secure units level and plumb.
- D. Butt Joints: Install with tight hairline joints.

3.03 CLEANING

A. Clean board surfaces in accordance with manufacturer's instructions.

END OF SECTION

SECTION 10 14 00 - SIGNAGE

PART 1 GENERAL

- 1.01 SECTION INCLUDES
 - A. Room and door signs.
 - B. Interior directional and informational signs.

1.02 REFERENCE STANDARDS

- A. 36 CFR 1191 Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards Americans with Disabilities Act (ADA) Standards for Accessibility Design; 2010 and
- C. Texas Accessibility Standards (TAS); 2012.
- D. ICC A117.1 Accessible and Usable Buildings and Facilities; 2009.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.04 SUBMITTALS

- A. See Division 1 Sections for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
 - 1. When room numbers to appear on signs differ from those on the drawings, include the drawing room number on schedule.
 - 2. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
 - 3. Submit for approval by Owner through Architect prior to fabrication.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Package signs as required to prevent damage before installation.
- B. Package room and door signs in sequential order of installation, labeled by floor or building.
- C. Store tape adhesive at normal room temperature.

1.06 FIELD CONDITIONS

A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.

B. Maintain this minimum temperature during and after installation of sign

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design:
 - 1. Signs Manufacturing and Maintenance, sales@signsmanufacturing.com, 214-339-2227
 - 2. Best Sign Systems, Inc.: <u>www.bestsigns.com.</u>
 - 3. Mohawk Sign Systems, Inc.: <u>www.mohawksign.com.</u>
 - 4. Seton Identification Products: <u>www.seton.com/aec.</u>
 - 5. Substitutions: Refer to applicable Division 1 sections.

2.02 SCHOOL MOTO

- A. Create the letters "Persevere", "Respect", "Proactive", and "Unity" using flat cut 1⁄4" aluminum, color to be selected from manufacturers' standard colors. The letters will be stud mounted to masonry pedestals. The letters will be either 4" or 6".
- B. Create (4) aluminum caps, color to be selected from manufacturers standard colors. Each cap size needs to match concrete base. Attach caps to concrete base with counter sunk tamper proof screws. Refer to drawings for sizes.

2.03 CHANNEL LETTERS

CAST ALUMINUM LETTERS

A. Fabricate 32" (nominal) reverse-lit channel letters reading "Charles Rice Learning Center " with welded construction (not stapled) and no lighting.

-Faces will be .080 aluminum (color TBD). Selected Manufactured Standard Color.

-Returns will be .060 aluminum (color TBD). Selected Manufacturer Standard Color.

-Letter backs will be made of .080 aluminum. Selected Manufacturer Standard Color.

2.04 MARQUEE SIGN

A. Refer to architectural drawings A102

-Double-sided LED illuminated marquee sign: 2' deep fabricated aluminum construction with painted finish, Lexan header with vinyl copy/logos, single color reader board with Lexan door cover with shocks and locks.

-Basis of Design: Daktronics G36 Series.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install neatly, with horizontal edges level.
- C. Locate signs and mount at heights indicated on drawings and inaccordance with ADA Standards and ICC A117.1.
- D. Protect from damage until Substantial Completion; repair or replace damaged items.

END OF SECTION 10 14 00

SECTION 10 14 63 - DIGITAL EXTERIOR MARQUEE SIGN

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 specification section, apply to work of this section.
- 1.2 SECTION INCLUDES
 - A. Cabinet, face, and message area of exterior marquee sign specifications.
 - B. Lighting
 - C. Structural support
 - D. LED Digital sign
- 1.3 RELATED SECTIONS
 - A. Section 03 20 00 Cast-in-place Concrete
 - B. Section 05 50 00 Metal Fabrications
 - C. Divisions 26 and 27
- 1.4 REFERENCES
 - A. ASTM A36/A36M Standard Specification for Carbon Structural Steel
 - B. ASTM A307 Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
 - C. ASTM A500/A500M Standard Specification for Cold-Formed Welded and Seamless Carbon Structural Tubing in Rounds and Shapes
 - D. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement
 - E. ASTM C33/C33M Standard Specification for Concrete Aggregates
 - F. ASTM C150/C150M Standard Specification for Portland Cement
 - G. ASTM C270 Standard Specification for Mortar for Unit Masonry
 - H. FBC Florida Building Code
 - I. ASCE 7 Minimum Design Loads for Buildings and Other Structures
 - J. UL Underwriters Laboratories, Inc
 - K. NEMA Standards
- 1.5 SUBMITTALS
 - A. Submit shop drawings under provisions of Section 01 33 00.
 - B. Product Data: Manufacturer's product literature including components and accessories
 - 1. Preparation instructions and recommendations
 - 2. Storage and handling requirements and recommendations
 - 3. Printed installation and maintenance instructions
 - 4. Programming Instructions and directions for access to online training
 - 5. Provide training as outlined in 3.2.
 - C. Shop Drawings shall indicate sign styles, lettering font, foreground and background colors, locations, overall dimensions of each sign and anchorage for Architects and District Design Coordinators review and approval.

- 1. Anchorage shall include as a minimum an engineered foundation plans/details, structural components and connections to each other, the sign cabinet, sign face, and the foundation in compliance with FBC.
- 2. Submit structural shop drawings to the School District Building Department in addition to the Architect.
- D. Provide color samples for Architects and District Design Coordinators selection.
- E. Submit graphics being applied to the sign for Architects and District Design Coordinators approval.
- F. Submit closeout information on operation and maintenance data for installed products.
- G. Submit executed warranty as specified to Owner.

1.6 QUALIFICATIONS

- A. Obtain all products in this section from single supplier.
- B. Manufacturing company specializing in manufacturing the products specified in this section with minimum 5-years documented experience.
- C. Installation by installer specializing and with minimum 5-years of experience in the installation of products specified in this section.
- D. Design Work under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of Florida.

1.7 WARRANTY

- A. Non LED Electronic Display warranty
 - 1. Minimum warranty for 10-years against defects in workmanship and materials, warranty does not cover lightning, lamps or damage from vandalism.
 - 2. Sign Structure and Identification Cabinet: Under Normal use and service should the sign structure or sign malfunction due to defects in workmanship or materials, the Manufacturer will repair or replace any of the defective materials, except as limited below for ballasts.
 - a. Faulty ballasts will be exchanged for new ballasts for a period of three years
 - b. The warranty also includes refinishing and reinstallation, which may be required due to repair or replacement of defective sign where defect was not apparent prior to installation.
 - 3. Contractor is responsible for replacement or refinishing of sign where Contractor's work contributed to rejection or to voiding of manufacturer's warranty.
- B. LED Electronic Display warranty
 - 1. Manufacturer shall warrant the LED Electronic Display to be free from defects in workmanship or materials for a period of 5-years from the date of Substantial Completion.
 - 2. Damage caused by abuse, misuse, misapplication or accidental damage outside the control of the Manufacturer (including Lightning), and any consequential or contingent liability is excluded from the warranty.
 - 3. Manufacturer will repair or replace malfunctioning or defective parts.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect, and handle products to site per manufactures requirements.

PART 2 PRODUCTS

2.01 MARQUEE SIGN

A. Refer to architectural drawing A1.00A

Double-sided LED illuminated marquee sign: 2' deep fabricated aluminum construction with painted finish, Lexan header with vinyl copy/logos, single color reader board with Lexan door cover with shocks and locks.

- A. Basis of Design: Daktronics G36 Series
- B. Cabinet Specifications
 - 1. Double sided extruded aluminum and sized as indicated on plans
 - 2. Heli arc welded and mitered at corners
 - 3. Powder coated color finish: 3.0 to 4.0 mils thick electrostatically applied and permanently bonded guaranteed non-fading.
- C. Cabinet Face Specifications
 - 1. Provide vandal resistant clear UV solar grade high impact resistant polycarbonate cover with stainless steel hinges secured with dual compression tubular locks.
 - 2. Powder coat covers to match cabinet.
- D. Lighting Specifications
 - 1. All electrical components shall be UL listed and approved.
 - 2. Lighting: High output instant start T-8 fluorescent tubes spaced to provide uniform night lighting over entire face of the sign.
 - 3. Install per current NEC edition.
- E. Support Structure Specifications
 - 1. Design the support structure to withstand wind loads of as required by ASCE 7 & FBC.
 - 2. Legs: Cover on both sides if indicated on plans and anchor to foundation as indicated on engineered plans.
 - 3. Side frames painted in color approved by the Architect and District Design Coordinator.
 - 4. Provide signed and sealed (by Florida licensed PE) engineered shop drawings and structural calculations for approval by District Building Department.
- F. Provide 6" high numbers for the street address on the marquee, both sides if they are viewable from the street.
- G. LED Display Cabinets:
 - 1. Heavy Gauge Formed Aluminum Cabinets:
 - a. Serviceability: LED cabinets serviceable from front
 - b. Protective Covers: Polycarbonate lens protecting LED display area.
 - c. Lifts: Gas cylinder assist lifts, one on each end of LED covers.
 - 2. Double Sided: Each side is one self-contained LED Display.
 - a. Function: Each side of LED display to contain its own processor and be capable of displaying different independent messages at the same time
 - b. Weather resistant cabinets designed to meet the classification requirements of NEMA 4X construction.

- c. Closure Panels: Matching aluminum ventilated closure panels join two cabinets aesthetically together.
- d. Cabinet Finish: Industrial, graffiti resistant coating, DGHS Polyurethane by PPG or Architect approved equal.
- e. Climate Controlled Interior: By thermostat, controlling heaters bars, fans.
- f. Ventilation: With side ventilation/water diverters forced air ventilated design with an air exchange rate of four complete air changes per minute.
- 3. Service: Serial port provided within Electronic Message Center for troubleshooting by direct connection to PC.
- 4. Controller (CPU) Central Processing Unit:
 - a. The central processing unit provided in each display is a microprocessor based circuit board assembly.
 - b. Unit is 10 MHz device with minimum of 2-MB battery backed static RAM memory and 128K bytes Flash ROM with on board programmability.
 - c. Provide 1 GB compact flash memory for message storage.
 - d. Provide one RS-232, RS-485/422 input/output serial port jumper selectable.
 - e. Function: CPU assembly provides automatic memory and program testing at power up, diagnostics, and full talk back.
 - f. Network Interface: Contact the District's IT department to obtain the latest specifications.
- 5. System Software Requirements
 - a. Scheduling made in 12 or 24-hour formats.
 - b. Scheduler: Resides within LED display cabinet as onboard processor; does not require PC to operate messaging schedule.
 - c. Schedule Storage: System software and program sequence and schedules, can be stored on removable storage or fixed storage device.
 - d. Provide advance scheduling or pre-programming for more than 1 year in advance.
 - e. Screen Helps: Excerpts from the Owner's Manual.
 - f. Bad Word Checker: Prevents display of unacceptable words.
 - g. Library of words is password protected.
 - h. Library is fully editable for adding or deleting words.
 - i. Control: Menu guided control.
 - j. Editing and Display: Simultaneous display and edit capability.
 - k. Automatic Rebooting: Of system disk, after power outage:
 - i) System clock and calendar will continue to function during power failure.
 - ii) Message display holds memory for up to 60 days without power.
 - I. Provide all operating software to Owner along with required usage licenses and software updates.
 - m. Text Modules: Provide various with scalable fonts and traveling text.
 - n. Provide remote or on-site programming with appropriate connection.
 - o. Software Menu: User-friendly menu and icon-based software.
 - p. Provide password protection capability.

- 6. Power Supplies:
 - a. Verify the line voltage to the sign on existing school.
 - b. New power line from the building shall be in conduit sized and installed per the NEC and division 26 of the specifications.
 - c. Provide the electronic switching power supplies with short circuit and surge protection.
 - i) Protect the electronic switching power supplies by an overload allowance ranging from 105 percent up to 150 percent.
 - d. Power the LED display by multiple solid-state electronic switching power supplies.
 - i) Provide a separate power supply for the CPU to isolate the processor power from the LED drive power.

- 7. Information Transmission Method:
 - a. The data transmission method must be approved by the District's Information Technology Department.
 - i) Approved methods are constantly changing.
 - b. Coordinate with the District Information Technology Department and obtain the Department's written acceptance of the data transmission method prior to bid.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install signs in strict accordance with manufacturer's instructions, District Design Standards, District Master Specifications, and FBC requirements.
- B. Install signs at location and height as shown on the permitted site plan issued by the District Building Department.

3.2 TRAINING

- A. Provide for training by one of the three options:
 - 1. Online training provided at no charge through secure access log-in at the vendor's or the manufacturer's web site.
 - 2. Provide (2) DVD training disks, one to the School and one to Facilities Services Department.
 - 3. Provide onsite training of at least two school staff members by the vendor.

3.3 CLEANING

A. After installation, thoroughly clean all exposed surfaces and restore all damaged material to its original condition or replaced with new material.

END OF SECTION

Section 10 21 23 - Cubicle Curtains

Part 1 – General

1.01 Summary

- **A.** Provide cubicle curtains and tracks not limited to the following applications.
 - 1. Hospital bed cubicles.
 - 2. Examination areas.
 - **3.** Emergency areas.
 - 4. Dressing areas.
 - **5**. Where privacy systems are needed.
- **B.** Provide shower curtains at tubs and showers.
- C. Related Work:
 - 1. Section 09 21 16 Gypsum Board Assemblies, for wallboard ceilings.
 - 2. Section 09 51 00 Acoustical Ceilings, for acoustical ceiling panels.
- D. Section includes:
 - 1. Ceiling mounted curtain track
 - 2. Track accessories and attachments
 - 3. Cubicle curtains

1.02 Submittals

- A. Product Data: Submit manufacturer's product data, installation and maintenance instructions.
- **B.** Verification Samples: Submit 8 ½" x 11" representative of curtain fabric specified to verify style and color. Curtain samples sizes available:
 - 1. CSelect 4" x4"
 - 2. On The Right Track 81/2" x' 11"
 - 3. Traditional curtains 36" x 24"
- C. Shop Drawings: Submit reflected ceiling plans indicating locations of cubicle curtain and tracks.
- **D.** Maintenance Instructions: Submit manufacturer's maintenance instructions that include recommendations for care and cleaning of components.

1.03 Quality Assurance

- A. Manufacturer: Minimum of 5 years manufacturing similar products.
- B. Installer: Minimum of 2 years installing similar products.
- **C.** Flammability: Curtains shall pass NFPA 701 Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.
- **D.** Mock-Ups: Install one complete unit for approval prior to installation of remaining cubicle curtains and tracks. Approved mock-ups may remain in place.

1.04 Delivery, Storage, and Handling

A. Deliver materials and products in unopened factory labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations.

1.05 Warranty

A. Warranty: Provide manufacturer's standard 1 year warranty against defects in manufacturing.

Part 2 – Products 2.01 Man

Manufacturer

A. Basis of Design -provide On the Right Track, Inc manufactured by Construction Specialties, 3 Mark Twain School for the Talented and Gifted CUBICLE CURTAINS Org # 220 Dallas ISD Construction Services 10 21 23 -1 CUBICLE CURTAINS CSP 207459 August 16, 2024 Werner Way, Lebanon, NJ 08833. Tel: 800.233.8493. Email: cet@c-sgroup.com, www.c-sgroup.com. No substitutions.

B. Drawings and specifications are based on manufacturer's literature from Construction Specialties, Inc. drawings and specifications unless otherwise indicated. Other manufacturers must be approved equal by Architect/Owner.

2.02 Materials

- **A.** Curtain Tracks:
 - 1. Surface Mounted Track: Extruded aluminum with powder coated white finish.
 - 2. Dimensions: 1 ½ inches (39 mm) high by 3/8 inch (10 mm) wide.
 - 3. Provide straight and bent sections as indicated on drawings
 - **4.** Track Accessories (PVC Free): splices, connectors, hangers, anchors and mounting plates as required
 - 5. Loading Zone: Provide (1) loading zone per track layout to be used as an area for on loading and off-loading cubicle curtains.
 - 6. Curtain Loading Tool: Provide manufacturer's standard loading tool.
- B. Cubicle Curtains:
 - 1. As fabricated by CS Cubicle Curtains. Curtains to be custom made from flame-retardant, hospital quality material with a 1 ½" triple hem, including turned edges and a row of stitches at top and bottom of hem, complete with label. Curtains to be fabricated with nylon mesh tops designed for attachment to track without separate hooks.

2.03 Cubicle Curtains

- A. Cubicle Curtain Fabric: Provide 100% polyester curtains. Fabric is to be opaque, washable, flame retardant and closely woven.
- B. HushCurtain® Acoustical Cubicle Curtains
- 1. Performance characteristics
 - a.Noise Reduction Coefficient (NRC): 0.95
 - b.Sound Transmission Class (STC): 11
 - c. Flame Retardant (NFPA 701 Full Assembly Test): Pass
 - d.HIPAA Compliant
- C. Pattern & Color:
- 1. Cubicle Curtain Fabric: Choose a CSelect[™] Fabric pattern and color from Construction Specialties' exclusive collection:
 - a. Pattern: Seagrass / Color: Bayshore Blue

2.04 Fabrication

- 1. Vertical Curtain Seams: Shall be double needle interlocked.
- 2. Label: Shall be sewn into the top hem of each curtain to identify the width of curtain.
- 3. Mesh Tops: Flameproof nylon mesh, mesh must have ½" spacing as per NFPA requirements. Mesh is to be completely bound with same fabric as the body of the curtain. Mesh to be 19" high at top of curtains.
- 4. Curtains to finish
 - a. 12" above the finished floor.
- 5. Panel Size:
 - a. 69 inches wide by 92 inches high including 19 inches of mesh, hemmed as required.

Mark Twain School for the Talented and Gifted	
Org # 220	
Dallas ISD Construction Services	10 21 23 -2

Part 3 - Execution

3.01 Installation

- **A.** Installation of Cubicle Curtains and Tracks: Install in accordance with manufacturer's recommendations, including the following:
 - 1. Verify that ceilings are suitable for installation prior to installation.
 - 2. Mechanically attach tracks using manufacturer's recommended anchors and attachment devices.
 - 3. Install accessories and curtains and test for proper operation. Replace damaged units.

END OF SECTION 10 21 23

SECTION 10 2601 - WALL AND CORNER GUARDS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Bumper Rails.
- B. Corner guards.

1.02 REFERENCE STANDARDS

- A. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials; 2010.
- B. ICC A117.1 Accessible and Usable Buildings and Facilities; 2009.

1.03 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.
- C. Manufacturer's Instructions: Indicate special procedures, perimeter conditions requiring special attention.

PART 2 - PRODUCTS

2.01 COMPONENTS

- A. Bumper Rails: Factory- or shop-fabricated, with preformed end caps and internal and external corners:
 - Performance of Installed Assembly: 1.
 - Resist lateral force of 250 lbs at any point without damage or permanent set. a.
 - Material: Type 304 stainless steel, No. 4 finish. 2.
 - Mounting: Surface. 3.
 - Projection From Wall to Outside of Rail: 3/4 inch. 4.
 - 5. Return rail to wall.
- Corner Guards. Stainless Steel (Where indicated on Drawings) Flush Mounted: Β.
 - Material: Type 304 stainless steel, No. 4 finish, 16 gage. 1
 - 2. Performance: Resist lateral impact force of 100 lbs at any point without damage or permanent set.
 - 3. Width of Wings: 2 inches.

 - Corner: Square.
 Length: Floor to ceiling.
 - Mounting: Provide corner guards with countersunk holes for attachment screws. 6.
- Mounting Brackets and Attachment Hardware: Appropriate to component and substrate. С
 - For corner guards, attach with adhesive backing and secure with countersunk screws. 1.

2.03 FABRICATION

- A. Fabricate components with tight joints, corners and seams.
- B. Pre-drill holes for attachment.

C. Form end trim closure by capping and finishing smooth.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.
- B. Verify that field measurements are as indicated on Drawings.

3.02 INSTALLATION

A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to wall framing members only.

3.03 TOLERANCES

- A. Maximum Variation From Required Height: 1/4 inch.
- B. Maximum Variation From Level or Plane For Visible Length: 1/4 inch.

END OF SECTION

SECTION 10 28 00 - TOILET ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes Toilet Accessories.

1.02 SUBMITTALS

- A. See Division 1 Sections for submittal procedures.
- B. Texas CHPS Submittals: For products having recycled content, documentation indicating percentages by weight of pre-consumer and post-consumer recycled content. Include statement including the cost for each product having recycled content
- C. Product Data: Include construction details, material descriptions and thicknesses, dimensions, profiles, fastening and mounting methods, specified options, and finishes for each type of accessory specified.
- D. Setting Drawings: For cutouts required in other work; include templates, substrate preparation instructions, and directions for preparing cutouts and installing anchoring devices.
- E. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required. Use designations indicated in the Toilet and Bath Accessory Schedule and room designations indicated on Drawings in product schedule.

1.03 QUALITY ASSURANCE

A. Source Limitations: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise approved by Architect.

1.04 REFERENCES

- A. ASTM A 123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; current edition.
- B. ASTM A 269 Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; current edition.
- C. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; current edition.
- D. ASTM A 666 Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; current edition.
- E. ASTM C 1036 Standard Specification for Flat Glass; current edition.
- F. GSA CID A-A-3002 Mirrors, Glass; U.S. General Services Administration; current edition.
- G. ANSI/ICC A117.1 American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; current edition.
- H. TEXAS ACCESSIBILITY STANDARDS (TAS) of the Architectural Barriers Act Article 9102, Texas Civil Statutes.

1.05 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by disabled persons, proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.06 WARRANTY

- A. Manufacturer's Mirror Warranty: Written warranty, executed by mirror manufacturer agreeing to replace mirrors that develop visible silver spoilage defects within minimum warranty period indicated.
 - 1. Minimum Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Drawings and specifications are based on manufacturers shown on the drawings toilet accessory schedule unless otherwise indicated.
- B. Acceptable Manufacturers : Refer to drawings.
- C. Substitutions: Not permitted.

2.02 MATERIALS

- A. Accessories General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 - 1. Grind welded joints smooth.
 - 2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Keys: Provide 3 keys for each accessory to Owner; master key all lockable accessories.
- C. Stainless Steel Sheet: ASTM A 666, Type 304.
- D. Stainless Steel Tubing: ASTM A 269, Type 304 or 316.
- E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653, with G90/Z275 coating.
- F. Mirror Glass: Float glass, Type I, Class 1, Quality q2 (ASTM C 1036), with silvering, copper coating, and suitable protective organic coating to copper backing in accordance with GSA CID A-A-3002.
- G. Adhesive: Two component epoxy type, waterproof.
- H. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof, security type.
- I. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FABRICATION

- A. Surface-Mounted Toilet Accessories: Unless otherwise indicated, fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with continuous stainless-steel hinge. Provide concealed anchorage where possible.
- B. Recessed Toilet Accessories: Unless otherwise indicated, fabricate units of all-welded construction, without mitered corners. Hang doors and access panels with full-length, stainless-steel hinge. Provide anchorage that is fully concealed when unit is closed.
- C. Framed Glass-Mirror Units: Fabricate frames for glass-mirror units to accommodate glass edge protection material. Provide mirror backing and support system that permits rigid, tamper-resistant glass installation and prevents moisture accumulation.
 - 1. Provide galvanized steel backing sheet, not less than 0.034 inch and full mirror size, with non-absorptive filler material. Corrugated cardboard is not an acceptable filler material.
- D. Mirror-Unit Hangers: Provide mirror-unit mounting system that permits rigid, tamper- and theftresistant installation, as follows:

- 1. One-piece, galvanized steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
- 2. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
- E. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Secure mirrors to walls in concealed, tamper-resistant manner with special hangers, toggle bolts, or screws. Set units level, plumb, and square at locations indicated, according to manufacturer's written instructions for substrate indicated.
- C. Install grab bars to withstand a downward load of at least 250 lb. when tested according to method in ASTM F 446.

3.02 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

3.03 TOILET AND BATH ACCESSORY SCHEDULE

	Kimberly-Clark Professional Series Coreless
Tissue Holders Group Student Restrooms (Twin Jumbo)	JRT E-Z Load TWIN Jumbo Roll Bathroom Twin
	Tissue Dispenser. Code 09608
Tissue Holders In-Classroom Restrooms and Adult (Single Jumbo)	Kimberly-Clark Professional Series-I IN-SIGHT
	Coreless JRT E-Z Load Jumbo Roll Bathroom
	Tissue Dispenser. Code 09602
Paper Towel Dispensers Student, Adult, and Classroom Restrooms	Kimberly-Clark Professional Sanitouch Hard
	Roll Towel Dispenser. Code 09996
Soap Dispensers	Dispenser. 2000 ML.
Sanitary Napkin Disposals	GAMCO ND1 Buckeye International, Inc. Symmetry

Sanitary Napkin Dispenser	GAMCO NV-2-4FS
Grab Bars	GAMCO Min. 150 Series
Mirrors	Sanitary Napkin Dispenser
Robe Hook	Bobrick B-2116
Shower Curtain Rod/w Vinyl Curtain	Bobrick B207 (Sized for opening)

3.04 Hand Dryers

- A. Located in all Group Restrooms.
- B. Type: Surface Mounted 4" Depth, Stainless Steel Slim Series
- C. Speed flow Model M06ACS-UL Sensor Operated
- D. Provide 1 hand-dryer for every 2 lavatories but do not exceed 3 hand-dryers total

END OF SECTION 10 28 00

SECTION 10 7500 - FLAGPOLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum Flagpoles,

1.02 REFERENCE STANDARDS

- A. AASHTO M 36 Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains,
- B. ASTM A123/A123M Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- C. NAAMM FP 1001 Guide Specifications for Design Loads of Metal Flagpoles.

1.03 SUBMITTALS

- A. See Division 1 Sections for submittal procedures.
- B. Product Data: Provide data on pole, accessories, and configurations.
- C. Shop Drawings: Indicate detailed dimensions, base details, anchor requirements, and imposed loads.

1.04 QUALITY ASSURANCE

A. Designer Qualifications: Design flagpole foundation under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed the State in which the Project is located.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Spiral wrap flagpole with protective covering and pack in protective shipping tubes or containers.
- B. Protect flagpole and accessories from damage or moisture.

PART 2 PRODUCTS

2.01 FLAGPOLES

- A. Basis of Design: Commercial Flag Poles by Sign Manufacturing contact 214-339.2227
- B. Flagpoles: Designed in accordance with NAAMM FP 1001.
 - 1. Material: Seamless Aluminum.
 - 2. Design: Cone tapered.
 - 3. Mounting: Ground mounted type.
 - 4. Nominal Height: 35 feet measured from nominal ground elevation.
 - 5. Halyard: Internal type, polypropylene, two sets of swivel type clips for two flags.

2.02 POLE MATERIALS

A. Aluminum: ASTM B241/B241M, 6063 alloy, T6 temper.

2.03 ACCESSORIES

- A. Finial Ball: Aluminum, gold finish.
- B. Truck Assembly: Galvanized steel; revolving, stainless steel ball bearings, non-fouling.
- C. Cleats: 9 inch size, aluminum with galvanized steel fastenings, two per halyard.
- D. Cleat Box: Aluminum, with built-in hinge and hasp assembly, attached to pole with tamper proof screws inside box.
- E. Halyard: 5/16 inch diameter polypropylene, braided, white.
- F. Connecting Sleeve For Multiple Section Poles: Same material as pole, precision fit for field assembly of pole, concealed fasteners.

Mark Twain School for the Talented and Gifted Org# 220 10 75 00-1

FLAGPOLES CSP// 207459

Dallas ISD Construction Services

August 18, 2024

2.04 OPERATORS

A. Hand Crank: Removable type.

2.05 MOUNTING COMPONENTS

- A. Foundation Tube Sleeve: AASHTO M 36, corrugated 16 gage, 0.0598 inch steel, galvanized, depth as indicated on approved submittals.
- B. Pole Base Attachment: Flush aluminum base with base cover.

2.06 FINISHING

- A. Metal Surfaces in Contact With Concrete: Asphaltic paint.
- B. Concealed Steel Surfaces: Galvanized to ASTM A123/A123M requirements.
- C. Exposed to View Steel Surfaces: Galvanized to ASTM A123/A123M requirements.
- D. Aluminum: Mill finish.
- E. Finial: Spun gold finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that concrete foundation is ready to receive work and dimensions are as indicated on shop drawings.

3.02 PREPARATION

A. Coat metal sleeve surfaces below grade and surfaces in contact with dissimilar materials with asphaltic paint.

3.03 INSTALLATION

A. Install flagpole, base assembly, and fittings in accordance with manufacturer's instructions.

3.04 TOLERANCES

A. Maximum Variation from Plumb: 1 inch.

3.05 ADJUSTING

A. Adjust operating devices so that halyard and flag function smoothly.

END OF SECTION 10 75 00

Mark Twaln School for the Talented and Gifted Org# 220

10 75 00-2

FLAGPOLES CSP 207459

August 16, 2024

Dallas ISD Construction Services

14.1

SECTION 122413

ROLLER WINDOW SHADES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Manually operated sunscreen roller shades. (Type 1)
- B. Electrically Operated sunscreen roller shades. (Type 2)

1.2 RELATED SECTIONS

- A. Section 06100 Rough Carpentry: Wood blocking and grounds for mounting roller shades and accessories.
- B. Section 09260 Gypsum Board Assemblies: Coordination with gypsum board assemblies for installation of shade pockets, closures and related accessories.
- C. Section 09510 Acoustical Ceilings: Coordination with acoustical ceiling systems for installation of shade pockets, closures and related accessories.
- D. Division 16 Electrical: Electric service for motor controls

1.3 REFERENCES

- A. ASTM G 21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- B. NFPA 701-99 Fire Tests for Flame-Resistant Textiles and Films.
- C. NFPA 70 National Electrical Code.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01330.
- B. Submit Environmental Certification and Third Party Evaluation per Section 1.5 Qualifications.
- C. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
 - 3. Storage and handling requirements and recommendations.
 - 4. Mounting details and installation methods.
 - 5. Typical wiring diagrams including integration of motor controllers with building management system, audiovisual and lighting control systems as applicable.
- D. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, wiring diagrams and relationship to adjacent work.
- 1. Prepare shop drawings on Autocad or Microstation format using base sheets provided electronically by the Architect.
- E. Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings and include opening sizes and key to typical mounting details.
- F. Selection Samples: For each finish product specified, one set of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.
- G. Verification Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements. Shadecloth sample and aluminum finish sample as selected. Mark face of material to indicate interior faces.
- H. Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of twenty years experience in manufacturing products comparable to those specified in this section.
- B. Installer Qualifications: Installer trained and certified by the manufacturer with a minimum of ten years experience in installing products comparable to those specified in this section.
- C. Fire-Test-Response Characteristics: Passes NFPA 701-99 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.
- D. Electrical Components: NFPA Article 100 listed and labeled by either UL or ETL or other testing agency acceptable to authorities having jurisdiction, marked for intended use, and tested as a system. Individual testing of components will not be acceptable in lieu of system testing.
- E. Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC 9644, ATCC9645.
- F. Environmental Certification: Submit written certification from the manufacturer, including third party evaluation, recycling characteristics, and perpetual use certification as specified below. Initial submittals, which do not include the Environmental Certification, below will be rejected. Materials that are simply 'PVC free' without identifying their inputs shall not qualify as meeting the intent of this specification and shall be rejected.
- G. Third Party Evaluation: Provide documentation stating the shade cloth has undergone third party evaluation for all chemical inputs, down to a scale of 100 parts per million, that have been evaluated for human and environmental safety. Identify any and all inputs, which are known to be carcinogenic, mutagenic, teratogenic, reproductively toxic, or endocrine disrupting. Also identify items that are toxic to aquatic systems, contain heavy metals, or organohalogens. The material shall contain no inputs that are known problems to human or environmental health per the above major criteria, except for an input that is required to meet local fire codes.
- H. Recycling Characteristics: Provide documentation that the shade cloth can and is part of a closed loop of perpetual use and not be required to be down cycled, incinerated or otherwise

thrown away. Scrap material can be sent back to the mill for reprocessing and recycling into the same quality yarn and woven into new material, without down cycling. Certify that this process is currently underway and will be utilized for this project.

- I. Perpetual Use Certification: Certify that at the end of the useful life of the shade cloth, that the material can be sent back to the manufacturer for recapture as part of a closed loop of perpetual use and that the material can and will be reconstituted into new yarn, for weaving into new shade cloth. Provide information on each shade band indicating that the shade band can be sent back to the manufacturer for this purpose.
- J. Mock-Up: Provide a mock-up (manual shades only) of one roller shade assembly for evaluation of mounting, appearance and accessories.
 - 1. Locate mock-up in window designated by Architect.
 - 2. Do not proceed with remaining work until, mock-up is accepted by Architect.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in the Window Treatment Schedule.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 WARRANTY

- A. Roller Shade Hardware, Chain and Shadecloth (except EcoVeil™): Manufacturer's standard non-depreciating twenty-five year limited warranty.
 - 1. EcoVeil standard non-depreciating 10-year limited warranty.
- B. Roller Shade Installation: One year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas.

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
 - A. Acceptable Manufacturer: MechoShade Systems, Inc.; 5515 South Briar Ridge Circle, McKinney, TX 75070. Kathy Macasa 214-585-0469 - Fax 214-585-0469 Kathym@mechoshade.com.
 - B. Shade Techniques, Inc.
 - C. Substitutions: Submit per Specification Section 01630.

2.2 APPLICATIONS/SCOPE

- A. Roller Shade Schedule:
 - 1. Shade Type 1: Manual operating, chain drive, sunscreen roller shades in exterior windows of rooms and spaces as shown on the Drawings.

2. Shade Type 2: Motorized interior solar roller shades in all exterior windows of rooms and spaces shown on Drawings, and related motor control systems.

2.3 SHADE CLOTH

- A. Visually Transparent Single-Fabric Shadecloth: MechoShade Systems, Inc., ThermoVeil group, single thickness non-raveling 0.030-inch (0.762 mm) thick vinyl fabric, woven from 0.018-inch (0.457 mm) diameter extruded vinyl yarn comprising of 21 percent polyester and 79 percent reinforced vinyl, in colors selected from manufacturer's available range.
 - 1. Dense Basket Weave: "1300 series", 5 percent open, 2 by 2 dense basket-weave pattern.
 - 2. Color: Selected from manufacturer's standard colors

2.4 SHADE BAND

- A. Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.
 - 1. Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.
 - 2. Shade band and Shade Roller Attachment:
 - a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55 inch (39.37 mm) in diameter for manual shades, and less than 2.55 inches (64.77 mm) for motorize shades are not acceptable.
 - b. Provide for positive mechanical engagement with drive / brake mechanism.
 - c. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable / replaceable with a "snap-on" snap-off" spline mounting, without having to remove shade roller from shade brackets.
 - d. Mounting spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.
 - e. Any method of attaching shade band to roller tube that requires the use of: adhesive, adhesive tapes, staples, and/or rivets are not acceptable.

2.5 SHADE FABRICATION

- A. Fabricate units to completely fill existing openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise.
- B. Fabricate shadecloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shadecloth to roll true and straight without shifting sideways more than 1/8 inch (3.18 mm) in either direction per 8 feet (2438 mm) of shade height due to warp distortion or weave design. Fabricate hem as follows:
 - 1. Bottom hem weights.
 - 2. Concealed hemtube.
- C. Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shadebands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer's standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of

the shadecloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.

- D. For railroaded shadebands, provide seams in railroaded multi-width shadebands as required to meet size requirements and in accordance with seam alignment as acceptable to Architect. Seams shall be properly located. Furnish battens in place of plain seams when the width, height, or weight of the shade exceeds manufacturer's standards. In absence of such standards, assure proper use of seams or battens as required to, and assure the proper tracking of the railroaded multi-width shadebands.
- E. Provide battens for railroaded shades when width-to-height (W:H) ratios meet or exceed manufacturer's standards. In absence of manufacturer's standards, be responsible for proper use and placement of battens to assure proper tracking and roll of shadebands.

2.6 COMPONENTS

- A. Access and Material Requirements:
 - 1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.
 - 2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.
 - 3. Use only Delrin engineered plastics by DuPont for all plastic components of shade hardware. Styrene based plastics, and /or polyester, or reinforced polyester will not be acceptable.
- B. Manual Operated Chain Drive Hardware and Brackets:
 - 1. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.
 - 2. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll, which shall be installed without exposed fastening devices of any kind.
 - 3. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.
 - 4. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer's design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.
 - 5. Provide shade hardware system that allows multi-banded manually operated shades to be capable of smooth operation when the axis is offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve, for a 12 degrees total offset.
 - 6. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable
 - 7. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel or heavier as required to support 150 percent of the full weight of each shade.
 - 8. Drive Bracket / Brake Assembly:
 - a. MechoShade Drive Bracket model M5 shall be fully integrated with all MechoShade accessories, including, but not limited to: SnapLoc fascia, room darkening side / sill channels, center supports and connectors for multi-banded shades.

- b. M5 drive sprocket and brake assembly shall rotate and be supported on a welded 3/8 inch (9.525 mm) steel pin.
- c. The brake shall be an over -unning clutch design which disengages to 90 percent during the raising and lowering of a shade. The brake shall withstand a pull force of 50 lbs. (22 kg) in the stopped position.
- d. The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly, which assures a smooth, non-jerky operation in raising and lowering the shades. The assembly shall be permanently lubricated. Products that require externally applied lubrication and or not permanently lubricated are not acceptable.
- e. The entire M5 assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and reinstalled without effecting the roller shade limit adjustments.
- f.
- C. Drive Chain: #10 qualified stainless steel chain rated to 90 lb. (41 kg) minimum breaking strength. Nickel plate chain shall not be accepted.
- D. Motorized Shade Hardware and Shade Brackets:
 - 1. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel, or heavier, thicker, as required to support 150 percent of the full weight of each shade.
 - 2. Provide shade hardware system that allows for field adjustment of motor or replacement of any operable hardware component without requiring removal of brackets, regardless of mounting position (inside, or outside mount).
 - 3. Provide shade hardware system that allows for operation of multiple shade bands offset by a maximum of 8-45 degrees from the motor axis between shade bands (4-22.5 degrees) on each side of the radial line, by a single shade motor (multi-banded shade, subject to manufacturer's design criteria).
 - 4. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer's design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.
 - 5. Provide shade hardware system that allows multi-banded manually operated shades to be capable of smooth operation when the axis is offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve, for a 12 degrees total offset.
 - 6. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable
 - 7. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel or heavier as required to support 150 percent of the full weight of each shade.
 - 8. Drive Bracket / Brake Assembly:
 - a. MechoShade Drive Bracket model M5 shall be fully integrated with all MechoShade accessories, including, but not limited to: SnapLoc fascia, room darkening side / sill channels, center supports and connectors for multi-banded shades.
 - b. M5 drive sprocket and brake assembly shall rotate and be supported on a welded 3/8 inch (9.525 mm) steel pin.
 - c. The brake shall be an over -unning clutch design which disengages to 90 percent during the raising and lowering of a shade. The brake shall withstand a pull force of 50 lbs. (22 kg) in the stopped position.

- d. The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly, which assures a smooth, non-jerky operation in raising and lowering the shades. The assembly shall be permanently lubricated. Products that require externally applied lubrication and or not permanently lubricated are not acceptable.
- e. The entire M5 assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and reinstalled without effecting the roller shade limit adjustments.

2.7 SHADE MOTOR DRIVE SYSTEM

- A. Shade Motors:
 - 1. Tubular, asynchronous (non-synchronous) motors, with built-in reversible capacitor operating at 110v AC (60hz), single phase, temperature Class A, thermally protected, totally enclosed, maintenance free with line voltage power supply equipped with locking disconnect plug assembly furnished with each motor.
 - 2. Conceal motors inside shade roller tube.
 - 3. Maximum current draw for each shade motor of 2.3 amps.
 - 4. Use motors rated at the same nominal speed for all shades in the same room.
- B. Total hanging weight of shade band shall not exceed 80 percent of the rated lifting capacity of the shade motor and tube assembly.

2.8 MOTOR CONTROL SYSTEMS

- A. IQ/MLC: Specifications and design of shade motors and motor control system are based on the IQ/MLC motor logic control system manufactured by MechoShade Systems, Inc. Other systems may be acceptable provide that all of the following performance capabilities are provided. Motor logic control systems not in complete compliance with these performance criteria shall not be accepted as equal systems.
 - 1. Motor Control System:
 - a. Provide power to each shade motor via individual 3 conductor line voltage circuits connecting each motor to the relay based motor logic controllers (IQ/MLC).
 - b. Control system components shall provide appropriate (spike and brown out) over-current protection (+/- 10 percent of line voltage) for each of the four individual motor circuits and shall be rated by UL or ETL as a recognized component of this system and tested as an integrated system.
 - c. Motor control system shall allow each group of four shade motors in any combination to be controlled by each of four local switch ports, with up to fourteen possible "sub-group" combinations via local 3 button wall switches and all at once via a master 3 button switch. System shall allow for overlapping switch combinations from two or more local switches.
 - d. Multiple "sub-groups" from different IQ/MLC control components shall be capable of being combined to form "groups" operated by a single 3 button wall switch, from either the master port or in series from a local switch port.
 - e. Each shade motor shall be accessible (for control purposes) from up to four local switches and one master switch.
 - f. Control system shall allow for automatic alignment of shade hem bars in stopped position at 25 percent, 50 percent, and 75 percent of opening heights, and up to three user-defined intermediate stopping positions in addition to all up / all down, regardless of shade height, for a total of five positions. Control system shall allow shades to be stopped at any point in the opening height noting that shades may not be in alignment at these non-defined positions).

- g. Control system shall have two standard operating modes: Normal mode allowing the shades to be stopped anywhere in the window's opening height and uniform mode, allowing the shades to only be stopped at the predefined intermediate stop positions. Both modes shall allow for all up / all down positioning.
- h. Control system components shall allow for interface with both audiovisual system components and building fire and life safety system via a dry contact terminal block.
- i. Control system components shall allow for interface with external analog input control devices such as solar activated controllers, 24 hour timers, and similar items; via a dry contact terminal block.
- Reconfiguration of switch groups shall not require rewiring of the hardwired line voltage motor power supply wiring, or the low voltage control wiring. Reconfiguration of switch groups shall be accomplished within the motor control device (IQ/MLC).
- 2. Wall Switches:
 - a. Three-button architectural flush mounted switches with metal cover plate and no exposed fasteners.
 - b. Connect local wall switches to control system components via low voltage (12V DC) 4-conductor modular cable equipped with RJ-11 type connectors supplied, installed and certified under Division 16 Electrical.
 - c. Connect master wall switches to control system components via low voltage (12V DC) 6-conductor modular cable equipped with RJ-12 type connectors supplied, installed and certified under Division 16 Electrical.
- B. I·CON Control System (Software, two way communication): Specifications and design are based on the I·CON motor control system as manufactured by MechoShade Systems, Inc. Other systems may be acceptable provided that all of the following performance capabilities are provided. Motor control systems not in complete compliance with these performance criteria shall not be accepted as equal systems.
 - 1. Upper and lower stopping points (operating limits) of shadebands shall be programmed into motors via a hand held removable program module / configurator.
 - 2. Intermediate stopping positions for shades shall be 4 predefined intermediate positions, for a total of 6 defined and aligned positions. All shades on the same switch circuit with the same opening height shall align at each intermediate stopping position.
 - 3. Motors shall be addressable through a 2 motor bus interface module via a hand-held removable program module and shall be capable of responding to a minimum of seven different user defined stored addresses including multiple overlapping sub groups and three reserved control input addresses for use by building management systems, life safety systems and other emergency inputs.
 - 4. The BI and I CON controller system shall have the capability of two-way communication with the motors. Each I CON controller, (bus Interface or BI) shall allow for a unique address message to be received from the hand held configurator and/or a PC controller or switch.
 - a. Bus line shall consist of 2 twisted pair of 16 ga low voltage wire.
 - b. Shade motor control components (bus interfaces, wall switches, bus supplies, auxiliary control input devices, and similar items) shall be connected in series via the low voltage (12VDC) two way digital communication bus line.
 - c. Bus line shall be capable of being installed in a free topology to provide maximum flexibility for installation and future maintenance.

- d. Low voltage (12VDC) digital bus line shall be powered by a bus supply transformer, requiring 115VAC (220 - 230 VAC) input drawing a maximum current of 1 amp. A minimum of one bus supply shall be required for every 400 linear feet of bus line. Final bus supply spacing shall be reviewed with the system manufacturer after the number of nodes per 400 ft (120 meters) run of bus line has been determined.
- 5. Wall Switches:
 - a. Shades shall be operated by 4 button low voltage standard switches or programmable intelligent switches [IS]. Standard switch shall be wired to a bus interface and the bus interface will be programmed to transmit an address for the local switch.
 - b. Intelligent switches may be installed anywhere on the busline. Each IS shall be capable of storing one control level address to be broadcast along the busline.
 - c. An address that is transmitted by either a switch or central controller shall be responded to by those motors with the same address in their control table.
 - d. IS shall provide for interface with other low voltage input devices via a set of dry contact terminals located on the switch.
 - e. Standard switch or IS may control an individual, sub-group or group of motors in accordance with the address in each motor/BI unit.

2.9 ACCESSORIES

- A. Fascia (for Shade Type 1):
 - 1. Continuous removable extruded aluminum fascia that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.
 - 2. Fascia shall be able to be installed across two or more shade bands in one piece.
 - 3. Fascia shall fully conceal brackets, shade roller and fabric on the tube.
 - 4. Provide bracket / fascia end caps where mounting conditions expose outside of roller shade brackets.
 - 5. Notching of Fascia for manual chain shall not be acceptable.
- B. Roller Shade Pocket for recessed mounting in acoustical tile, or drywall ceilings as indicated on the Drawings.
 - 1. Provide either extruded aluminum and or formed steel shade pocket, sized to accommodate roller shades, with exposed extruded aluminum closure mount, tile support and removable closure panel to provide access to shades.
 - a. Provide "Vented Pocket" such that there will be a minimum of four 1 inch (25.4 mm) diameter holes per foot allowing the solar gain to flow above the ceiling line.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 2 inches (50 mm) to interior face of glass. Allow proper clearances for window operation hardware.
- B. Turn-Key Single-Source Responsibility for Motorized Interior Roller Shades: To control the responsibility for performance of motorized roller shade systems, assign the design, engineering, and installation of motorized roller shade systems, motors, controls, and low voltage electrical control wiring specified in this Section to a single manufacturer and their authorized installer/dealer. The Architect will not produce a set of electrical drawings for the installation of control wiring for the motors, or motor controllers of the motorized roller shades. Power wiring (line voltage), shall be provided by the roller shade installer/dealer, in accordance with the requirements provided by the manufacturer. Coordinate the following with the roller shade installer/dealer:
 - 1. Main Contractor shall provide power panels and circuits of sufficient size to accommodate roller shade manufacturer's requirements, as indicated on the mechanical and electrical drawings.
 - 2. Main Contractor shall coordinate with requirements of roller shade installer/dealer, before inaccessible areas are constructed.
 - 3. Roller shade installer/dealer shall run line voltage as dedicated home runs (of sufficient quantity, in sufficient capacity as required) terminating in junction boxes in locations designated by roller shade dealer.
 - 4. Roller shade installer/dealer shall provide and run all line voltage (from the terminating points) to the motor controllers, wire all roller shade motors to the motor controllers, and provide and run low voltage control wiring from motor controllers to switch/ control locations designated by the Architect. All above-ceiling and concealed wiring shall be plenum-rated, or installed in conduit, as required by the electrical code having jurisdiction.
 - 5. Main Contractor shall provide conduit with pull wire in all areas, which might not be accessible to roller shade contractor due to building design, equipment location or schedule.
- B. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
- C. Clean roller shade surfaces after installation, according to manufacturer's written instructions.
- D. Engage Installer to train Owner's maintenance personnel to adjust, operate and maintain roller shade systems.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 12 30 00 - MILLWORK

PART 1 GENERAL

- 1.1 SECTION INCLUDES:
 - A. Wall Cabinets.
 - B. Base Cabinets.
 - C. Full Height Cabinets.
 - D. Open shelving Cabinets.
 - E. Loose shelving units with standards and brackets.
 - F. Counter tops and lavatories.

1.2 RELATED SECTIONS:

- A. SECTION 06 10 00: Rough Carpentry: Blocking, bracing and back-up framing.
- B. SECTION 09 90 00: Paints and Coatings.

1.3 DEFINITIONS:

- A. Exposed: Where used "exposed" portions of casework includes surfaces visible when doors and drawers are closed. Bottoms of cases more than 4'-0" above finish floor are considered exposed. Visible surfaces in open cases or behind clear doors also are considered as exposed portions.
- B. Semi-Exposed: Where used "semi-exposed" portions of cabinet work includes those members behind opaque doors, such as shelves, divisions, interior faces of ends, case backs, drawer sides, backs and bottoms, and back face of doors. Tops of cases 6 feet 6 inch or more above finish floor shall be considered semi-exposed.

1.4 REFERENCES:

- A. American National Standards Institute (ANSI):
 - 1. A161.2, Performance Standards for Fabricated High Pressure Decorative Laminate Countertops.
- B. American National Standards Institute (ANSI/BHMA 156.9 Grade 1-Schools/Hospitals).
- C. Architectural Woodwork Institute (AWI):
 - 1. Architectural Woodwork Quality Standards, 6th Edition, 1993.
- C. American Plywood Association (APA):
 - 1. E30E-85 Residential Commercial Construction Guide.

- D. Federal Specifications (FS):
 - 1. FS MM-L-736C, Lumber Hardwood.
 - 2. FS MMM-A-1308, Adhesive, Contact.
- E. National Electrical Manufacturer's Association (NEMA):
 - 1. LD-3, High Pressure Decorative Laminates.
- F. Product Standards (PS):
 - 1. 1, Construction and Industrial Plywood.
 - 2. 20, American Softwood Lumber Standard.
 - 3. 51, Hardwood and Decorative Plywood.
 - 4. 58, Basic Hardboard.

1.5 SUBMITTALS:

- A. Procedures for Submittals: Section 01 33 00.
- B. Shop Drawings:
 - 1. Indicate required field measurements beyond control of mill.
 - 2. Indicate profiles, sections, and views of stock items as well as specially fabricated items for the work, at scale large enough to permit checking for design conformity.
 - 3. Indicate sizes, quantities, markings, materials, wood species, finishes and accessories.
 - 4. Include assembly and installation drawings to show methods of blocking, fastening, bracing, jointing, and connecting to work of other trades.
 - 5. Indicate dimensions necessary for fitting casework and adjacent equipment and appliances to fixed planes. Be responsible for details and dimensions not controlled by job conditions.
 - 6. Indicate cut-out locations.
- C. Product Data: Manufacturer=s data for each item of hardware and specialty.
- D. Samples:
 - 1. 8-1/2 inch by 11 inch plastic laminate samples in each color and finish.
 - 2. 6 inch by 6 inch solid plastic samples in each color.
- E. Quality Control Submittals:
 - 1. Qualification Data: Fabricator's qualifications verifying years of experience; include list of completed projects having similar scope of work identified by name, location, date, reference name and phone number.

1.6 QUALITY ASSURANCE:

- A. Fabricator Qualifications: Company specializing in fabrication of custom casework of quality and having minimum of 3 years documented experience.
- B. Fabrication Standards: Fabricate products and items in accordance with AWI standards listed below using custom grade unless noted otherwise.
 - 1. Lumber grades: AWI Section 100.
 - 2. Standing and running trim: AWI Section 300.
 - 3. Laminate Clad Cabinets: AWI Section 400B.
 - 4. Counter tops: AWI Section 400C.
 - 5. Paneling: AWI Section 500.
 - 6. Shelving: AWI Section 600.
 - 7. Miscellaneous work: AWI Section 700.

1.7 MOCKUP:

- A. Provide mockup of full size base cabinet and upper cabinet.
- B. Provide units with specified countertop; with hardware installed.
- C. Units will be examined to ascertain quality and conformity to AWI quality level standards and specification requirements.
- D. Mockup may remain as part of the Work.
- 1.8 DELIVERY, STORAGE AND HANDLING:
 - A. Deliver, store, handle, and protect products in accordance with Sections 01610.
 - B. Protect materials from damage, soiling and deterioration.
 - C. Do not deliver finish carpentry materials until job site conditions and operations which could damage, soil or deteriorate work are complete.
 - D. Store products and materials in ventilated, interior locations under constant minimum temperature of 60 degrees F. and relative humidity not to exceed 55%.

1.9 ENVIRONMENTAL REQUIREMENTS:

- A. Maintain temperature and moisture conditions as recommended by casework fabricator from date of installation through remainder of construction period.
- 1.10 FIELD MEASUREMENTS:
 - A. Verify that field measurements are as indicated on shop drawings.

1.11 SEQUENCING AND SCHEDULING:

A. Verify that blocking is in place and back priming complete before beginning work.

PART 2 PRODUCTS

2.1 MATERIALS:

- A. General:
 - 1. Comply with quality and grading standards specified for each material.
 - 2. Sizes noted on Drawings or specified for lumber are nominal unless detailed by specific dimensions of actual size. Minimum thickness is nominal 1 x material unless noted or shown otherwise.
 - 3. Plywood 3/4 inch thickness unless noted or detailed otherwise.
 - 4. Products surfaced four sides, unless noted otherwise.
 - 5. Grain: Mixed.

- B. Hardboard:
 - 1. Quality standard: PS 58.
 - 2. Grade: Tempered.
 - 3. Face: Both faces sanded.
 - 4. Thickness: 1/4 inch, minimum.
- C. Laminate Materials:
 - 1. High Pressure Laminate Surface:
 - a. Quality standard: NEMA, LD-3.
 - b. Grade: General purpose and post formable (for counter tops). Provide chemical resistant grade for counters in medical and dental areas.
 - c. Thickness: 0.050 inch for horizontal grade; 0.028 to 0.032 inch for vertical grade.
 - d. Core: Standard.
 - e. Finish: Matte textured.
 - f. Color: Laminate manufacturer's standard selection to be selected by Architect.
 - g. Acceptable Manufacturers:
 - (1) Wilsonart by Ralph Wilson Plastics, Temple, TX.
 - (2) Nevamar by Exxon Chemical Co., Odenton, MD.
 - (3) Formica Corp.
 - 2. Laminate Backing Sheets:
 - a. Composition: High pressure laminate of paper and melamine, hot press cured onto substrates, without decorative finish, 0.020 inch thick minimum.
 - b. Acceptable manufacturers: Same as for high pressure laminate surfacing.
 - c. Conform to NEMA LQ-1-1977 requirements for "General Purpose" decorative board (not "Light Duty" liner type).
 - d. 06 finish, opaque color.
 - e. Resin: Polyester; or Melamine; phenolic resin may be used on concealed surfaces.
 - f. Color: Manufacturer's standard premium color.
- D. Polycarbonate Glazing: 1/4 in. thick Lexan MR-5 by G.E. or similar by Sheffield Plastics.

2.2 ACCESSORIES AND TREATMENT:

- A. Contact Adhesive: FS MMM-A-130B of type recommended by millwork manufacturer to suit application.
- B. Bolts, Nuts, Washers, Lags, Pins, Nails, and Screws: Size and type to suite application. Provide allen or torx head with security pin configuration except that interior of cabinets need not have security fasteners.
- C. Hardware:
 - 1. Overlay Cabinet Hinges: Stanley No. HT1592 steel cabinet hinge, for full overlay 3/4 inch doors, US26D finish.
 - 2. Cabinet Pulls: Stanley No. 4484 US26D finish, 4 x 1-5/16 inch projection. Three per door where either dimension exceeds 24".
 - 3. Doors: Knape and Vogt No. 836, 1 inch diameter, US26D finish.
 - 4. Door Catches: Stanley No. 46 plain finished, aluminum encased, impregnated rubber magnet. Two on all doors exceeding 24" in either dimension
 - 5. Full Extension Drawer Slide: Knape and Vogt No. 1428 with self-lubrication frictionless, oilite bronze oil cushion bearings, rubber bumpers, tracks, mounting brackets, all zinc plated steel.
 - 6. Locks: Heavy duty institutional pin tumbler type; latch or cam suitable for application.
 - a. Locks keyed alike in each Room or Area, or as otherwise directed by Owner.
 - b. Provide 3 keys for each lock.
 - c. Master key and grand master key as directed.
 - d. Provide 10 extra locks, keyed differently.

- e. Teacher cabinet keyed separately
- 7. Adjustable Shelf Standards within Cabinets: Knape and Vogt No. 255, 5/8 inch wide, 1/2 inch adjustment intervals, bright zinc plated steel finish.
- 8. Shelf Supports Within Cabinets: Knape and Vogt No. 256 and No. 256R, 3/4 inch wide, with and without rubber cushions, satin chrome finish.
- 9. Shelf Standards and Supports: Knape and Vogt Co., No. 87 Standards and No. 187 brackets, satin chrome finish
- 10. Grommets: MG Series by Doug Mockett Co., No. MG-1, clear satin finish. Size: 1-5/8 inch.
- 11. Finish: Heavy Duty with Satin-brushed satin finish.

2.3 SHOP FABRICATION:

A. Fabricate casework to AWI custom standards for reveal overlay construction as detailed (or as

Indicated in AWI Architectural Casework Details if details are not present).

- B. Prime seal concealed and semi-concealed surfaces. Brush apply only.
- C. Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes, and other fixtures. Verify locations of cutouts from site dimensions. Seal edge surfaces of cutouts.
- D. Before proceeding with millwork required to be fitted to other construction, obtain measurements and verify dimensions of shop drawings details for accurate fit.
- E. Route and groove back of flat trim members, kerf backs of other wide flat members except plywood or veneered members.
- F. Miter trim joints, where required, by joining, splining, and gluing to complying with requirements for specified grade.
- G. On high pressure laminate work:
 - 1. Apply laminate finish in full, uninterrupted sheets of maximum practical lengths. Apply backing sheets to reverse side of items receiving laminate surfacing. Use laminate backing sheets for all cabinet interiors.
 - 2. Form corners and butt joints with hairline joints.
 - 3. Do not locate joints within 2 feet of sink cut-out.
 - 4. Cap all exposed edges with laminate.
- H. Construction:
 - 1. General:
 - a. Construct casework bodies, bottoms, dividers, sides, tops, shelves, doors, drawer fronts and countertops of 3/4 inch sheet material.
 - b. Use 1/2 inch thick solid lumber material for drawer sides, back and sub-front.
 - c. Use 5/16 inch thick tempered hardboard for drawer bottoms and cabinet backs.
 - 2. Overlay reveals:
 - a. Unless shown or noted otherwise, allow 1/4 inch between adjacent drawers and doors and at vertical edges.
 - b. Allow 1/2 inch reveal at top and bottom of wall cabinets and at bottom of base cabinets.
 - 3. Methods of Joinery:
 - a. Provide face plates, paneled ends, and construction, glued under pressure.
 - b. Provide body web frames of stile plowed and stub tenoned construction.
 - c. Join case body members by dado or concealed dowel joints.
 - d. Do not use mechanical fasteners or metal clips for attachment of body members to other body members or to web frames.
 - 4. Base Cabinets:
 - a. Use finished end panels unless condition will be fully concealed.

- b. Provide finished toe space fronts, finished to match cabinet front.
- c. Construct drawers with rabbited (tongue and groove) construction.
- d. Provide marine grade plywood at wet areas, do not use particle boards.
- 5. Wall Cabinets:
 - a. Use finished end panels unless condition will be fully concealed.
 - b. Provide continuous 1 x 3 inch anchor cleat at top and bottom of cabinet interior full width
 - of unit. Secure cleat in rabbit over back, then glue and spot pin.
- 6. Countertops:
 - a. All countertops in wet areas or where receiving sinks are too use Marine Grade or A/C fur plywood.
 - b. Provide with 1-1/2 inch deep face edge, faced with high pressure laminate unless noted or shown otherwise, with post-formable 4" high, integral back-splashes. Utilize Marine Grade for all counter tops except use solid plywood for all counters with sinks.
 - c. At cabinet top ends, provide loose 4 inch high pressure laminate covered splashes typically unless taller splashes shown or noted.
 - d. Standard edging: Rounded edge is required at nosing and outside edges of countertops.
 - e. Material: Stained Oak/Birch Edge.
 - f. Shelving:
 - g. 3/4 inch thick up to 36 inch unsupported length.
 - h. Limit spans of all shelving to 36" and less.

PART 3 EXECUTION

- 3.1 EXAMINATION:
 - A. Verify that surfaces openings and conditions are ready to receive work of this section. Notify Architect of any existing condition which will adversely affect execution. Beginning of execution will constitute acceptance of existing conditions.
 - B. Verify that field measurements are as shown on Shop Drawings.
 - C. Verify that mechanical, electrical, and other items affecting work of this section are in place and ready to receive the work.

3.2 PREPARATION:

- A. Prime paint or seal concealed surfaces and items or assemblies which will be in contact with cementitious materials or surfaces.
- B. Make field cuts with extreme care to avoid splintering.

3.3 INSTALLATION:

- A. Install work in accordance with AWI Custom Quality Standards. Handle materials to avoid dents and other damages.
- B. Set and secure materials and components, rigid, plumb, and square. Use joint fasteners to align and secure adjoining cabinets and countertops. Affix base cabinets to floor.
- C. Shim as required using concealed shims.

- D. Field Fitting:
 - 1. Cut to fit and carefully scribe.
 - 2. Where casework abuts other finished work, scribe and cut for accurate fit.
 - 3. Where necessary to fit at site, provide ample allowance for cutting and fitting.
 - 4. Do not use overlay trim pieces to cover joints.
- E. Before making cutouts, drill pilot holes at corners.
- F. Stagger joints in adjacent members.
- G. Cope moldings at returns and miter at corners.
- H. Attach items securely in place with uniform joints providing for thermal and building movements; blind nail where possible.
- I. Use fine finishing nails where exposed.
- J. Secure casework to anchors, built-in blocking, or directly attach to substrates where capable of adequately supporting load. Use toggle bolt type fasteners for wall mounted components. Secure countertops to base cabinets.
- K. Install hardware in accordance with manufacturer's recommendations.
- L. On field applied laminate plastic work:
 - 1. Apply plastic laminate finishes where indicated.
 - 2. Adhere with adhesive over entire surface. Make joints and corners hairline.
 - 3. Match patterns. Slightly bevel arises.
 - 4. Cap exposed edges with plastic laminate of same finish and pattern.
 - 5. Apply laminate backing sheet on reverse side of plastic laminate finished surfaces.

3.4 ADJUSTING:

- A. Adjust work under provisions of Section 01 73 00.
- B. Adjust moving or operating parts to function smoothly and correctly.

3.5 CLEANING/PROTECTION:

- A. Protect casework from marring, defacement, or other damage until final completion.
- B. Clean spaces of debris and vacuum and wipe down casework. Leave in condition ready for use.

3.6 TOLERANCES FOR FIELD ASSEMBLIES/JOINED ITEMS:

- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/64 inch for plastic laminate countertops and splashes, 1/32 inch for other components.

END OF SECTION 12 30 00

SECTION 12 3600 - COUNTERTOPS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Solid surface and plastic laminate countertops for architectural cabinetwork.

1.2 REFERENCES

- A. ANSI A208.1 American National Standard for Particleboard; current edition.
- B. ANSI A208.2 American National Standard for Medium Density Fiberboard for Interior Use; current edition.
- C. ANSI Z124.3 American National Standard for Plastic Lavatories; current edition.
- D. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials; current edition.
- E. AWI/AWMAC (QSI) Quality Standard Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2006, 8th Ed., Version 2.0.
- F. ISSFA-2 Classification and Standards for Solid Surfacing Material; International Solid Surface Fabricators Association; current edition
- G. NEMA LD 3 High-Pressure Decorative Laminates; current edition.
- H. PS 1 Construction and Industrial Plywood; current edition.

1.3 SUBMITTALS

- A. See Division 1 sections for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Specimen warranty.
- C. Shop Drawings: Complete details of materials and installation; combine with shop drawings of cabinets and casework specified in other sections.
- D. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.
- F. Test Reports: Chemical resistance testing, showing compliance with specified requirements.
- G. Installation Instructions: Manufacturer's installation instructions and recommendations.
- H. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Installation by fabricator.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.6 **PROJECT CONDITIONS**

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 COUNTERTOP ASSEMBLIES

- A. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.
 - 1. Flat Sheet Thickness: ³/₄ inch, minimum.
 - 2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISSFA-2 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
 - a. Surface Burning Characteristics: Flame spread 25, maximum; smoke developed 450, maximum; when tested in accordance with ASTM E 84.
 - b. NSF approved for food contact.
 - c. Sinks and Bowls: Integral castings; minimum 3/4 inch wall thickness; comply with ANSI Z124.3.
 - d. Finish on Exposed Surfaces: As designated in the "Finish Schedule" on the Drawings.
 - e. Color and Pattern: As designated in the 'Finish Schedule' on Drawings.
 - f. Manufacturers:
 - 1) Dupont: www.corian.com.
 - 2) Substitutions: See Section 01 6000 Product Requirements for substitution procedures.
 - 3. Other Components Thickness: 1/2 inch, minimum.
 - 4. Exposed Edge Treatment: Built up to minimum 1-1/4 inch thick; radiused edge.
 - 5. Back and End Splashes: Same sheet material, radiused top; minimum 4 inches high.
- B. Plastic Laminate Countertops: High-pressure decorative laminate (HPDL) sheet bonded to substrate.
 - 1. Laminate Sheet: NEMA LD 3, Grade HDS, 0.048 inch nominal thickness.
 - a. Manufacturers: Formica; <u>www.formica.com</u>
 - b. Color and pattern: As designated in the 'Finish Schedule' on the Drawings.

2.2 ACCESSORY MATERIALS

- A. Plywood for Supporting all Substrate: FSC Certified PS 1 Exterior Type, AC veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.
- B. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.
- C. Cove Molding for Top of Splashes: Rubber with semi-gloss finish and T-spline to fit between splash and wall; 1/2 inch by 1/2 inch; color as selected. To be applied to all splashes with the exception of tile splashes.
- D. Joint Sealant: Mildew-resistant silicone sealant, color approved by Architect. To be applied at all casework and millwork joints, corners and where at dissimilar materials.

2.3 FABRICATION

- A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
 - 1. Join lengths of tops using best method recommended by manufacturer.
 - 2. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
- B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
 - 1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
 - 2. Height: 4 inches, unless otherwise indicated.
- C. Solid Surfacing: Fabricate tops up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.2 **PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

- B. Attach plastic laminate countertops using screws with minimum penetration into substrate board of 5/8 inch.
- C. Seal joint between back/end splashes and vertical surfaces.
 - 1. Where indicated use rubber cove molding.
 - 2. Where applied cove molding is not indicated use specified sealant.

3.4 TOLERANCES

- A. Variation from Horizontal: 1/8 inch in 10 feet, maximum.
- B. Offset from Wall, Countertops: 1/8 inch maximum, 1/16 inch, minimum.
- C. Field Joints: 1/16 inch, wide, maximum.

3.5 CLEANING AND PROTECTION

- A. Clean countertops surfaces thoroughly.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 21 05 00 COMMON WORK RESULTS FOR FIRE SUPPRESSION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe, fittings, valves, and connections for sprinkler, standpipe and fire hose, and combination sprinkler and standpipe systems.

1.02 RELATED REQUIREMENTS

A. Section 21 1300 - Fire-Suppression Sprinkler Systems: Sprinkler systems

design. B. Section 21 1200 - Fire-Suppression Standpipes: Standpipe

design.

1.03 REFERENCE STANDARDS

A. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Welding, Brazing, and Fusing

Qualifications; The American Society of Mechanical Engineers; 2013.

B. ASME B16.9 - Factory-made Wrought Steel Buttwelding Fittings; The American Society of

Mechanical Engineers; 2012.

- C. ASME B16.18 Cast Copper Alloy Solder Joint Pressure Fittings; The American Society of
 - Mechanical Engineers; 2012 (ANSI B16.18).
- D. ASME B16.25 Buttwelding Ends; The American Society of Mechanical

Engineers; 2012. E. ASME B36.10M - Welded and Seamless Wrought Steel Pipe;

The American Society of

Mechanical Engineers; 2004.

- F. ASTM A53/A53M Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- G. ASTM A135/A135M Standard Specification for Electric-Resistance-Welded Steel Pipe; 2009 (Reapproved 2014).
- H. ASTM A795/A795M Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use; 2013.
- I. ASTM B75/B75M Standard Specification for Seamless Copper Tube; 2011.
- J. AWS A5.8/A5.8M Specification for Filler Metals for Brazing and Braze Welding; American

Welding Society; 2011 and errata.

- K. AWS D1.1/D1.1M Structural Welding Code Steel; 2010.
- L. AWWA C105/A21.5 Polyethylene Encasement for Ductile-Iron Pipe Systems; American Water

Works Association; 2010 (ANSI/AWWA C105/A21.5).

- M. NFPA 13 Standard for the Installation of Sprinkler Systems; National Fire Protection Association; 2013.
- N. NFPA 14 Standard for the Installation of Standpipe and Hose Systems; National Fire Protection Association; 2013.
- O. UL 262 Gate Valves for Fire-Protection Service; Underwriters Laboratories Inc.; Current

Mark Twain School for the Talented and Gifted 21 05 00 – 1 Org #220 Dallas ISD Construction Services COMMON WORK RESULTS FOR FIRE SUPPRESSION CSP 207459 August 16, 2024 Edition, Including All Revisions.

P. UL 312 - Check Valves for Fire-Protection Service; Underwriters Laboratories Inc.; Current

Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturers catalogue information. Indicate valve data and ratings.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 FIRE PROTECTION SYSTEMS

- A. Sprinkler Systems: Conform work to NFPA 13.
- B. Standpipe and Hose Systems: Conform to NFPA 14.
- C. Welding Materials and Procedures: Conform to ASME BPVC-IX.

2.02 BURIED PIPING

- A. Steel Pipe: ASTM A53/A53M Schedule 40 or ASTM A795 Standard Weight, black, with AWWA C105 polyethylene jacket, or double layer, half-lapped polyethylene tape.
 - 1. Steel Fittings: ASME B16.9, wrought steel, buttwelded; with double layer, half-lapped polyethylene tape.
 - 2. Joints: Welded in accordance with AWS D1.1.
 - 3. Casing: Closed glass cell insulation.

2.03 ABOVE GROUND PIPING

- A. Steel Pipe: ASTM A53 Schedule 40, black.
 - 1. Steel Fittings: ASME B16.25, buttweld ends.
 - 2. Mechanical Grooved Couplings: Malleable iron housing clamps to engage and lock, "C" shaped elastomeric sealing gasket, steel bolts, nuts, and washers; galvanized for galvanized pipe.

B. Copper Tube: ASTM B75 (ASTM B75M) or ASTM B88 (ASTM B88M), H58 drawn temper.

- 1. Type: Type M (C).
- 2. Fittings: ASME B16.18, cast copper alloy solder joint, pressure type.
- 3. Joints: AWS A5.8 Classification BCuP-3 or BCuP-4 copper/silver braze.

2.04 PIPE HANGERS AND SUPPORTS

- A. Hangers for Pipe Sizes 1/2 to 1-1/2 inch (15 to 40 mm): Malleable iron, adjustable swivel, split ring.
- B. Hangers for Pipe Sizes 2 inches (50 mm) and Over: Carbon steel,

adjustable, clevis. C. Multiple or Trapeze Hangers: Steel channels with welded

spacers and hanger rods. D. Wall Support for Pipe Sizes to 3 inches (80 mm):

Cast iron hook.

- E. Wall Support for Pipe Sizes 4 inches (100 mm) and Over: Welded steel bracket and wrought steel clamp.
- F. Vertical Support: Steel riser clamp.
- G. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
- H. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

2.05 GATE VALVES

- A. Up to and including 2 inches (50 mm):
 - 1. Bronze body, bronze trim, rising stem, handwheel, solid wedge or disc, threaded ends.
- B. Over 2 inches (50 mm):
 - 1. Iron body, bronze trim, rising stem pre-grooved for mounting tamper switch, handwheel, OS&Y, solid rubber covered bronze or cast iron wedge, flanged ends.
- C. Over 4 inches (100 mm):
 - 1. Iron body, bronze trim, non-rising stem with bolted bonnet, solid bronze wedge, flanged ends, iron body indicator post assembly.

2.06 BALL VALVES

A. Up to and including 2 inches (50 mm):1. Bronze two piece body, brass, chrome plated bronze, or stainless steel ball, teflon seats and stuffing box ring, lever handle and balancing stops, threaded ends with union.

B. Over 2 inches (50

mm):

1. Cast steel body, chrome plated steel ball, teflon seat and stuffing box seals, lever handle or gear drive handwheel for sizes 10 inches (250 mm) and over, flanged.

2.07 BUTTERFLY VALVES

A. Bronze

Body:

- 1. Stainless steel disc, resilient replaceable seat, threaded or grooved ends, extended neck, handwheel and gear drive and integral indicating device, and built-in tamper proof switch rated 10 amp at 115 volt AC.
- B. Cast or Ductile Iron

Body

1. Cast or ductile iron, chrome or nickel plated ductile iron or aluminum bronze disc, resilient replaceable EPDM seat, wafer, lug, or grooved ends, extended neck, handwheel and gear drive and integral indicating device, and internal tamper switch rated 10 amp at 115 volt AC.

2.08 CHECK VALVES

A. Up to and including 2 inches (50

mm):

1. Bronze body and swing disc, rubber seat, threaded ends.

B. Over 2 inches (50

mm):

1. Iron body, bronze trim, swing check with rubber disc, renewable disc and seat, flanged ends with automatic ball check.

Mark Twain School for the Talented and Gifted 21 05 00 – 3 Org #220 Dallas ISD Construction Services COMMON WORK RESULTS FOR FIRE SUPPRESSION CSP 207459 August 16, 2024 C. 4 inches (100 mm) and

Over:

1. Iron body, bronze disc, stainless steel spring, resilient seal, threaded, wafer, or flanged ends.

2.09 DRAIN VALVES

A. Compression

Stop:

1. Bronze with hose thread nipple and cap.

PART 3 EXECUTION

3.01 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and foreign material, from inside and outside, before

assembly. C. Prepare piping connections to equipment with flanges or unions.

3.02 INSTALLATION

A. Install sprinkler system and service main piping, hangers, and supports in accordance with

NFPA 13.

B. Install standpipe piping, hangers, and supports in accordance with NFPA 14.

C. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient. D. Install piping to conserve building space, to not interfere with use of space and other work. E. Group piping whenever practical at common elevations.

F. Sleeve pipes passing through partitions, walls, and floors.

G. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

H. Pipe Hangers and

Supports:

1. Install hangers to provide minimum 1/2 inch (15 mm) space between finished covering and adjacent work.

2. Place hangers within 12 inches (300 mm) of each horizontal elbow.3. Use hangers with 1-1/2 inch (40 mm) minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.

- 4. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
- 5. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
- I. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level.
- J. Prepare pipe, fittings, supports, and accessories for finish painting. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding. Refer to Section 09 9000.

K. Do not penetrate building structural members unless indicated.

Mark Twain School for the Talented and Gifted 21 05 00 - 4	COMMON WORK RESULTS FOR FIRE
Org #220	SUPPRESSION
Dallas ISD Construction Services	CSP 207459
	August 16, 2024

- L. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.
- M. Install valves with stems upright or horizontal, not inverted. Remove protective coatings prior to installation.
- N. Provide drain valves at main shut-off valves, low points of piping and apparatus.



SECTION 21 13 00 FIRE SUPPRESSION SPRINKLERS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 21 0500 - Common Work Results for Fire Suppression: Pipe, fittings, and valves.

1.02 REFERENCE STANDARDS

A. UL (FPED) - Fire Protection Equipment Directory; Underwriters Laboratories Inc.; current edition.

1.03 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on sprinklers, valves, and specialties, including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.
- C. Shop Drawings:
 - 1. Submit preliminary layout of finished ceiling areas indicating only sprinkler locations coordinated with ceiling installation.
 - 2. Indicate hydraulic calculations, detailed pipe layout, hangers and supports, sprinklers, components and accessories. Indicate system controls.
 - 3. Submit shop drawings to authority having jurisdiction for approval. Submit proof of approval to Architect.
- D. Project Record Documents: Record actual locations of sprinklers and deviations of piping from drawings. Indicate drain and test locations.
- E. Operation and Maintenance Data: Include components of system, servicing requirements, record drawings, inspection data, replacement part numbers and availability, and location and numbers of service depot.

1.04 QUALITY ASSURANCE

A. Conform to UL requirements.

PART 2 PRODUCTS

2.01 SPRINKLERS

- A. Suspended Ceiling Type: Semi-recessed pendant type with matching push on escutcheon plate.
 - 1. Response Type: Quick.
 - 2. Coverage Type: Standard.
 - 3. Fusible Link: Fusible solder link type temperature rated for specific area

hazard. B. Exposed Area Type: Pendant type with guard.

- 1. Response Type: Quick.
- 2. Coverage Type: Standard.
- 3. Fusible Link: Fusible solder link type temperature rated for specific area hazard.
- C. Sidewall Type: Semi-recessed horizontal sidewall type with matching push on escutcheon plate.
 - 1. Response Type: Quick.
 - 2. Coverage Type: Standard.

Mark Twain School for the Talented and Gifted 21 13 00-1 Org #220 Dallas ISD Construction Services

FIRE SUPPRESSION SPRINKLERS CSP 207459 August 16, 2024 3. Fusible Link: Fusible solder link type temperature rated for specific area hazard.

2.02 PIPING SPECIALTIES

- A. Dry Pipe Sprinkler Alarm Valve: Check type valve with divided seat ring, rubber faced clapper to automatically actuate water motor alarm and electric alarm, with accelerator; with test and drain valve.
- B. Water Motor Alarm: Hydraulically operated impeller type alarm with aluminum alloy chrome plated gong and motor housing, nylon bearings, and inlet strainer.
- C. Electric Alarm: Electrically operated chrome plated gong with pressure alarm switch.

D. Water Flow Switch: Vane type switch for mounting horizontal or vertical, with two contacts;

rated 10 amp at 125 volt AC and 2.5 amp at 24 volt DC.

- E. Fire Department Connections:
 - 1. Type: Flush mounted wall type with brass
 - finish.
 - 2. Outlets: Two way with thread size to suit fire department hardware; threaded dust cap and chain of matching material and finish.
 - 3. Drain: 3/4 inch (19 mm) automatic drip, outside.
 - Label: "Sprinkler Fire Department
 - Connection".

PART 3 EXECUTION

4.

3.01 INSTALLATION

- A. Install in accordance with referenced NFPA design and installation
- standard. B. Install equipment in accordance with manufacturer's

instructions.

- C. Locate fire department connection with sufficient clearance from walls, obstructions, or adjacent siamese connectors to allow full swing of fire department wrench handle.
- D. Locate outside alarm gong on building wall as

indicated. E. Place pipe runs to minimize obstruction

to other work.

- F. Place piping in concealed spaces above finished ceilings.
- G. Apply masking tape or paper cover to ensure concealed sprinklers, cover plates, and sprinkler escutcheons do not receive field paint finish. Remove after painting. Replace painted sprinklers.
- H. Flush entire piping system of foreign
- matter. I. Hydrostatically test entire

system.

J. Require test be witnessed by Fire Marshal.

Mark Twain School for the Talented and Gifted 21 13 00-2 Org #220 Dallas ISD Construction Services

FIRE SUPPRESSION SPRINKLERS CSP 207459 August 16, 2024



Mark Twain School for the Talented and Gifted 21 13 00-3 Org #220 Dallas ISD Construction Services

FIRE SUPPRESSION SPRINKLERS CSP 207459 August 16, 2024

SECTION 22 05 53 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nameplates.
- B. Tags.
- C. Stencils.
- D. Pipe Markers.

1.02 RELATED REQUIREMENTS

A. Section 09 9000 - Painting and Coating: Identification painting.

1.03 REFERENCE STANDARDS

- A. ASME A13.1 Scheme for the Identification of Piping Systems; The American Society of
 - Mechanical Engineers; 2007.
- B. ASTM D709 Standard Specification for Laminated Thermosetting Materials; 2001 (Reapproved 2007).

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

- A. Air Terminal Units: Tags.
- B. Dampers: Ceiling tacks, where located above lay-in ceiling.
- C. Ductwork: Nameplates.
- D. Thermostats: Nameplates.

2.02 NAMEPLATES

- A. Manufacturers:
 - 1. Kolbi Pipe Marker Co.: www.kolbipipemarkers.com.
 - 2. Seton Identification Products: www.seton.com.
- B. Description: Laminated three-layer plastic with engraved letters.
 - 1. Letter Color: White.
 - 2. Letter Height: 1/4 inch (6 mm).
 - 3. Background Color: Black.
 - 4. Plastic: Conform to ASTM D709.

2.03 TAGS

- A. Manufacturers:
 - 1. Advanced Graphic Engraving: www.advancedgraphicengraving.com.
 - 2. Brady Corporation: www.bradycorp.com.
 - 3. Kolbi Pipe Marker Co.: www.kolbipipemarkers.com.

Mark Twain School for the Talented and Gifted 22 05 53-1 Org #220 Dallas ISD Construction Services

IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT CSP 207459 August 16, 2024 4. Seton Identification Products: www.seton.com.

2.04 STENCILS

2.05 PIPE MARKERS

- A. Manufacturers:
 - 1. Brady Corporation: www.bradycorp.com.
 - 2. Kolbi Pipe Marker Co.: www.kolbipipemarkers.com.
 - 3. MIFAB, Inc.: www.mifab.com.
 - 4. Seton Identification Products: www.seton.com.
- B. Comply with ASME A13.1.
- C. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic,

preformed to fit around pipe or pipe covering; minimum information indicating

flow direction arrow and identification of fluid being conveyed.

- D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
- E. Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches (150 mm) wide by 4 mil (0.10 mm) thick, manufactured for direct burial service.
- F. Color code as follows:
 - 1. Potable, Cooling, Boiler, Feed, Other Water: Green with white letters.
 - 2. Fire Quenching Fluids: Red with white letters.
 - 3. Toxic and Corrosive Fluids: Orange with black letters.
 - 4. Flammable Fluids: Yellow with black letters.
 - 5. Combustible Fluids: Brown with white letters.
 - 6. Compressed Air: Blue with white letters.

2.06 CEILING TACKS

- A. Manufacturers:
 - 1. Craftmark: www.craftmarkid.com.
- B. Description: Steel with 3/4 inch (20 mm) diameter color coded head.

PART 3 EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION

- A. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
- B. Install tags with corrosion resistant chain.
- C. Install plastic pipe markers in accordance with manufacturer's instructions.
- D. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.

3.03 TESTING

A. The Sanitary Sewer System shall be smoke tested by an independent contractor hired by the GC.

Mark Twain School for the Talented and Gifted 22 05 53-2 Org #220 Dallas ISD Construction Services IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT CSP 207459 August 16, 2024

END OF SECTION

Mark Twain School for the Talented and Gifted 22 05 53-3 Org #220 Dallas ISD Construction Services IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT CSP 207459 August 16, 2024

SECTION 22 07 19 PLUMBING PIPING INSULATION

1. GENERAL

1.1 SCOPE

- a. This section specifies general requirements for the furnishing and installation insulation. These requirements apply to all other Division 22 specification sections specifying insulation.
- b. The intent of the insulation specifications is to obtain superior quality workmanship resulting in an installation that is absolutely satisfactory in both function and appearance. Furnish and install insulation in strict accordance with the specifications for each type of service and apply as recommended by the manufacturer.
- c. This section also specifies the furnishing and installation of low temperature piping insulation of fiberglass or Armaflex AP as noted below. The insulation will be used for low temperature application including refrigerant, domestic cold water, horizontal roof drain and emergency overflow piping and related drain bodies, condensate drains within building or on roof, and horizontal portions of waste lines above grade which receive condensate from air handling units or evaporators.
- d. This section also specifies the furnishing and installation of fiberglass high temperature piping insulation, including steam, steam condensate, heating water supply and return, and domestic hot water piping.

1.2 APPLICABLE PROVISIONS

a. Refer to Section 23 0500 Common Work Results for HVAC.

1.3 SUBMITTALS

- a. Submittals. Submit product data on each insulation type, adhesive, and finish to be used in the work. Include sufficient data to substantiate that materials conform to the requirements of this section.
- b. Sample Application. Make an application of each type of insulation to display the material, quality and application method. Obtain acceptance of the sample application before proceeding with the work.
- c. Submit manufacturer's technical product data for insulation products. Include sufficient data to substantiate that materials conform to the requirements of this section.

1.4 DELIVERY, STORAGE, AND HANDLING

a. Deliver insulation products properly packaged in factory-fabricated containers.

Mark Twain School for the Talented and Gifted	22 07 19-1	PLUMBING PIPING INSULATION
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

- b. Store in a clean, dry space in original containers. Protect products from weather, damaging fumes, construction debris and traffic.
- c. Handle carefully to avoid damaging insulation products.

2. PRODUCTS

2.1 FIRE HAZARD RATING

a. All duct and piping insulation used on the project must have a flame spread rating not exceeding 25 and a smoke developed rating not exceeding 50 as determined by test procedures ASTM E 84, NFPA 255 and UL 723. These ratings must be as tested on the <u>Composite</u> of insulation, jacket or facing, and adhesive. Components such as adhesives, mastics and cements must meet the same individual ratings as the minimum requirements.

2.2 GLASS FIBER PIPE INSULATION

- a. Furnish premolded glass fiber pipe insulation, with a permanent k-factor of 0.23 Btu per hr. per sq. ft. per °F at 75°F mean temperature. Furnish insulation which is 4 lb. per cu. ft. density, with factory-applied, all-service reinforced vapor barrier jacket, having integral laminated aluminum vapor barrier. Schuller Micro-Lok, Knauf Pipe Insulation, or equivalent.
- b. Do not use self-sealing laps and butt joints.

2.3 CLOSED CELL INSULATION

a. Furnish elastomeric, closed-cell, premolded pipe insulation, permanent k-factor of 0.255 Btu per hr. per sq. ft. per °F at 75°F mean temperature. Furnish insulation which is 6 lb. per cu. ft. density, suitable temperature range -40°F to 220°F, 25/50 flame/smoke spread rating per ASTM E84, passing ASTM D1171 zone resistance test.

2.4 VALVE AND FITTING INSULATION

- a. Furnish insulation to full thickness of adjacent piping.
- b. Fiberglass: Furnish molded PVC or mitered covers for flanges, valves, and fittings.

2.5 PIPING INSULATION SHIELDS

a. Field Fabricated. Use sections of high density fiberglass insulation that will support the bearing area at hangers and supports. Further support insulation at hangers and supports with a shield of galvanized metal extending not less than 6 inches on either side of the support bearing area, covering at least half the pipe circumference, and conforming to the schedule below. Metal shields must cover the whole pipe circumference when pipe is guided top and bottom. Adhere metal shield to insulation so that metal will not slide with respect to insulation.

	Pipe Diameter	Insulated	Section	Minimu	ım U.S. Standard	
Mark Twain Org #220	School for the Talented	d and Gifted	22 07 19-	2	PLUMBING PIPING CSP 207459	INSULATIO
Dallas ISD C	Construction Services				August 16, 2024	

	Length in Inches	Gage of Metal Shield
3" and Smaller	12	18
4" to 6"	12	16
8" to 16"	18	14
18" and Larger	24	12

- b. Factory-fabricated (at Contractors option). Use factory-made insulation shields as made by Pipe Shields, Inc., or equivalent. Insulation must extend at least 1 inch beyond metal. Select proper shield for service and pipe span.
- c. High Temperature Piping Insulation: Furnish fiberglass pipe insulation, thickness as tabulated below:

Insulating Unit	Thickness (Inches)
Domestic Hot Water Piping, 1 ¹ / ₂ " and smaller	1
Domestic Hot Water Piping, 2" and greater	1½
Domestic Tempered Water Piping, 1 ½" and smaller	1
Domestic Tempered Water Piping, 2" and greater	1½

2.6 PIPE INSULATION

- a. Furnish in accordance with the requirements of Section 15080, Insulation General.
- b. Supply in type and thickness as tabulated below:

Insulated Unit	Thickness (Inches)	Туре
Refrigerant Suction Piping	3/4	Armaflex AP
Condensate Drain Lines	1/2	Armaflex AP
Roof Drain and Emergency Overflow Piping	1/2	Fiberglass
Above Ground Sanitary Waste Piping Receiving Condensate from HVAC Equipment	1⁄2	Fiberglass
Domestic Cold Water Piping (All)	1/2	Fiberglass

Mark Twain School for the Talented and Gifted 22 07 19-3 Org #220 Dallas ISD Construction Services PLUMBING PIPING INSULATION CSP 207459 August 16, 2024
2.7 ADHESIVE, FINISH, SEALANT AND CEMENT

- a. Fiberglass:
 - (1) Adhesive. Furnish Benjamin Foster 85-20 or equivalent to seal longitudinal laps of the vapor barrier jacket and to adhere butt joint covers. Self-sealing laps and butt strips are not allowed.
 - (2) Finish. Use Benjamin Foster 30-35 or equivalent with glass fabric reinforcement.
 - (3) Sealant. (Low-temperature applications). Use Benjamin Foster 95-44 or equivalent at valve and fitting covers.
 - (4) Cement (high-temperature applications). Use Ramco Insulation Inc. RAMCOTE 1200 or equivalent at valve and fitting covers.
- b. Closed-cell: Finish with minimum 2-coats of Armstrong Finish or equivalent per manufacturer's recommendations.

2.8 ALUMINUM JACKETING

- a. Piping. Furnish for finishing insulated pipe, a self-fastening jacket of type 3003-H14 aluminum alloy, 0.016 in. thick.
- b. Valves, Fittings and Flanges. Furnish for finishing all valves, fittings and flanges, formed aluminum covers, 0.024 in. thick, Type 3003-H14 aluminum alloy.
- c. Straps and seals. Furnish aluminum strapping seals for jackets and covers according to manufacturer's recommendations.

2.9 HEAT TRACING

a. Furnish a parallel resistance heating cable with minimum 4.0 watts per lineal foot. Cable shall be UL listed and selected for 120 volt single phase service. Furnish an adjustable thermostat with remote sensing bulb to energize cable when ambient temperature drops below 40°F, field adjustable, Thermon or approved equivalent.

2.10 WIRE

a. Use galvanized wire of gage and spacing specified below for securing insulating materials (other than fiberglass pipe insulation) to pipe, valves, fittings, vessels, and other items.

Installation	<u>Wire Gage</u>	Loop Spacing
Pipe, 4" and smaller	16	9" intervals
Pipe, 4" to 8"	14	9" intervals
Pipe, 8" and larger	12	6" intervals

PLUMBING PIPING INSULATION CSP 207459 August 16, 2024

Installation	<u>Wire Gage</u>	Loop Spacing
Pumps, vessels, and other large items	12	As required to prevent over stressing

2.11 ACCEPTABLE MANUFACTURERS

- a. Fiberglass: Certainteed, Knauf, Owens-Corning, Schuller.
- b. Closed-cell: Armstrong, Halstead.
- c. Sealants and Adhesive: Benjamin Foster, Childers, Ramco Insulation Co.
- d. Jacketing: Childers, Preformed Metal Products Company, Schuller.
- e. Fitting Covers: Proto, Zeston.

3. EXECUTION

3.1 WIRE

a. Draw wire loops tight over vapor barrier jacket, with ends of wire bent down. Take care not to puncture vapor seal.

3.2 INSTALLATION

- a. Install in accordance with the requirements of Section 23 0500 Common Work Results for HVAC Equipment.
- b. In exposed areas, finish with glass cloth and coating.
- c. Comply with all manufacturer's recommendations.
- d. Piping.
 - (1) Apply insulation to clean, dry pipes. Butt insulation joints firmly together.
 - (2) Seal longitudinal laps and butt strips with sealant.
 - (3) Insulate valves, fittings, flanges, and special items to the full thickness required for corresponding piping.
- e. Do not insulate any item until all pressure tests have been performed in accordance with specifications.
- f. Replace insulation damaged by either moisture or other means. Insulation which has been wet, whether dried or not, is considered damaged. Make repairs where condensation is caused by improper installation of insulation. Also, repair any damage caused by condensation.

Mark Twain School for the Talented and Gifted 22 07 19-5 Org #220 Dallas ISD Construction Services PLUMBING PIPING INSULATION CSP 207459 August 16, 2024 g. Where existing insulated piping, ductwork or other surfaces are tapped or damaged, remove existing insulation back to undamaged sections and replace with new insulation of the same type and thickness as existing insulation. Apply as specified for insulation of the same service.

3.3 VALVES, FLANGES AND FITTINGS

- a. Omit insulation at screwed unions and at valves smaller than $1\frac{1}{2}$ in.
- b. Concealed piping, 2 in. and smaller. At Contractor's option, insulate with mineral wool and insulating cement to a thickness equivalent to or greater than adjoining straight pipe.
- c. Insulate all valves, flanges and fittings with factory molded or mitered fitting covers, maintaining insulation thickness equivalent to that of adjoining piping.
- d. Mitered covers.
 - (1) Pipe 2 in. and smaller. Install mitered covers that are minimum 3-pieces to the side.
 - (2) Pipe $2\frac{1}{2}$ in. and larger. Install mitered covers that are minimum 6-pieces to the side.
 - (3) Rasp the fitting or otherwise form to have a smooth appearance.
 - (4) Secure covers with wire.
 - (5) Apply ¼ in. layer of Benjamin Foster 30-35 or equivalent reinforced with white 20 in. x 20 in. glass fabric.

3.4 SHIELDS AND HANGERS

- a. When the insulation is jacketed in aluminum, install a length of 40-pound roofing felt ½ in. longer than the insulation shield between jacket and shield.
- b. Install pipe hangers as specified in Section 23 00529, Hangers and Supports.

3.5 ALUMINUM JACKETING

- a. Apply to all insulated piping installed outdoors.
- b. Install per manufacturer's recommendations.
- c. Locate longitudinal joints on the bottom side of horizontal piping
- d. Overlap circumferential joints at least 2 in.
- e. Apply to all fiberglass insulated pipe located outdoors and to insulated refrigerant piping outdoors or on the roof.

3.6 HEAT TRACING

a. Heat trace any exterior insulated piping smaller than 2 in. nominal diameter. Exterior piping includes all piping that is exposed to outdoor temperatures, including covered parking garages, unheated buildings or sheds, etc.

Mark Twain School for the Talented and Gifted 22 07 19-6 Org #220 Dallas ISD Construction Services PLUMBING PIPING INSULATION CSP 207459 August 16, 2024 b. Install per manufacturer's recommendations.

END OF SECTION 22 07 19

SECTION 22 08 00 COMMISSIONING (Cx) OF PLUMBING

PART 1 GENERAL

- 1. Commissioning Services Provider (CxP) Requirements: Refer to Section 01 91 00.
- 2. Project specifications to include the Plumbing Contractor (PC) and Plumbing Sub-Contractors requirements below:
 - a. Provide all personnel, tools, materials, and equipment to support the commissioning process.
 - b. Facilitate the coordination of the commissioning work by the CxP.
 - c. Incorporate all commissioning related activities into the project schedule, ensuring that Cx activities do not delay project completion.
 - d. Notify Dallas ISD and the CxP in writing that equipment and systems are ready for functional testing.
 - e. Perform equipment startups using authorized manufacturers' representatives.
 - f. Provide written documentation to the CxP that equipment and systems are fully operational and ready to be functionally performance tested.
 - g. Perform commissioning tests at the direction of the CxP.
 - h. Attend construction phase commissioning coordination meetings.
 - i. Provide qualified personnel for participation in commissioning tests.
 - j. Provide equipment, materials, and labor to correct deficiencies found during the commissioning process.
 - k. Participate in plumbing system, assemblies, equipment, and component maintenance orientations and inspections as directed by the CxP.
 - I. Provide information requested by the CxP for commissioning documentation and testing.
 - m. Perform all quality control functions to ensure equipment and systems are installed properly. Ensure equipment and systems are brought to a state of readiness and full functionality prior to commencing the commissioning functional performance testing processes.
 - n. Provide a representative to attend end of warranty testing.

END OF SECTION

SECTION 22 10 05 PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes domestic water piping from 5' outside of building to fixtures and equipment inside the building.
- B. Related Sections include the following:
 - 1. Division 22 Section "Plumbing Specialties" for water distribution piping specialties.
 - 2. See Section 230719 "Piping Insulation" for information on insulation of systems in this specification section.

1.3 **PERFORMANCE REQUIREMENTS**

- A. Provide components and installation capable of producing domestic water piping systems with the following minimum working-pressure ratings, unless otherwise indicated:
 - 1. Domestic Water Service Piping: 160 psig.
 - 2. Domestic Water Distribution Piping: 125 psig.

1.4 SUBMITTALS

- A. Product Data: For pipe, tube, fittings, and couplings.
- B. Water Samples: Specified in "Cleaning" Article in Part 3.
- C. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

1.5 QUALITY ASSURANCE

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF 61, "Drinking Water System Components-Health Effects; Sections 1 through 9," for potable domestic water piping and components.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. Refer to Part 3 "Piping Applications" Article for applications of pipe, tube, fitting, and joining materials.
- B. Transition Couplings for Aboveground Pressure Piping: Coupling or other manufactured fitting the same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

Mark Twain School for the Talented and Gifted $22 \ 10 \ 05 - 1$ Org #220

PLUMBING PIPING CSP 207459 August 16, 2024

Dallas ISD Construction Services

C. Transition Couplings for Underground Pressure Piping: AWWA C219, metal, sleeve- Type coupling or other manufactured fitting the same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

2.2 COPPER TUBING

- A. Soft Copper Tube: ASTM B 88, Type K, water tube, annealed temper.
 - 1. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought- copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.
 - 2. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end. Furnish Class 300 flanges if required to match piping.
 - 3. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonalstock body, with ball-and- socket, metal-to-metal seating surfaces and solder-joint or threaded ends.
- B. Hard Drawn-Temper Copper Tube: ASTM B88, Type K
 - 1. Cast-Copper, Solder-Joint Fittings: ASME B16.18, pressure fittings.
 - 2. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, pressure fittings.
 - 3. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.

2.3 PVC PIPE AND FITTINGS

- A. Comply with NSF 14 for plastic piping components. Include "NSF-dwv" marking for plastic drain, waste, and vent piping and "NSF-sewer" marking for plastic sewer piping.
- B. Solid-Wall Schedule 40 PVC Pipe: ASTM D2665 drain, waste, and vent.
- c. PVC Socket Fittings: ASTM D2665, made in accordance with ASTM D3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.
- D. Adhesive Primer: ASTM F656.
- E. Solvent Cement: ASTM D2564.

2.4 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings:
 - 1. Marked with CISPI collective trademark.
 - 2. ASTM A888 or CISPI 301.

B. Heavy-Duty, Hubless-Piping Couplings: Mark Twain School for the Talented and Gifted 22 10 05 – 2 Org #220 Dallas ISD Construction Services

- 1. Standards: ASTM C1277 and ASTM C1540. < Insert standard>.
- 2. Description: Stainless steel shield with stainless steel bands and tightening devices; and ASTM C564, rubber sleeve with integral, center pipe stop.

2.5 PE ENCASEMENT

A. PE Encasement for Underground Metal Piping: ASTM A 674 or AWWA C105 PE film, 0.008- inch(0.20-mm) minimum thickness, tube or sheet.

2.6 VALVES

A. Refer to Division 22 Section "Plumbing Piping Specialties" for balancing and drain valves.

PART 3 - EXECUTION

3.1 **PIPING APPLICATIONS**

- A. Below-ground Domestic Water Piping: Use any of the following piping materials for each size range:
 - 1. NPS 2-1/2 and Smaller: Soft copper tube, Type K; copper pressure fittings; and soldered joints.
- B. Above-ground Domestic Water Piping: Use any of the following piping materials for each size range:
 - 1. NPS 2-1/2 and Smaller: Hard Drawn, Type K; wrought-copper fittings; and soldered joints.
- C. Below-ground Sanitary Sewer and Vent Piping up to a minimum of 12" above finished floor: Use any of the following piping materials for each size range:
 - 1. Schedule 40 PVC piping and fittings
- D. Above-ground Sanitary and Vent Piping higher than 12" above the finished floor: Use any of the following piping materials for each size range:
 - 1. No-hub cast iron piping and fittings.
 - 2. Schedule 40 PVC piping and fittings where permitted by local authority having jurisdiction
- E. Below-ground Sanitary Storm Sewer Piping up to a minimum of 12" above finished floor: Use any of the following piping materials for each size range:
 - 1. Schedule 40 PVC piping and fittings

Mark Twain School for the Talented and Gifted $22\ 10\ 05-3$ Org #220 Dallas ISD Construction Services

- F. Above-ground Storm Sewer Piping higher than 12" above the finished floor: Use any of the following piping materials for each size range:
 - 1. No-hub cast iron piping and fittings.
 - 2. Schedule 40 PVC piping and fittings where permitted by local authority having jurisdiction

3.2 VALVE APPLICATIONS

- A. Drawings indicate valve Types to be used. Where specific valve Types are not indicated, the following requirements apply:
 - 1. Shutoff Duty: Use bronze ball or gate valves for piping NPS 2 and smaller. Use cast- iron butterfly or gate valves with flanged ends for piping NPS 2-1/2 and larger.
 - 2. Throttling Duty: Use bronze ball valves for piping NPS 2 and smaller. Use cast- iron butterfly valves with flanged ends for piping NPS 2-1/2 and larger.
 - 3. Hot-Water-Piping, Balancing Duty: Calibrated balancing valves.
 - 4. Drain Duty: Hose-end drain valves.

3.3 PIPING INSTALLATION

- A. Refer to Division 23 Section "Basic Mechanical Requirements" for basic piping installation.
- B. Extend domestic water service piping to exterior water distribution piping in sizes and locations indicated.
- C. Encase piping with polyethylene film according to ASTM A 674 or AWWA C105. E.
- D. Install shutoff valve, hose-end drain valve, strainer, pressure gage, and test tee with valve, inside building at each domestic water service. Refer to Division 23 Section "Plumbing Piping Specialties" for drain valves and strainers.
- E. Install aboveground domestic water piping level and plumb.
- F. Fill water piping. Check components to determine that they are not air bound and that piping is full of water.
- G. Perform the following steps before operation:
 - 1. Close drain valves, hydrants, and hose bibbs.
 - 2. Open shutoff valves to fully open position.
 - 3. Open throttling valves to proper setting.
 - 4. Remove plugs used during testing of piping and plugs used for temporary sealing of piping during installation.
 - 5. Remove and clean strainer screens. Close drain valves and replace drain plugs.

Mark Twain School for the Talented and Gifted 22 10 05 – 4 Org #220 Dallas ISD Construction Services

- 6. Remove filter cartridges from housings, and verify that cartridges are as specified for application where used and that cartridges are clean and ready for use.
- H. Check plumbing equipment and verify proper settings, adjustments, and operation. Do not operate water heaters before filling with water.
- I. Check plumbing specialties and verify proper settings, adjustments, and operation.
 - 1. Water-Pressure Regulators: Set outlet pressure at 80 psig maximum, unless otherwise indicated.
- J. Energize pumps and verify proper operation.

3.4 JOINT CONSTRUCTION

- A. Refer to Division 23 Section "Basic Mechanical Requirements" for basic piping joint construction.
- B. Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead- free- alloy solder; and ASTM B 828 procedure, unless otherwise indicated.
- C. Mechanically Formed Outlets: Form tee in copper tube according to equipment manufacturer's written instructions. Use tool designed for copper tube; drill pilot hole, form collar for outlet, dimple tube to form seating stop, and braze branch tube into collar.

3.5 VALVE INSTALLATION

- A. Install sectional valve close to water main on each branch and riser serving plumbing fixtures or equipment. Use ball or gate valves for piping NPS 3 and smaller.
- B. Install shutoff valve on each water supply to equipment and on each water supply to plumbing fixtures without supply stops. Use ball valves for piping NPS 3 and smaller. Use butterfly or gate valves for piping NPS 4 and larger.
- C. Install drain valves for equipment, at base of each water riser, at low points in horizontal piping, and where required to drain water piping.
 - 1. Install hose-end drain valves at low points in water mains, risers, and branches.
 - 2. Install stop-and-waste drain valves where indicated.
- D. Install calibrated balancing valves in each hot-water circulation return branch and discharge side of each pump and circulator. Set calibrated balancing valves partly open to restrict but not stop flow.

3.6 HANGER AND SUPPORT INSTALLATION

A. Refer to Division 23 Section "Hangers and Supports" for pipe hanger and support devices. Install the following:

Mark Twain School for the Talented and Gifted 22 10 05 – 5 Org #220 Dallas ISD Construction Services

- 1. Vertical Piping: MSS Type 8 or Type 42, clamps.
- 2. Individual, Straight, Horizontal Piping Runs: According to the following:
 - i. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
 - ii. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
 - iii. Longer Than 100 Feet, if Indicated: MSS Type 49, spring cushion rolls.
- 3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
- 4. Base of Vertical Piping: MSS Type 52, spring hangers.
- B. Install supports according to Division 23 Section "Hangers and Supports."
- C. Support vertical piping and tubing at base and at each floor.
- D. Rod diameter may be reduced 1 size for double-rod hangers, to a minimum of 3/8 inch.
- E. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 1-1/4 and Smaller: 84 inches with 3/8-inch rod.
 - 2. NPS 1-1/2: 108 inches with 3/8-inch rod.
 - 3. NPS 2: 10 feet with 3/8-inch rod.
 - 4. NPS 2-1/2: 11 feet with 1/2-inch rod.
 - 5. NPS 3 and NPS 3-1/2: 12 feet with 1/2-inch rod.
 - 6. NPS 4 and NPS 5: 12 feet with 5/8-inch rod.
 - 7. NPS 6: 12 feet with 3/4-inch rod.
 - 8. NPS 8 to NPS 12: 12 feet with 7/8-inch rod.
- F. Install supports for vertical steel piping every 15 feet.
- G. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 3/4 and Smaller: 60 inches with 3/8-inch rod.
 - 2. NPS 1 and NPS 1-1/4: 72 inches with 3/8-inch rod.
 - 3. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.
 - 4. NPS 2-1/2: 108 inches with 1/2-inch rod.
 - 5. NPS 3 to NPS 5: 10 feet with 1/2-inch rod.
 - 6. NPS 6: 10 feet with 5/8-inch rod.
 - 7. NPS 8: 10 feet with 3/4-inch rod.
- H. Install supports for vertical copper tubing every 10 feet.

Mark Twain School for the Talented and Gifted 22 10 05 – 6 Org #220 Dallas ISD Construction Services

I. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.7 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment and machines to allow service and maintenance.
- C. Connect domestic water piping to exterior water service piping. Use transition fitting

to join dissimilar piping materials.

- D. Connect domestic water piping to service piping with shutoff valve, and extend and connect to the following:
 - 1. Booster Systems: Cold-water suction and discharge piping.
 - 2. Water Heaters: Cold-water supply and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
 - 3. Plumbing Fixtures: Cold- and hot-water supply piping in sizes indicated, but not smaller than required by plumbing code. Refer to Division 22 Section "Plumbing Fixtures."
 - 4. Equipment: Cold- and hot-water supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection. Use flanges instead of unions for NPS 2-1/2 and larger.

3.8 FIELD QUALITY CONTROL

- A. Inspect domestic water piping as follows:
 - 1. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.
 - 2. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
 - i. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
 - ii. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
 - 3. Re-inspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for re-inspection.
 - 4. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

Mark Twain School for the Talented and Gifted 22 10 05 – 7 Org #220 Dallas ISD Construction Services

- B. Test domestic water piping as follows:
 - 1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
 - 2. Leave uncovered and unconcealed new, altered, extended, or replaced domestic water piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
 - 3. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
 - 4. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.
 - 5. Prepare reports for tests and required corrective action.

3.9 ADJUSTING

- A. Adjust balancing valves in hot-water-circulation return piping to provide adequate flow.
 - 1. Manually adjust ball-Type balancing valves in hot-watercirculation return piping to provide flow of hot water in each branch.
 - 2. Adjust calibrated balancing valves to flows indicated.

3.10 CLEANING

- A. Clean and disinfect potable and non-potable domestic water piping as follows:
 - 1. Purge new piping and parts of existing domestic water piping that have been altered, extended, or repaired before using.
 - 2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction or, if methods are not prescribed, procedures described in either AWWA C651 or AWWA C652 or as described below:
 - i. Flush piping system with clean, potable water until dirty water does not appear at outlets.
 - ii. Fill and isolate system according to either of the following:
 - a. Fill system or Part thereof with water/chlorine solution with at least 50 ppm

(50 mg/L) of chlorine. Isolate with valves and allow to stand for 24 hours.

- b. Fill system or Part thereof with water/chlorine solution with at least 200 ppm (200 mg/L) of chlorine. Isolate and allow to stand for three hours.
- iii. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
- iv. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.
- B. Prepare and submit reports of purging and disinfecting activities.
- C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

END OF SECTION 22 10 05

SECTION 22 10 06 PLUMBING PIPING SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Roof and floor drains.
- B. Cleanouts.
- C. Interceptors.
- D. Thermostatic mixing valves.

1.02 REFERENCE STANDARDS

- A. NSF 61 Drinking Water System Components Health Effects; 2012.
- B. NSF 372 Drinking Water System Components Lead Content; 2011.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Specialties in Potable Water Supply Systems: Provide products that comply with NSF 61 and
 - NSF 372 for maximum lead content.

2.02 DRAINS

- A. Manufacturers:
 - Jay R. Smith Manufacturing Company: www.jayrsmith.com. 1.
 - Josam Company: www.josam.com. 2.
 - 3. Zurn Industries, Inc: www.zurn.com.

2.03 ACID WASTE CLEANOUTS

- A. Manufacturers:
 - 1. Orion: www.orionfittings.com.

2.04 ACID NEUTRALIZATION TANK

- A. Manufacturers:
 - 1. Orion: www.orionfittings.com
- B. Box Manufacturers:
 - 1. IPS Corporation/Water-Tite: www.ipscorp.com.
 - 2. Oatey: www.oatey.com.
- C. Dilution Basins:
 - a. Furnish acid dilution basins of size and capacity as indicated on the Drawings, made of high-density polyethylene and equipped with inlet and outlet fittings of size as indicated on the Drawings.
 - b. Equip basin complete with wide mouth top and heavy gage bolt down covers with neoprene gaskets and stainless steel nuts, bolts and washers.
 - c. For tanks up to 55 gallons in capacity, furnish tanks with minimum 3/16 in. thick basin walls; for larger tanks, furnish tanks with minimum 1/4 in. thick basin walls.

d. Furnish all required fittings, inlets, covers, rings and extension pieces as required Mark Twain School for the Talented and Gifted 22 10 06-1 PLUMBING PIPING SPECIALTIES CSP 207459 Ora #220

Dallas ISD Construction Services

August 16,2024

to accommodate required tank depth, inlet and outlet piping connections, and pipe depths.

2.05 MIXING VALVES

- A. Thermostatic Mixing Valves:
 - 1. Manufacturers:
 - a. ESBE: www.esbe.se/en.
 - b. Leonard Valve Company: www.leonardvalve.com.
 - c. Honeywell Water Controls: http://yourhome.honeywell.com.
 - d. Watts: www.watts.com

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

END OF SECTION 22 10 06

SECTION 22 42 00 PLUMBING FIXTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following conventional plumbing fixtures and related components:
 - 1. Faucets for lavatories and sinks.
 - 2. Protective shielding guards.
 - 3. Fixture supports.
 - 4. Lavatories and sinks.

1.3 DEFINITIONS

- A. ABS: Acrylonitrile-butadiene-styrene plastic.
- B. Accessible Fixture: Plumbing fixture that can be approached, entered, and used by people with disabilities.
- C. Cast Polymer: Cast-filled-polymer-plastic material. This material includes cultured-marble and solid-surface materials.
- D. Cultured Marble: Cast-filled-polymer-plastic material with surface coating.
- E. Fitting: Device that controls the flow of water into or out of the plumbing fixture. Fittings specified in this Section include supplies and stops, faucets and spouts, shower heads and tub spouts, drains and tailpieces, and traps and waste pipes. Piping and general-duty valves are included where indicated.
- F. FRP: Fiberglass-reinforced plastic.
- G. PMMA: Polymethyl methacrylate (acrylic) plastic.
- H. PVC: Polyvinyl chloride plastic.

1.4 SUBMITTALS

- A. Product Data: For each type of plumbing fixture indicated. Include selected fixture and trim, fittings, accessories, appliances, appurtenances, equipment, and supports. Indicate materials and finishes, dimensions, construction details, and flow-control rates.
- B. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain plumbing fixtures, faucets, and other components of each category through one source from a single manufacturer.
 - 1. Exception: If fixtures, faucets, or other components are not available from a single manufacturer, obtain similar products from other manufacturers specified for that category.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable

Buildings and Facilities"; Public Law 90-480, "Architectural Barriers Act"; and Public Law 101-

336, "Americans with Disabilities Act"; for plumbing fixtures for people with disabilities.

D. Regulatory Requirements: Comply with requirements in Public Law 102-486, "Energy Policy

Act," about water flow and consumption rates for plumbing fixtures.

- E. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.
- F. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.
- G. Comply with the following applicable standards and other requirements specified for plumbing fixtures:
 - 1. Enameled, Cast-Iron Fixtures: ASME A112.19.1M.
 - 2. Plastic Mop-Service Basins: ANSI Z124.6.
 - 3. Porcelain-Enameled, Formed-Steel Fixtures: ASME A112.19.4M.
 - 4. Slip-Resistant Bathing Surfaces: ASTM F 462.
 - 5. Solid-Surface-Material Lavatories and Sinks: ANSI/ICPA SS-1.
 - 6. Stainless-Steel Commercial, Handwash Sinks: NSF 2 construction.
 - 7. Stainless-Steel Residential Sinks: ASME A112.19.3.
 - 8. Vitreous-China Fixtures: ASME A112.19.2M.
- H. Comply with the following applicable standards and other requirements specified for lavatory and sink faucets:
 - 1. Backflow Protection Devices for Faucets with Hose-Thread Outlet: ASME A112.18.3M.
 - 2. Faucets: ASME A112.18.1.
 - 3. Hose-Connection Vacuum Breakers: ASSE 1011.
 - 4. Hose-Coupling Threads: ASME B1.20.7.
 - 5. Integral, Atmospheric Vacuum Breakers: ASSE 1001.
 - 6. NSF Potable-Water Materials: NSF 61.
 - 7. Pipe Threads: ASME B1.20.1.
 - 8. Supply Fittings: ASME A112.18.1.
 - 9. Brass Waste Fittings: ASME A112.18.2.
- I. Comply with the following applicable standards and other requirements specified for miscellaneousfittings:1. Atmospheric Vacuum Breakers: ASSE 1001.
 - 2. Brass and Copper Supplies: ASME A112.18.1.
 - 3. Manual-Operation Flushometers: ASSE 1037.
 - 4. Plastic Tubular Fittings: ASTM F 409.
 - 5. Brass Waste Fittings: ASME A112.18.2.
- J. Comply with the following applicable standards and other requirements specified for miscellaneous components:
 - 1. Flexible Water Connectors: ASME A112.18.6.
 - 2. Floor Drains: ASME A112.6.3.
 - 3. Grab Bars: ASTM F 446.
 - 4. Hose-Coupling Threads: ASME B1.20.7.
 - 5. Off-Floor Fixture Supports: ASME A112.6.1M.

Mark Twain School for the Talented and Gifted 22 42 00-2 Org #220 Dallas ISD Construction Services

- 6. Pipe Threads: ASME B1.20.1.
- 7. Plastic Toilet Seats: ANSI Z124.5.
- 8. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.6 WARRANTY

- A. Special Warranties: Manufacturer's standard form in which manufacturer agrees to repair or replace components of whirlpools that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures of unit shell.
 - b. Faulty operation of controls, blowers, pumps, heaters, and timers.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal use.

2. Warranty Period for Commercial Applications: 3 years from date of Substantial Completion.

PART 2 - PRODUCTS

Manufacturer: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

2.1 LABORATORY SINKS AND FAUCETS

- a. American Standard Companies, Inc.
- b. Bradley Corporation.
- c. Chicago Faucets.
- d. Elkay Manufacturing Co.
- e. Kohler Co.
- f. Kewaune

2.2 **PROTECTIVE SHIELDING GUARDS**

- a. McGuire Manufacturing Co., Inc.
- b. TRUEBRO, Inc.
- c. Zurn Plumbing Products Group; Tubular Brass Plumbing Products Operation.

2.3 **PROTECTIVE SHIELDING PIPING ENCLOSURES**

- a. McGuire Manufacturing Co., Inc.
- b. TRUEBRO, Inc.
- c. Zurn Plumbing Products Group; Tubular Brass Plumbing Products Operation.

Description: Manufactured plastic enclosure for covering plumbing fixture hot- and coldwater supplies and trap and drain piping. Comply with ADA requirements.

2.4 EMERGENCY SHOWER AND EYE WASH (ESEW-1)

A. Furnish and install a Barrier Free, free standing, combination shower and eye wash with stay-open shower and eye wash valves, floor flange, 1-1/2-inch supply connection, stainless steel pull rod and triangle handle and "EMERGENCY SHOWER" identification sign. Support shower to wall as recommended by manufacturer, to ensure a rigid installation. Bradley S19-220ABF, HAWS No. 7000BT or approved equivalent.

2.5 EMERGENCY EYE WASH (EEW-1)

Mark Twain School for the Talented and Gifted 22 42 00-3 Org #220 Dallas ISD Construction Services

A. Furnish and install a Barrier Free, free standing, eye wash with stay-open eye wash valve, floor flange, 3/4-inch supply connection, and "EMERGENCY EYEWASH" identification sign. Bradley S19-310BF, HAWS No. 8200WC or approved equivalent.

2.6 WALL BOXES

- A. Wall Boxes, Refrigerator (WB-1). Furnish and install C-P Industries Inc. "WATER-TITE" No. 9000 ice maker box with brass angle valve or approved equivalent.
- B. Wall Boxes, Washing Machine (WB-2). Furnish and install Guy Gray No. BB-200TS, top supply washing machine supply and drain box with 2-inch drain and ½-inch supply inlet angle valves or approved equivalent.
- C. Wall Boxes, Clothes Dryer Vent (WB-3). Furnish and install recessed, metal clothes dryer vent with stainless steel removable metal cover plate door and dryer connection fittings. Furnish a metal flexible dryer vent duct. Furnish an individual, 4-inch galvanized steel duct extending from dryer vent box up through roof for each and every dryer vent box. Extend flues from the vent box through the roof or sidewall and terminate with a bird proof vacuum/vent cap of approved design at 24-inches above the roof and as allowed by code. Include an approved roof flashing and storm collar where the flue pierces the roof. Quendal No. CV-4 15-3/4-inch by 33-3/4-inch or approved equivalent.

2.7 UTILITY CONTROLLER

- A. Furnish a Utility Controller as manufactured by ISIMET. Utility controller shall manage the electrical, water and gas utilities served to laboratory spaces in the building. The unit shall include the following:
 - 1. Panic Button.
 - 2. Auxiliary output circuit
 - 3. Brushed stainless steel, NEMA 4, UL listed, flush mounted cabinet .
 - 4. Concealed hinges.
 - 5. Keyed door panel lock.
 - 6. Control Switch
 - 7. Reset Switch
 - 8. Keyed Switch
 - 9. Service Switch
 - 10. Building Automation shut down interface.
 - 11. 24 volt output
 - 12. Type S flush mount, liquid tight with vent, brushed stainless steel enclosure with keyed lock and 24 volt solenoid valves for gas, air and water.
- B. Install all wiring and conduit between controller, solenoid valve enclosure and electrical power relay(shown in Div 16). Terminate all wiring and make final connections. Test all valves and relays for proper system operation. Coordinate interface of automation shut down feature with controls contractor.

2.8 INSULATION GUARDS

A. For all lavatories and accessible sinks, furnish handicap lavatory P-trap and angle valve assemblies for both cold and hot water supplies; molded, antimicrobial, Truebro Inc. Handi Lav-Guard insulation kit, Model No. 102W. For offset drains, furnish Model No.

103W.

B. Undersink Enclosure. Where indicated on the drawings, furnish Truebro Handi Basin-Guard undersink enclosure, Model No. 36W; verify color with Architect prior to ordering.

2.9 PROTECTIVE DEVICES

- A. Approved backflow preventers shall be used to connect piping to plumbing fixtures or equipment that do not have an approved integral device for cross connection protection.
- B. Reduced Pressure Principle Type. Furnish a Watts Number U-909-S-HW-QT Reduced Pressure Principle backflow preventer. Equip complete with bronze strainer, stainless steel check modules, quarter turn ball valves and integral body unions.
 - a. For each backflow preventer valve, furnish a Watts 909-AG Fixed Air Gap Fitting with inlet compatible with outlet of backflow preventer relief valve opening. Furnish a full size drain line from air gap fitting to floor drain or hub drain.

2.10 FLOW RESTRICTORS AND TEMPERING VALVES

A. Furnish and install flow restrictors and tempering valves to all fixtures requiring water flow and/or temperature regulation as required to meet local code requirements and to regulate water flow for instantaneous water heaters. Furnish either in-line or faucet-end type flow restrictors (Use of either type is acceptable). Furnish access to all in-line flow restrictors located in walls or above ceilings.

2.11 ACCEPTABLE MANUFACTURERS

- A. Plumbing Fixtures: American Standard, Crane, Kohler, Universal Rundle.
- B. Trim: American Standard, Chicago Faucet, Elkay, Kohler, McGuire, Speakman, Symmons, T&S Brass, Watersaver.
- C. Water Closet Seats: Bemis, Beneke, Church, Sperzer.
- D. Mop Sinks: Stern-Williams, Zurn.
- E. Drinking Fountains: Elkay, Halsey Taylor, Haws, Oasis.
- F. Stainless Steel Sinks: Elkay, Just.
- G. Flush Valves: Delaney, Sloan, Zurn.
- H. Emergency Showers and Eyewashes: Bradley, Guardian, Haws, Speakman.
- I. Mixing Valves: Leonard, Powers, Symmons.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before plumbing fixture installation.

Mark Twain School for the Talented and Gifted 22 42 00-5 Org #220 Dallas ISD Construction Services

- B. Examine cabinets, counters, floors, and walls for suitable conditions where fixtures will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Assemble plumbing fixtures, trim, fittings, and other components according to manufacturers' written instructions.
- B. Install off-floor supports, affixed to building substrate, for wall-mounting fixtures.
 - 1. Use carrier supports with waste fitting and seal for back-outlet fixtures.
 - 2. Use carrier supports without waste fitting for fixtures with tubular waste piping.
 - 3. Use chair-type carrier supports with rectangular steel uprights for accessible fixtures.
- C. Install back-outlet, wall-mounting fixtures onto waste fitting seals and attach to supports.
- D. Install floor-mounting fixtures on closet flanges or other attachments to piping or building substrate.
- E. Install wall-mounting fixtures with tubular waste piping attached to supports.
- F. Install counter-mounting fixtures in and attached to casework.
- G. Install fixtures level and plumb according to roughing-in drawings.
- H. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.
- I. Install trap and tubular waste piping on drain outlet of each fixture to be directly connected to sanitary drainage system.
- J. Install tubular waste piping on drain outlet of each fixture to be indirectly connected to drainage system.
- K. Install flushometer valves for accessible water closets and urinals with handle mounted on wide side of compartment. Install other actuators in locations that are easy for people with disabilities to reach.
- L. Install toilet seats on water closets.
- M. Install faucet-spout fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.
- N. Install water-supply flow-control fittings with specified flow rates in fixture supplies at stop valves.
- O. Install faucet flow-control fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.
- P. Install traps on fixture outlets.
 - 1. Exception: Omit trap on fixtures with integral traps.
 - 2. Exception: Omit trap on indirect wastes, unless otherwise indicated.
- Q. Install escutcheons at piping wall ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding fittings. Escutcheons are specified in Division 22 Section "Common Work Results for Plumbing."
- R. Seal joints between fixtures and walls, floors, and countertops using sanitary-type, onepart, mildew-resistant silicone sealant. Match sealant color to fixture color. Sealants are specified in Division 07 Section "Joint Sealants."

3.3 CONNECTIONS

A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

Mark Twain School for the Talented and Gifted 22 42 00-6 Org #220 Dallas ISD Construction Services

- B. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- C. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical

Systems."

D. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and

Cables."

3.4 FIELD QUALITY CONTROL

- A. Verify that installed plumbing fixtures are categories and types specified for locations where installed.
- B. Check that plumbing fixtures are complete with trim, faucets, fittings, and other specified components.

C. Inspect installed plumbing fixtures for damage. Replace damaged fixtures and components.

D. Install fresh batteries in sensor-operated mechanisms.

3.5 ADJUSTING

- A. Operate and adjust faucets and controls. Replace damaged and malfunctioning fixtures, fittings, and controls.
- B. Operate and adjust disposers and controls. Replace damaged and malfunctioning units and controls.

C. Adjust water pressure at faucets and flushometer valves to produce proper flow and stream.

D. Replace washers and seals of leaking and dripping faucets and stops.

3.6 CLEANING

- A. Clean fixtures, faucets, and other fittings with manufacturers' recommended cleaning methods and materials. Do the following:
 - 1. Remove faucet spouts and strainers, remove sediment and debris, and reinstall strainers and spouts.
 - 2. Remove sediment and debris from drains.
- B. After completing installation of exposed, factory-finished fixtures, faucets, and fittings, inspect exposed finishes and repair damaged finishes.

3.7 **PROTECTION**

- A. Provide protective covering for installed fixtures and fittings.
- B. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by

Owner.

END OF SECTION 224200

SECTION 23 00 10 BASIC MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Piping materials and installation instructions common to most piping systems.

- 2. Transition fittings.
- 3. Dielectric fittings.
- 4. Mechanical sleeve seals.
- 5. Sleeves.
- 6. Escutcheons.
- 7. Grout.
- 8. Mechanical demolition.
- 9. Equipment installation requirements common to equipment sections.
- 10. Painting and finishing.
- 11. Concrete bases.
- 12. Supports and anchorages.

1.3 DEFINITIONS

- A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.
- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

- F. The following are industry abbreviations for rubber materials:
 - 1. EPDM: Ethylene-propylene-diene terpolymer rubber.
 - 2. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

- A. Product Data: For the following:
 - 1. Transition fittings.
 - 2. Dielectric fittings.
 - 3. Mechanical sleeve seals.
 - 4. Escutcheons.

1.5 QUALITY ASSURANCE

A. Electrical Characteristics for Mechanical Equipment: Equipment of differing electrical characteristics may be furnished provided such equipment is proposed on the "Alternate Manufacturer Evaluation Form", subsequently approved, and connecting electrical services, circuit breakers, and conduit sizes appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

1.7 COORDINATION

- A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for mechanical installations.
- B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
- C. Coordinate requirements for access panels and doors for mechanical items requiring access that are concealed behind finished surfaces.

PART 2 - PRODUCTS

2.1 PIPE, TUBE, AND FITTINGS

- A. Refer to individual Division 23 piping Sections for pipe, tube, and fitting materials and joining methods.
- B. Pipe Threads: ASMEB1.20.1 for factory-threaded pipe and pipe fittings.

2.2 JOINING MATERIALS

A. Refer to individual Division 23 piping Sections for special joining materials not listed below.

- B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
 - 1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
 - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
 - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
 - 2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.

C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

- D. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- E. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B813.
- F. Brazing Filler Metals: AWS A5.8, BcuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.
- G. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

2.3 TRANSITION FITTINGS

- A. AWWA Transition Couplings: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.
 - 1. Manufacturers:
 - i. Cascade Waterworks Mfg. Co.
 - ii. Dresser Industries, Inc.; DMD Div.
 - iii. Ford Meter Box Company, Incorporated (The); Pipe

Products Div.

- iv. JCM Industries.
- v. Smith-Blair, Inc. f.Viking Johnson.
- 2. Underground Piping NPS 1-1/2 and Smaller: Manufactured fitting or coupling.
- 3. Underground Piping NPS 2 and Larger: AWWA C219, metal sleevetype coupling.
- 4. Aboveground Pressure Piping: Pipe fitting.
- B. Flexible Transition Couplings for Underground Nonpressure Drainage Piping: ASTM C 1173 with elastomeric sleeve, ends same size as piping to be joined, and corrosion-resistant metal band on each end.

- 1. Manufacturers:
 - i. Cascade Waterworks Mfg. Co.
 - ii. Fernco, Inc.
 - iii. Mission Rubber Company.
 - iv. Plastic Oddities, Inc.

2.4 DIELECTRIC FITTINGS

- A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder- joint, plain, or weld-neck end connections that match piping system materials.
- B. Insulating Material: Suitable for system fluid, pressure, and temperature.
- C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.
 - 1. Manufacturers:
 - i. Capitol Manufacturing Co.
 - ii. Watts Industries, Inc.; Water Products Div.
 - iii. Zurn Industries, Inc.; Wilkins Div.
- D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300-psig minimum working pressure as required to suit system pressures.
 - 1. Manufacturers:
 - i. Capitol Manufacturing Co. b.
 - ii. Epco Sales, Inc.
 - iii. Watts Industries, Inc.; Water Products Div.
- E. Dielectric-Flange Kits: Companion-flange assembly for field assembly. Include flanges, full- face- or ring-type neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.
 - 1. Manufacturers:
 - i. Advance Products & Systems,

Inc.

- ii. Central Plastics Company.
- iii. Pipeline Seal and Insulator, Inc.
- 2. Separate companion flanges and steel bolts and nuts shall have 150- or 300-psig minimum working pressure where required to suit system pressures.
- F. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.

Mark Twain School for the Talented and Gifted23 00 10-4BASIC MECHANICAL REQUIREMENTSOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

- 1. Manufacturers:
 - i. Calpico, Inc.
 - ii. Lochinvar Corp.
- G. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F.
 - 1. Manufacturers:
 - i. Perfection Corp.
 - ii. Precision Plumbing Products, Inc. c.Victaulic Co. of America.

2.5 MECHANICAL SLEEVE SEALS

- A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.
 - 1. Manufacturers:
 - i. Advance Products & Systems, Inc.
 - ii. Metraflex Co.
 - iii. Pipeline Seal and Insulator, Inc.
 - 2. Sealing Elements: EPDM interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
 - 3. Pressure Plates: Carbon steel. Include two for each sealing element.
 - 4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.6 SLEEVES

- A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.
- B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.
- C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral water stop, unless otherwise indicated.
- D. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
 - 1. Under deck Clamp: Clamping ring with set screws.

2.7 ESCUTCHEONS

A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.

- B. Split-Casting, Cast-Brass Type: With concealed hinge and set screw.
 - 1. Finish: Polished chrome-plated.
- C. Split-Plate, Stamped-Steel Type: With concealed or exposed-rivet hinge, set screw or spring clips, and chrome-plated finish.

D. Split-Casting, Floor-Plate Type: Cast brass with concealed hinge and set screw.

2.8 GROUT

A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

- 1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
- 2. Design Mix: 5000-psi, 28-day compressive strength.
- 3. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 MECHANICAL DEMOLITION

A. Refer to Divisions 2 and 23 for general demolition requirements and procedures.

- B. Disconnect, demolish, and remove mechanical systems, equipment, and components indicated to be removed.
 - 1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - 2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
 - 3. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - 4. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.
 - 5. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - 6. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - 7. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
- C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.2 PIPING SYSTEMS - COMMON REQUIREMENTS

Mark Twain School for the Talented and Gifted23 00 10-6BASIC MECHANICAL REQUIREMENTSOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

- A. Install piping according to the following requirements and Division 23 sections specifying piping systems.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved.
- C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping to permit valve servicing.
- G. Install piping at indicated slopes.
- H. Install piping free of sags and bends.
- I. Install fittings for changes in direction and branch connections.
- J. Install piping to allow application of insulation.
- K. Select system components with pressure rating equal to or greater than system operating pressure.
- L. Install escutcheons for piping with fittings with penetrations of walls, ceilings, and floors.
- M. Install sleeves for pipes passing through concrete and masonry walls and concrete floor and roof slabs.
 - 1. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using joint sealants appropriate for size, depth, and location of joint.
- N. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
 - 1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.
- O. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials.

- P. Verify final equipment locations for roughing-in.
- Q. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.3 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 23 Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end.Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
- E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
- F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
- H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

3.4 PIPING CONNECTIONS

- A. Make connections according to the following, unless otherwise indicated:
 - 1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
 - 2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
 - 3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.

4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.5 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

- A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.
- B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
- C. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- D. Install equipment to allow right of way for piping installed at required slope.

3.6 PAINTING

A. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.7 CONCRETE BASES

- A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.
 - 1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
 - 2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
 - 3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
 - 4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 5. Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
 - Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Division 3.

3.8 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Refer to Division 5 for structural steel.

- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor mechanical materials and equipment.
- C. Field Welding: Comply with AWS D1.1.

3.9 GROUTING

- A. Mix and install grout for mechanical equipment base bearing surfaces, pump and other equipment base plates, and anchors.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placement of grout.
- E. Place grout, completely filling equipment bases.
- F. Place grout on concrete bases and provide smooth bearing surface for equipment.
- G. Place grout around anchors.
- H. Cure placed grout.

END OF SECTION 23 00 10

SECTION 23 05 00 COMMON WORK RESULTS FOR HVAC

1. GENERAL

1.1 SCOPE OF WORK

- A. The work covered by Division 23 includes all materials, labor, transportation, tools, permits, fees, utilities, and incidentals necessary for, and the complete installation of, all mechanical work required by the Contract Documents (the Work).
- B. The intent of the Contract Documents is to provide an installation that is functionally complete in every respect. If additional details or special construction are required for the work indicated or specified in Division 23, or work indicated or specified in other portions of the Contract Documents, include all such additional Work as is usually furnished with or reasonably infer able as being required for such systems, to make the installation complete and operational.
- C. Coordinate and properly relate the work of Division 23 to the building structure and to the work of other trades. Verify all dimensions and visit the site to become thoroughly familiar with the existing conditions that affect the Work.
- D. Advise the Architect/Engineer in writing of any discrepancy prior to bidding. The submission of a bid is deemed evidence of the Contractor's site visit, the coordination of all existing conditions, and the inclusion of all consideration for existing conditions.

1.2 CODES AND STANDARDS

- A. Comply with the latest edition of the applicable standards, rules, and regulations of the ATSM, ASHRAE, ASME, UL, SMACNA, ANSI, AWWA, 2000 International Building Code, 2000 International Mechanical Code, 2000 International Plumbing Code, 2000 International Fire Code, NEC, and Americans with Disabilities Act (ADA), Texas Accessibility Standards (TAS) and any other authorities that may have lawful jurisdiction concerning the work specified. None of the terms or provisions of this specification waive any of the rules, regulations, or requirements of these codes or authorities.
- B. Materials that are specified by reference to Federal Specifications; ASTM, ASME, ANSI, or AWWA Specifications; Federal Standards; or other standard specifications must comply with latest editions, revisions, amendments or supplement in effect on date bids are received. Requirements in reference specifications and standards are minimum for all equipment, material, and work. In instances where capacities, size or other features of equipment, devices or materials exceed these minimums, meet listed or shown capacities.

Mark Twain School for the Talented & Gifted 23 05 00-1 Org #220 Dallas ISD Construction Services COMMON WORK RESULTS FOR HVAC CSP 207459 August 16, 2024

- C. Material and equipment for electrical work must bear an approval label or be listed by Underwriter's Laboratories.
- D. Resolve any code violation discovered in the Contract Documents with the Architect/Engineer prior to award of the Contract. After award of the Contract, make any correction or additions necessary for compliance with applicable codes as part of this work.
- E. In any instance where the Drawings or Specifications call for materials of a better quality or larger size than required by the codes, those provisions of the Drawings or Specifications shall take precedence. The codes shall govern in case of direct conflict between the codes and the Drawings or Specifications.

1.3 RELATED DOCUMENTS

A. The Drawings and Specifications, the General Conditions, Supplementary General Conditions and other requirements of Divisions 1 apply to the work specified in Division 23. Comply with these Documents in every respect. Examine all of the documents that make up the Contract Documents and coordinate them with the mechanical work on the Mechanical Drawings and in Division 23 of these Specifications.

1.4 DRAWINGS AND SPECIFICATIONS

- A. Drawings for the project and details of the installations accompany these Specifications, to indicate the locations of equipment, piping, ductwork, outlets, fixtures, controls, etc. Schedules incorporated into the Drawings and/or Specifications tabulate performance characteristics of equipment and other devices. The Drawings, Schedules, and Specifications are complementary to each other, and what is required by one is as binding as if required by all.
- B. If the Contractor deems any departures from the Contract Documents necessary, submit details of such departures and the reasons therefore in writing to the Architect/Engineer for review. Make no departures from the Contract Documents without prior written approval of the Architect/Engineer.
- C. The interrelation of the Specifications, Drawings, and Schedules is as follows: The Specifications determine the nature and quality of the materials, the Drawings establish the quantities, dimensions and details, and the Schedules give the performance characteristics. Should the Drawings disagree in themselves, or with the Specifications, include the better quality or greater quantity of work or materials unless otherwise directed by the Architect/Engineer in writing. In case the Specifications do not fully agree with the Schedules, the latter shall govern. Figures shown on Drawings govern scale measurements and large scale Details govern small scale Drawings. In case of disagreement between Specifications and Drawings, see Division 1 of these specifications for clarification.

Mark Twain School for the Talented & Gifted 23 05 00-2COMMON WORK RESULTS FOR HVACOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

- D. Furnish and install all items specifically mentioned in the Specifications but not indicated on the Drawings and/or items shown on the Drawings but not specifically mentioned in the Specifications under the appropriate section of work as if they were both specified and indicated.
- E. In the event of a discrepancy between a manufacturer's product number and the description of that product, either on the Drawings or in the Specifications, the description shall take precedence over the product number.

1.5 PERMITS

A. Obtain and pay for all permits and inspections.

1.1 BUILDING CONSTRUCTION

- a. Review all the Contract Drawings and Specifications so as to thoroughly become familiar with the type and quality of construction to be provided on this project.
- b. <u>The Mechanical Drawings are diagrammatic in character and cannot show every</u> <u>connection in detail or every pipe or duct in its exact location.</u> Carefully investigate structural and finish conditions and coordinate with all other trades to avoid interference between the various phases of Work.
- c. The approximate location of mechanical items is indicated on the Mechanical Drawings. These Drawings are not intended to give complete and exact details regarding location of outlets, apparatus, etc. Determine exact locations by taking actual measurements at the job site; locations are subject to the review of the Architect/Engineer. The Architect/Engineer reserves the right to make any reasonable changes in the locations indicated as part of the Work.

1.2 CONTRACTOR QUALIFICATIONS

- a. An acceptable contractor for the work under this Division must be a specialist in this field and have the personal experience, training, skill and the organization to furnish a practical working system. If required, furnish acceptable evidence of having contracted for and installed not less than three systems of comparable size and type to this one, that have served their owners satisfactorily for not less than three years.
- b. Provide a foreman for this Work who has experience in installing not less than three such systems. Provide adequate and competent supervision to ensure first class construction and installation.
- c. Execute the work and install all materials in accordance with the best practice of the trades in a thorough, substantial, workmanlike manner using competent workmen, so that the Work presents a neat appearance when completed. Perform all work using mechanics
 Mark Twain School for the Talented & Gifted 23 05 00-3 COMMON WORK RESULTS FOR HVAC CSP 207459
 Dallas ISD Construction Services
skilled in the trade.

d. Accept responsibility for all construction techniques required for all Mechanical systems specified and indicated on the Drawings.

1.3 OBSERVATION OF THE WORK

- a. Architect/Engineer's and/or Owner's authorized representatives have the right to observe the work at any time. Provide a representative to be present when the Work is being observed, and give assistance, as may be required, to the Architect/Engineer's representative. Promptly correct all deficiencies noted by Architect/Engineer. Replace, rework, and/or repair all unsatisfactory material and/or workmanship to the satisfaction of the Architect/Engineer.
- b. Periodic observation of the work by Architect/Engineer is only for the express purpose of verifying compliance with the Contract Documents. Observation by the Architect/Engineer does not relieve Contractor, any Subcontractor, and/or Material Supplier of responsibility for deviation from requirements of Contract Documents nor for errors or omissions in the performance of work.

1.4 SUBMITTALS

- a. Comply with the requirements of Division 1, Submittals.
- b. Review is only for general conformance with the design concept of the Project and general compliance with the Contract Documents. The Contractor is responsible for confirming and correlating equipment dimensions at the Site; for information that pertains to fabrication processes or construction techniques; and for coordination of the Work of all Trades. Review of submittals does not relieve the Contractor, any Subcontractor and/or Material Supplier of responsibility for deviation from the requirements of the Contract Documents nor for errors or omissions in submittals, including failure to coordinate with Work required by other trades.
- c. Organize submittal data in a 3-ring binder indexed by Specification section. Show any revisions to equipment layouts required by the use of the selected equipment. Type of submittal data required is listed in the individual sections of this Division.
- d. Submit a draft of the Operation and Maintenance Manual table of contents for review with the submittals.

1.5 SUBSTITUTIONS AND PRODUCT OPTIONS

a. Comply with the requirements of Division 1, Material and Equipment.

1.6 PROJECT RECORD DOCUMENTS

Mark Twain School for the Talented & Gifted 23 05 00-4 Org #220 Dallas ISD Construction Services COMMON WORK RESULTS FOR HVAC CSP 207459 August 16, 2024 a. Comply with the requirements of Division 1, Contract Closeout.

1.7 OPERATION AND MAINTENANCE DATA

- a. Comply with the requirements of Division 1, Contract Closeout.
- b. Submit a separate Operation & Maintenance (O&M) Manual for the work of each Subcontractor for Division 23 work.
- c. Include the following in each O&M Manual as a minimum.
 - (1) Summary of the scope of work included in the Manual.
 - (2) Name of Subcontractor who performed the work.
 - (3) Warranty information as defined in this Section.
 - (4) Table of Contents, organized by Specification Section.
 - (5) Listing of each major item of equipment furnished as part of the work, including equipment mark as identified on the Drawings, manufacturer, model number, serial number, capacity in tons, gpm, cfm, Btuh, hp, etc. as appropriate, and where the O&M information for that item is contained in the O&M Manual.
 - (6) A copy of the final submittal information including all revisions and submittal reply comments from the Engineer.
 - (7) Manufacturer's brochures for installation, operation, and maintenance wherever available.
 - (8) Manufacturer's list of recommended spare parts.
 - (9) For each item of equipment as appropriate, a listing of replaceable parts by part number, size, quantity, etc. as appropriate, e.g., belts, filters, sheaves, fuses, motors.
 - (10) For each item of equipment as appropriate, a listing of the control setpoints as established during startup, testing, and balancing.
 - (11) For each system as appropriate, a summary of normal startup and shutdown procedures, as well as emergency shutdown procedures.

1.8 GUARANTEE

- a. Guarantee Work for one year from the "Date of Final Acceptance" of the project(as defined in Division 1); during that period make good any faults or imperfections that may arise due to defects or omissions in materials or workmanship. The contractor shall include any additional cost for warranties due to early start up of equipment necessitated by construction. Any lapse of equipment manufacturers labor or parts warranty from actual start up to "Date of Final Acceptance" shall be covered by the contractor.
- b. Provide written warranties to the Owner, as part of the O&M Manual, that identify, for each Subcontractor performing Division 23 work, the portion of the Work performed by that Subcontractor, the effective date of the warranty, names of at least two contact persons for obtaining warranty service, and a number by which the Owner can obtain 24 hours, seven days per week emergency service.

2. PRODUCTS

Mark Twain School for the Talented & Gifted 23 05 00-5 Org #220 Dallas ISD Construction Services COMMON WORK RESULTS FOR HVAC CSP 207459 August 16, 2024

2.1 MATERIALS AND EQUIPMENT

a. Furnish new and unused materials and equipment of <u>domestic manufacturers</u>, meeting the requirements of the paragraph in each equipment Specification section regarding acceptable manufacturers. Where two or more units are required of the same type or class of equipment, furnish units of a single manufacture.

2.2 STANDARD PRODUCTS

a. All materials and equipment must be standard catalog products of domestic manufacturers regularly engaged in the manufacture of products conforming to these Specifications. Materials and equipment must have been in satisfactory use at least two years prior to bid date. Where custom or special items are required, fully describe these in drawings and/or material lists which detail the item proposed for use on this Project.

2.3 RUST PREVENTION

a. Protect all metallic materials from corrosion. Give all exposed metallic parts of outdoor apparatus a rust inhibiting treatment and standard finish by the manufacturer. Protect all parts such as boxes, bodies, fittings, guards, and miscellaneous parts by galvanizing, except where other equivalent protective treatment is specifically approved in writing.

2.4 DELIVERY AND STORAGE

- a. Do not deliver any equipment to the job site until the equipment is ready to be installed or until there is suitable space provided to properly protect equipment from weather, humidity, dust, and physical damage.
- b. Protect all equipment in accordance with the manufacturer's recommendations.
- c. Replace all equipment damaged in transit from the factory, during delivery to premises, while in storage on premises, while being erected and installed, and while being tested, until time of final acceptance.

2.5 CAPACITIES AND SPACE LIMITATIONS

a. Verify that the proposed equipment will physically fit within the space indicated on the Contract Documents and that the required code clearances and maintenance access are maintained. Note any space conflicts in the submittals. Provide scale drawings to the Architect/Engineer indicating proposed solutions to any space conflict, for the Architect/Engineer's review.

2.6 NAMEPLATES

a. Furnish each piece of equipment with a factory-installed nameplate securely attached to Mark Twain School for the Talented & Gifted 23 05 00-6 Org #220 Dallas ISD Construction Services August 16, 2024 the equipment with the following information: name, address, catalog number, voltage, phase, full load amperes or horsepower, and/or other pertinent information. All data on nameplates must be legible at the time of final acceptance of the Project.

b. Furnish <u>all</u> fan-coil units, roof top units, heat recovery units, heat pump units, condensing units and pumps with an engraved Setonply nameplate, black background, white letters, 1½ in. x 4 in. Include equipment mark (same as indicated on drawings) in white. Attach plates to equipment without using screws, per manufacturer's recommendations. Furnish <u>all</u> fans with an engraved aluminum plate with black background, white letters, ¾ in. x 2½ in. Include the equipment mark on the first line, a list of rooms or a description of the area served by the fan on the second line, and indicate the service on the third line. Attach to fan per manufacturer's recommendation.

3. EXECUTION

3.1 PROTECTION

- a. Protect all materials and equipment to be installed under this Division from physical and weather damage.
- b. Adequately protect work, equipment, fixtures, and materials. At work completion, make all work clean and in good, unblemished condition.
- c. Remove, round, or protect with ³/₄ inch Armaflex insulation all sharp corners of pipe, duct, and equipment where such corners pose a hazard to occupants or maintenance personnel.

3.2 MANUFACTURER'S INSTRUCTIONS

a. Accept full responsibility for furnishing the proper mechanical equipment and/or material and for installing it as intended by the manufacturer's written instructions. Request advice and assistance from a representative of the specific manufacturer, if needed for proper installation, operation, or start up. Follow the manufacturers' published instructions for preparing, assembling, installing, erecting, and cleaning all materials and equipment. If any conflict arises between the requirements of the Contract Documents and the manufacturer's directions, promptly notify the Architect/Engineer in writing and request the Architect/Engineer's instructions before proceeding with the work. Bear all costs arising in connection with correcting any deficiencies due to failure to perform the Work in accordance with these manufacturer's directions and/or Architect/Engineer's instructions.

3.3 COORDINATION

a. <u>Contract Documents are diagrammatic in showing certain physical relationships to</u> <u>other trades</u>. Interfacing and coordinating with other Work including utilities and electrical Work is the exclusive responsibility of the Contractor.

Mark Twain School for the Talented & Gifted 23 05 00-7 Org #220 Dallas ISD Construction Services COMMON WORK RESULTS FOR HVAC CSP 207459 August 16, 2024

- b. Coordinate with Division 16 and other divisions as required. This includes but is not limited to verification of power, voltage, phase and other characteristics as being compatible with that called for on the Electrical Drawings and Division 16 Specifications, as well as that called for in Division 23 Drawings and Specifications or other Divisions requiring electrical connections or interface with this Division. Perform this coordination before placing orders for equipment.
- c. Arrange mechanical work in a neat, well-organized manner, with services running parallel to the primary lines of the building construction, and with the maximum overhead clearance possible.
- d. Locate operating and control equipment properly to allow easy access. Arrange entire mechanical work with adequate access for operation and maintenance of all components requiring access. If any equipment or components are shown in such a position that proper access cannot be provided, resolve the problem by coordinating with the General Contractor before installation. In the event access still cannot be provided, advise Architect/Engineer and request review of the situation.
- e. Advise other trades in advance of the relevant construction of openings required in their work for the subsequent move-in of large units of mechanical work.
- f. Verify exact locations of existing equipment and determine exact requirements for connections before routing services to equipment.
- g. <u>Contract Drawings are diagrammatic only and do not give fully dimensioned</u> <u>locations of various elements of work or show all offsets or required fittings</u>. Determine exact locations from field measurements. Making adjustments to field conditions is considered a part of the Work.
- h. Before installing mechanical equipment, plumbing fixtures, water heaters, water coolers and other plumbing or mechanical items, obtain Architect/Engineer review as to the exact method and exact placement and location of equipment in the various areas shown on the drawings. <u>Do not determine location by scaling the Drawings</u>. Mount plumbing fixtures at the heights as directed by the Architect and applicable authorities. Relocate equipment and devices and pay all costs of modifying work of all trades required by failure to comply with this requirement as part of the Work.
- i. <u>The Drawings show diagrammatically the location of the various outlets and</u> <u>apparatus</u>. Determine exact locations of these outlets and apparatus by reference to the Drawings and to all detail Drawings, equipment drawings, rough-in drawings, etc., by taking measurements at the building, and in cooperation with the other trades. The Owner reserves the right to make any reasonable change in location of any outlet or apparatus before installation, as part of the Work.

3.4 CONCEALED WORK

Mark Twain School for the Talented & Gifted 23 05 00-8 Org #220 Dallas ISD Construction Services COMMON WORK RESULTS FOR HVAC CSP 207459 August 16, 2024 a. Where the word "concealed" is used in connection with insulating, painting, piping, ducts and the like, the word is understood to mean hidden from sight as in chases, furred spaces or suspended ceilings. "Exposed" is understood to mean open to view, including exposed in mechanical rooms.

3.5 OBSTRUCTIONS

- a. The Drawings indicate certain information pertaining to surface and subsurface obstructions taken from available drawings. However, such information is not guaranteed as to accuracy of location or completeness.
- b. Before any cutting or trenching operations are begun, verify with Owner's representative, utility company, municipalities, and other applicable parties that all available information has been provided. Verify locations given.
- c. Should obstruction be encountered, whether indicated or not, alter routing of new Work, reroute existing lines, remove obstruction where permitted, or otherwise perform whatever Work is necessary to satisfy the purpose of the new Work and leave existing services and structures in a satisfactory and serviceable condition.
- d. Assume total responsibility for and repair any damage to existing utilities or construction, whether or not such existing facilities are indicated.

3.6 **OPENINGS**

- a. Framed, cast or masonry openings for piping or equipment are specified under other Divisions. Provide all drawings and layout work for exact size and location of all such openings as part of the Work.
- b. Place all equipment, piping, sleeves, etc. to avoid cutting new construction.

3.7 AIR FILTERS AND PIPE STRAINERS

a. Immediately before final acceptance of a project, inspect, clean and service strainers. Replace disposable type air filters, clean permanent air filters. If air conditioning systems are used during construction the unit filters shall be changed, at a minimum, weekly and temporary filters shall be placed over return grilles, return openings to duct systems etc to prevent fouling of cooling coils. It is the contractor's responsibility to maintain these systems and to turn over at project completion clean duct systems and air conditioning units. The contractor shall ensure that clean filters are in place when the owners test and balance contractor performs his work. The contractor should assume the test and balance will occur sometime after "Date of Final Acceptance".

3.8 OPERATING TESTS

a. After all mechanical systems have been completed and put into operation, subject each Mark Twain School for the Talented & Gifted 23 05 00-9 Org #220 Dallas ISD Construction Services August 16, 2024 system to an operating test under design conditions to ensure proper sequence and operation throughout the range of operation. Make adjustments as required to ensure proper functioning of all systems. Special tests on individual systems are specified under individual Specification sections.

3.9 LUBRICATION, REFRIGERANT AND OIL

- a. Furnish a complete charge of correct lubricant for each item of equipment requiring lubrication.
- b. Furnish complete and working charge of proper refrigerant, free of contaminants, into each refrigerant system. After each system has been in operation long enough to ensure completely balanced conditions, check the charge and modify it for proper operation as required.

3.10 HOISTING, SCAFFOLDING, AND TRANSPORTATION

- a. Include all hoisting, scaffolding and ladders as required to set all materials and equipment in place.
- b. Include all necessary transportation required for the delivery of all materials, equipment, tools, and labor to the job.

3.11 CLEANING AND TOUCH-UP PAINTING

- a. At all times, keep the premises free from accumulations of waste material or rubbish resulting from Division 23 Work. Remove debris not only from the building, but also from the site and from any public areas adjacent to the site.
- b. At the completion of the project, remove all tools, scaffolding, and surplus materials.
- c. Touch-up or repaint to match original color, any finished surfaces scratched or discolored.

3.12 CUTTING, SEALING, AND PATCHING

- a. Perform any required operations when it becomes necessary to cut through any wall, floor, or ceiling to install any Work under this Contract, or to repair any defects that may appear up to the expiration of the guarantee period. Do not cut or modify any structural members without the written permission of the Architect/Engineer.
- b. Patch all openings cut by the Contractor, and repair any damage to the Work of other trades caused by cutting or by the failure of any part of the Work installed.
- Furnish and install suitable covers over any openings cut through exterior walls or roofs, while they are left open, to protect the property or materials involved. Properly protect any openings cut through walls below grade to prevent entrance of water or other damaging
 Mark Twain School for the Talented & Gifted 23 05 00-10
 COMMON WORK RESULTS FOR HVAC CSP 207459
 Dallas ISD Construction Services
 August 16, 2024

elements. Waterproof all openings upon completion of the work.

d. Seal any openings through fire rated walls or floors to maintain the minimum fire rating of wall or floor penetrated, using fire barrier penetration sealing, "3M" Fire Barrier Caulk Type CP-25, type 303 Putty Fire-Stop Sealant, and "3M" Fire Barrier Penetration Sealing Systems, or approved equivalent.

3.13 SUBSTITUTIONS REQUIRING CHANGES

a. Manufacturers and power requirements indicated on the Drawings are the basis of design. If changes are required for the equipment submitted, such as changes in connection sizes and/or locations, supports, housekeeping pads, orientation, routing of piping and/or ductwork, conduit size, conductors, breakers, disconnects, etc., make such changes as part of this Work.

3.14 OPERATING INSTRUCTIONS TO OWNER

- a. Prior to startup and completion of work, and at a time designated by the Architect, arrange to provide services of a competent representative of the Contractor and/or Manufacturers as appropriate, to instruct and demonstrate the Owner's representative in the operation and maintenance of each system. Allow for approximately 80 hours of training.
- b. Refer to the individual sections of this Division for requirements specific to each section.

3.15 SHEAVES AND BELTS

a. Furnish and install one set of sheaves and belts for each fan or air handler system requiring adjustment of RPM based on the Owner's Testing and Balance Contractor recommendations

END OF SECTION 23 05 00

Mark Twain School for the Talented & Gifted 23 05 00-11 Org #220 Dallas ISD Construction Services COMMON WORK RESULTS FOR HVAC CSP 207459 August 16, 2024

SECTION 23 05 13 COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

- 1. General
 - 1.1. Related Documents
 - A. Drawings and general provisions of the Contract, including General and
 - Supplementary
 - I. Conditions and Division 1 Specification Sections, apply to this
 - 1.2. Summary Section
 - A. This Section includes basic requirements for factory-installed

motors. B. Related Sections include the following:

- I. Division 23 for mounting motors and vibration isolation control devices.
- II. Division 23 for application of motors and reference to specific motor requirements for motor-driven equipment.

1.3. Definitions

- A. Factory-Installed Motor: A motor installed by motorizedequipment manufacturer as a component of equipment.
- 1.4. Quality Assurance
 - A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - B. Comply with NFPA 70.
- 1.5. Coordination

A. Coordinate features of motors, installed units, and accessory devices.

Provide motors that are:

- I. Compatible with the following:
 - a. Magnetic controllers.
 - b. Multispeed controllers.
 - c. Reduced-voltage controllers.

COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT CSP 207459 August 16, 2024

- II. Designed and labeled for use with variable frequency controllers, and suitable for use throughout speed range without overheating.
- III. Matched to torque and horsepower requirements of the load.
- IV. Matched to ratings and characteristics of supply circuit and required control sequence.

2. Products

2.1. Motor Requirements

A. Motor requirements apply to factory-installed motors except as follows:

- I. Different ratings, performance, or characteristics for a motor are specified in another Section.
- II. Manufacturer for a factory-installed motor requires ratings, performance, or characteristics, other than those specified in this Section, to meet performance specified.

III. All motors are to be high efficiency type and suitable for use with a

Variable Frequency Drive.

- 2.2. Motor Characteristics
 - A. All motors above 1/16 HP and below 1 HP must be Electrically commutated Motors (ECM). Direct drive motors shall be used whenever possible.
 - B. Motors 3/4 HP and Larger: Three phase.
 - C. Motors smaller than 1/2 HP: Single

phase. D. Frequency Rating: 60 Hz.

- E. Voltage Rating: NEMA standard voltage selected to operate on nominal circuit voltage to which motor is connected.
- F. Duty: Continuous duty at ambient temperature of 105 deg F and at altitude of 3300 feet above sea level.
- G. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.
- H. Enclosure: Open dripproof.
- 2.3. Polyphase Motors

Mark Twain School for the Talented and Gifted 23 05 13-2 Org #220 Dallas ISD Construction Services COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT CSP 207459 August 16, 2024

- A. Description: NEMA MG 1, Design B, medium induction motor.
- B. Efficiency: Premium efficiency according to NEMA MG 1-1998

 Table 12-12. C.
 Stator: Copper windings, unless otherwise indicated.

- I. Multispeed motors shall have separate winding for each
- speed. D. Rotor: Squirrel cage, unless otherwise indicated.
- E. Bearings: Double-shielded, pre-lubricated ball bearings suitable for radial and thrust loading.
- F. Temperature Rise: Match insulation rating, unless otherwise
- indicated. G. Insulation: Class F, unless otherwise indicated.
- H. Code Letter Designation:
 - I. Motors 15 HP and Larger: NEMA starting Code F or G.
 - II. Motors Smaller Than 15 HP: Manufacturer's standard starting characteristic.
- I. Enclosure: Cast iron for motors 7.5hp and larger; rolled steel for motors smaller than 7.5 hp.
- 2.4. Polyphase Motors with Additional Requirements
 - A. Motors Used with Reduced-Inrush Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.
 - B. Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.
 - I. Designed with critical vibration frequencies outside operating range of controller output.
 - II. Temperature Rise: Matched to rating for Class B insulation.
 - III. Insulation: Class H.
 - IV. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors. NEMA Standard MG 1-1993, Revision 1, Part 31, Section IV, "Definite Purpose Inverter Fed Motors", Paragraph 31.40.4.2 Voltage Spikes.
 - C. Source Quality Control: Perform the following tests on each motor according to NEMA MG 1:
 - I. Measure winding resistance.

II. Read no-load current and speed at rated voltage and

frequency. III. Measure locked rotor current at rated

frequency.

- IV. Perform high-potential test.
- 2.5. Single-Phase Motors
 - A. Type: One of the following, to suit starting torque and requirements of specific motor application:
 - I. Permanent-split capacitor.
 - II. Split-phase start, capacitor
 - run. III. Capacitor start,

capacitor run.

- B. Shaded-Pole Motors: For motors 1/20 hp and smaller only.
- C. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.
- D. Bearings: Ball type for belt-connected motors and other motors with high radial forces on motor shaft; sealed, prelubricated-sleeve type for other single-phase motors.

3. Execution

- 3.1. Field Quality Control
 - A. Prepare for acceptance tests as follows:
 - I. Run each motor with its controller. Demonstrate correct rotation, alignment, and speed at motor design load.
 - II. Test interlocks and control features for proper operation.
 - III. Verify that current in each phase is within nameplate rating.
- 3.2. Adjusting
 - A. Align motors, bases, shafts, pulleys and belts. Tension belts according to manufacturer's written instructions.
- 3.3. Cleaning
 - A. After completing equipment installation, inspect unit components. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.

Mark Twain School for the Talented and Gifted 23 05 13-4 Org #220 Dallas ISD Construction Services COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT CSP 207459 August 16, 2024

SECTION 23 05 29 HANGERS AND SUPPORTS FOR HVAC EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes hangers and supports for mechanical system piping and equipment.
- B. Related Sections include the following:
 - 1. Division 23 for vibration isolation restraint devices.

1.3 **DEFINITIONS**

A. MSS: Manufacturers Standardization Society for the Valve and Fittings Industry.

B. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

1.4 SUBMITTALS

- A. Product Data: For each Type of pipe hanger, channel support system component, and thermal- hanger shield insert indicated.
- B. Shop Drawings: Provide shop drawings for each location required for multiple piping supports and trapeze hangers. Provide manufacturer's catalog data including load capacity.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products from one of the following manufacturers:
 - 1. Pipe Hangers:
 - 2. AAA Technology and Specialties Co.,

Inc.

- i. B-Line Systems, Inc.
- ii. Grinnell Corp.
- iii. National Pipe Hanger Corp.

Mark Twain School for the Talented and Gifted	23 05 29-1	HANGERS AND SUPPORTS FOR HVAC
Org #220		EQUIPMENT
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- B. PHD Manufacturing, Inc.
 - 1. Channel Support Systems:
 - i. B-Line Systems, Inc.
 - ii. Grinnell Corp.; Power-Strut Unit.
 - iii. National Pipe Hanger Corp.
 - iv. Unistrut Corp.
 - 2. Thermal-Hanger Shield Inserts:
 - i. Carpenter & Patterson, Inc.
 - ii. Michigan Hanger Co., Inc.
 - iii. PHS Industries, Inc.
 - iv. Pipe Shields, Inc.

2.2 MANUFACTURED UNITS

- A. Pipe Hangers, Supports, and Components: MSS SP-58, factoryfabricated components. Refer to "Hanger and Support Applications" Article in Part 3 for where to use specific hanger and support types.
 - 1. Galvanized, Metallic Coatings: For piping and equipment that will not have field-applied finish.
 - 2. Nonmetallic Coatings: On attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- B. Channel Support Systems: MFMA-2, factory-fabricated components for field assembly.
 - 1. Coatings: Manufacturer's standard painted or galvanized finish.
 - 2. Nonmetallic Coatings: On attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- C. Thermal-Hanger Shield Inserts: 100-psi minimum compressive-strength insulation, encased in sheet metal shield.
 - 1. Material for Cold Piping: ASTM C 552, Type I cellular glass or water-repellent-treated, ASTM C 533, Type I calcium silicate with vapor barrier.
 - 2. Material for Hot Piping: ASTM C 552, Type I cellular glass or water-repellent-treated, ASTM C 533, Type I calcium silicate.
 - 3. For Trapeze or Clamped System: Insert and shield cover entire circumference of pipe.
 - 4. For Clevis or Band Hanger: Insert and shield cover lower 180 degrees of pipe.

5.Insert Length: Extend 2 inches beyond sheet metal shield.Mark Twain School for the Talented and Gifted 23 05 29-2HANGERS AND SUPPORTS FOR HVACOrg #220EQUIPMENTDallas ISD Construction ServicesCSP 207459August 16, 2024

2.3 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, steel plates, shapes, and bars, black and galvanized.

PART 3 - PART 3 - EXECUTION

3.1 HANGER AND SUPPORT APPLICATIONS

- A. Specific hanger requirements are specified in Sections specifying equipment and systems.
- B. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Specification Sections.
- C. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
 - 1. Adjustable Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 1/2 to NPS 30.
 - Yoke-Type Pipe Clamps (MSS Type 2): For suspension of 120 to 450 deg F pipes, NPS 4 to NPS 16, requiring up to 4 inches of insulation.
 - Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes, NPS 3/4 to NPS 24, requiring clamp flexibility and up to 4 inches of insulation.
 - 4. Adjustable Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8.
 - Split Pipe-Ring with or without Turnbuckle-Adjustment Hangers (MSS Type 11): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 8.
 - 6. U-Bolts (MSS Type 24): For support of heavy pipe, NPS 1/2 to NPS 30.
 - Pipe Saddle Supports (MSS Type 36): For support of pipes, NPS 4 to NPS 36, with steel pipe base stanchion support and cast-iron floor flange.
 - 8. Pipe Stanchion Saddles (MSS Type 37): For support of pipes, NPS 4 to NPS 36, with steel pipe base stanchion support and castiron floor flange and with U-bolt to retain pipe.
 - 9. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-Type support for pipes, NPS 2-1/2 to NPS 36, if vertical adjustment is required, with steel pipe base stanchion support and cast-iron floor flange.

Mark Twain School for the Talented and Gifted 23 05 29-3 Org #220 Dallas ISD Construction Services HANGERS AND SUPPORTS FOR HVAC EQUIPMENT CSP 207459 August 16, 2024

- Single Pipe Rolls (MSS Type 41): For suspension of pipes, NPS 1 to NPS 30, from two rods if longitudinal movement caused by expansion and contraction might occur.
- 11. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes, NPS 2-1/2 to NPS 20, from single rod if horizontal movement caused by expansion and contraction might occur.
- Complete Pipe Rolls (MSS Type 44): For support of pipes, NPS
 to NPS 42, if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
- 13. Pipe Roll and Plate Units (MSS Type 45): For support of pipes, NPS 2 to NPS 24, if small horizontal movement caused by expansion and contraction might occur and vertical adjustment is not necessary.
- Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes, NPS 2 to NPS
 30, if vertical and lateral adjustment during installation might be required in addition to expansion and contraction.
- D. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
 - 1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 to NPS 20.
 - 2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers, NPS 3/4 to NPS 20, if longer ends are required for riser clamps.
- E. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
 - 1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
 - 2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
 - 3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
 - 4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
 - 5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.
- F. Building Attachments: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types: Mark Twain School for the Talented and Gifted 23 05 29-4 Org #220

Dallas ISD Construction Services

CSP 207459 August 16, 2024

- 1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
- 2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction to attach to top flange of structural shape.
- 3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
- 4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
- 5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
- 6. C-Clamps (MSS Type 23): For structural shapes.
- 7. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I- beams for heavy loads.
- 8. Malleable Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
- 9. Welded-Steel Brackets: For support of pipes from below or for suspending from above by using clip and rod. Use one of the following for indicated loads:
 - i. Light (MSS Type 31): 750 lb.

ii. Medium (MSS Type 32): 1500 lb. c. Heavy (MSS Type 33): 3000 lb.

10. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.

G. Saddles and Shields: Unless otherwise indicated and except as specified in piping system

Specification Sections, install the following types:

- 1. Steel Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
- 2. Protection Shields (MSS Type 40): Of length recommended by manufacturer to prevent crushing insulation.
- 3. Thermal-Hanger Shield Inserts: For supporting insulated pipe, 360-degree insert of high- density, 100-psi minimum compressive-strength, water-repellent-treated calcium silicate or cellular-glass pipe insulation, same thickness as adjoining insulation with vapor barrier and encased in 360-degree sheet metal shield.

Mark Twain School for the Talented and Gifted	23 05 29-5	HANGERS AND SUPPORTS FOR HVAC
Org #220		EQUIPMENT
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- H. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
 - 1. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
 - 2. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41 roll hanger with springs.

3.2 HANGER AND SUPPORT INSTALLATION

- A. Pipe Hanger and Support Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.
- B. Channel Support System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled channel systems.

1. Field assemble and install according to manufacturer's written instructions.

- C. Heavy-Duty Steel Trapeze Installation: Arrange for grouping of parallel runs of horizontal piping and support together on field-fabricated, heavy-duty trapezes.
 - 1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.
 - 2. Field fabricate from ASTM A 36/A 36M, steel shapes selected for loads being supported. Weld steel according to AWS D-1.1.
- D. Install building attachments within concrete slabs or attach to structural steel. Space attachments within maximum piping span length indicated in MSS SP-69. Install additional attachments at concentrated loads, including valves, flanges, guides, strainers, and expansion joints, and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
- E. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.
- F. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses will not be transmitted to connected equipment.
- G. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.9, "Building Services Piping," is not exceeded.
- H. Insulated Piping: Comply with the following:
 - 1. Install MSS SP-58, Type 39 protection saddles. Fill interior voids with insulation that matches adjoining insulation.

Mark Twain School for the Talented and Gifted	23 05 29-6	HANGERS AND SUPPORTS FOR HVAC
Org #220		EQUIPMENT
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- i. Option: Thermal-hanger shield inserts may be used.Include steel weight- distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
- 2. Shield Dimensions for Pipe: Not less than the following:
 - i. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
 - ii. NPS 4: 12 inches long and 0.06 inch thick.
 - iii. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
 - iv. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
 - v. NPS 16 to NPS 24: 24 inches long and 0.105 inch thick.
- 3. Pipes NPS 8 and Larger: Include wood inserts.
- 4. Insert Material: Length at least as long as protective shield.

5. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.3 EQUIPMENT SUPPORTS

- A. Fabricate structural-steel stands to suspend equipment from structure above or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment and make smooth bearing surface.

3.4 METAL FABRICATION

- A. Cut, drill, and fit miscellaneous metal fabrications for heavy-duty steel trapezes and equipment supports.
- B. Fit exposed connections together to form hairline joints. Field-weld connections that cannot be shop- welded because of shipping size limitations.
- C. Field Welding: Comply with AWS D1.1 procedures for shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work, and with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

3.5 ADJUSTING

Mark Twain School for the Talented and Gifted 23 05 29-7 Org #220 Dallas ISD Construction Services

HANGERS AND SUPPORTS FOR HVAC EQUIPMENT CSP 207459 August 16, 2024 A. Hanger Adjustment: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

3.6 PAINTING

A. Touching Up: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 23 05 29

Mark Twain School for the Talented and Gifted 23 05 29-8 Org #220 Dallas ISD Construction Services HANGERS AND SUPPORTS FOR HVAC EQUIPMENT CSP 207459 August 16, 2024

SECTION 23 05 53 MECHANICAL IDENTIFICATION

PART 1 GENERAL

1.1 **RELATED DOCUMENTS**

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following mechanical identification materials and their installation:
 - 1. Equipment nameplates.
 - 2. Equipment markers.
 - 3. Access panel and door markers.
 - 4. Pipe markers.
 - 5. Stencils.
 - 6. Valve tags.
 - 7. Valve schedules.
 - 8. Warning tags.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For color, letter style, and graphic representation required for each identification material and device.
- C. Valve numbering scheme.
- D. Valve Schedules: For each piping system. Furnish extra copies (in addition to mounted copies) to include in maintenance manuals.

1.4 **QUALITY ASSURANCE**

A. ASME Compliance: Comply with ASME A13.1, "Scheme for the Identification of Piping Systems," for letter size, length of color field, colors, and viewing angles of identification devices for piping.

1.5 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

Mark Twain School for the Talented and Gifted 23 05 53-1 Org #220 Dallas ISD Construction Services

- B. Coordinate installation of identifying devices with location of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 PRODUCTS

2.1 EQUIPMENT IDENTIFICATION DEVICES

- A. Equipment Nameplates: Metal, with data engraved or stamped, for permanent attachment on equipment.
 - 1. Data:
 - a. Manufacturer, product name, model number, and serial number.
 - b. Capacity, operating and power characteristics, and essential data.
 - 2. Location: Accessible and visible.
 - 3. Fasteners: As required to mount on equipment.
- B. Equipment Markers: ASTM D 709, Type I, cellulose, paperbase, phenolic-resin-laminate engraving stock; Grade ES-2. Fabricate in sizes required for message
 - 1. Terminology: Match schedules as closely as possible.
 - 2. Data:
 - a. Name and plannumber.
 - b. Equipment service.
 - c. Design capacity.
 - d. Other design parameters such as pressure drop, entering and leaving conditions, and speed.
 - 3. Size: 2-1/2 by 4 inches for control devices, dampers, and valves; 4-1/2 by 6 inches for equipment.
 - 4. Fasteners: Self-tapping, stainless-steel screws.
- C. Access Panel and Door Markers: 1/16-inch-thick, engraved laminated plastic, with abbreviated terms and numbers corresponding to identification. Provide 1/8-inch center hole for attachment.
 - 1. Fasteners: Self-tapping, stainless-steel screws.

2.2 **PIPING IDENTIFICATION DEVICES**

- A. Manufactured Pipe Markers, General: Preprinted, color-coded, with lettering indicating service, and showing direction offlow.
 - 1. Colors: Comply with ASME A13.1, unless otherwise indicated.

Mark Twain School for the Talented and Gifted Org #220	23 05 53-2	MECHANICAL IDENTIFICATION CSP 207459
Dallas ISD Construction Services		August 16, 2024

- 2. Lettering: Use piping system terms indicated and abbreviate only as necessary for each application length.
- 3. Pipes with OD, Including Insulation, Less Than 6 Inches: Full-band pipe markers extending 360 degrees around pipe at each location.
- 4. Pipes with OD, Including Insulation, 6 Inches and Larger: Either full-band or strip-type pipe markers at least three times letter height and of length required for label.
- 5. Arrows: Integral with piping system service lettering to accommodate both directions; or as separate unit on each pipe marker to indicate direction of flow.
- B. Pretensioned Pipe Markers: Precoiled semirigid plastic formed to cover full circumference of pipe and to attach to pipe without adhesive.

2.3 STENCILS

- A. Stencils: Prepared with letter sizes according to ASME A13.1 for piping; minimum letter height of 1-1/4 inches for ducts; and minimum letter height of 3/4 inch for access panel and door markers, equipment markers, equipment signs, and similar operational instructions.
 - 1. Stencil Material: Metal or fiberboard.
 - 2. Stencil Paint: Exterior, gloss, alkyd enamel or acrylic enamel, black, unless otherwise indicated. Paint may be in pressurized spray-can form.
 - 3. Identification Paint: Exterior, alkyd enamel or acrylic enamel in colors according to ASME A13.1, unless otherwise indicated.

2.4 VALVE TAGS

- A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2- inch numbers, with numbering scheme approved by Architect or Engineer. Provide 5/32-inch hole for fastener.
 - 1. Material: 0.032-inch- thick brass or aluminum.
 - 2. Valve-Tag Fasteners: Brass wire-link or beaded chain; or S-hook.

2.5 VALVE SCHEDULES

A. Valve Schedules: For each piping system, on standard-size bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal- operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

Mark Twain School for the Talented and Gifted 23 05 53-3 Org #220 Dallas ISD Construction Services

- 1. Valve-Schedule Frames: Glazed display frame for removable mounting on masonry walls for each page of valve schedule. Include mounting screws.
- 2. Frame: Extruded aluminum.
- 3. Glazing: ASTM C 1036, Type I, Class 1, Glazing Quality B, 2.5-mm, single-thickness glass.

2.6 WARNING TAGS

- A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags; of plasticized card stock with matte finish suitable for writing.
 - 1. Size: 3 by 5-1/4 inches minimum.
 - 2. Fasteners: Brass grommet and wire.
 - 3. Nomenclature: Large-size primary caption such as DANGER, CAUTION, or DO NOT OPERATE.
 - 4. Color: Yellow background with black lettering.

PART 3 EXECUTION

3.1 APPLICATIONS, GENERAL

A. A. Products specified are for applications referenced in other Division 15 Sections. If more than single- type material, device, or label is specified for listed applications, selection is Installer's option.

3.2 EQUIPMENT IDENTIFICATION

- A. Install and permanently fasten equipment nameplates on each major item of mechanical equipment that does not have nameplate or has nameplate that is damaged or located where not easily visible. Locate nameplates where accessible and visible. Include nameplates for the following general categories of equipment:
 - 1. Fuel-burning units, including boilers, furnaces, heaters, stills, and absorption units.
 - 2. Pumps, compressors, chillers, condensers, and similar motor-driven units.
 - 3. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
 - 4. Fans, blowers, primary balancing dampers, and mixing boxes.
 - 5. Packaged HVAC central-station and zone-type units.
- B. Install equipment markers with mechanical fasteners on or near each major item of mechanical equipment. Data required for markers may be included on signs, and markers may be omitted if both are indicated.

- 1. Letter Size: Minimum 1/4 inch for name of units if viewing distance is less than 24inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- 2. Data: Distinguish among multiple units, indicate operational requirements, indicate safety and emergency precautions, warn of hazards and improper operations, and identify units.
- 3. Locate markers where accessible and visible. Include markers for the following general categories of equipment:
 - a. Main control and operating valves, including safety devices and hazardous units such as gas outlets.
 - b. Fire department hose valves and hose stations.
 - c. Meters, gages, thermometers, and similar units.
 - d. Fuel-burning units, including boilers, furnaces, heaters, stills, and absorption units.
 - e. Pumps, compressors, chillers, condensers, and similar motor-driven units.
 - f. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
 - g. Fans, blowers, primary balancing dampers, and mixing boxes.
 - h. Packaged HVAC central-station and zone-type units.
 - i. Tanks and pressure vessels.
 - j. Strainers, filters, humidifiers, water-treatment systems, and similar equipment.
- C. Stenciled Equipment Marker Option: Stenciled markers may be provided instead of laminated plastic equipment markers, at Installer's option, if lettering larger than 1 inch high is needed for proper identification because of distance from normal location of required identification.
- D. Install access panel markers with screws on equipment access panels.
- E. Install laminated tag below ceiling identifying any equipment that is located above the ceiling.

3.3 **PIPING IDENTIFICATION**

- A. Install manufactured pipe markers indicating service on each piping system. Install with flow indication arrows showing direction of flow.
 - 1. Pipes with OD, Including Insulation, Less Than 6 Inches: Pretensioned pipe markers. Use size to ensure a tightfit.

Mark Twain School for the Talented and Gifted 23 05 53-5 Org #220 Dallas ISD Construction Services

- 2. Pipes with OD, Including Insulation, 6 Inches and Larger: Shaped pipe markers. Use size to match pipe and secure with fasteners.
- B. Stenciled Pipe Marker Option: Stenciled markers may be provided instead of manufactured pipe markers, at Installer's option. Install stenciled pipe markers with painted, color-coded bands or rectangles complying with ASME A13.1 on each piping system.
 - 1. Identification Paint: Use for contrasting background.
 - 2. Stencil Paint: Use for pipe marking.
- C. Locate pipe markers and color bands where piping is exposed in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior nonconcealed locations as follows:
 - 1. Near each valve and control device.
 - 2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
 - 3. Near penetrations through walls, floors, ceilings, and non-accessible enclosures.
 - 4. At access doors, manholes, and similar access points that permit view of concealed piping.
 - 5. Near major equipment items and other points of origination and termination.
 - 6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
 - 7. On piping above removable acoustical ceilings. Omit intermediately spaced markers.

3.4 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-

fabricated equipment units; plumbing fixture supply stops; shutoff valves; faucets; convenience and lawn-watering hose connections; and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

- B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following:
 - 1. Valve-Tag Size, shape, and color:

Mark Twain School for the Talented and Gifted 23 05 53-6 Org #220 Dallas ISD Construction Services

a. 1-1/2 inches, round, natural color.

3.5 VALVE-SCHEDULE INSTALLATION

A. Mount valve schedule on wall in accessible location in each major equipment room.

3.6 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

3.7 ADJUSTING

A. Relocate mechanical identification materials and devices that have become visually blocked by other work.

3.8 CLEANING

A. Clean faces of mechanical identification devices and glass frames of valve schedules.

END OF SECTION 23 05 53

SECTION 23 07 13 DUCT INSULATION

1. GENERAL

1.1 SCOPE

- a. This section specifies the furnishing and installation of external insulation for air ducts, both concealed and exposed.
- b. Exposed ducts include those not concealed by ceilings or chases.
- c. Ducts inside mechanical rooms are to be insulated as exposed ducts. Ducts located on mechanical mezzanines are to be insulated as concealed.

1.2 APPLICABLE PROVISIONS

a. Refer to Section 23 0713, Common Work Results for HVAC Equipment.

1.3 SUBMITTALS

a. Submit manufacturer's technical product data for insulation products. Include sufficient data to substantiate that materials conform to the requirements of this section.

1.4 DELIVERY, STORAGE, AND HANDLING

- a. Deliver insulation products properly packaged in factory-fabricated containers.
- b. Store in a clean, dry space in original containers. Protect products from weather, damaging fumes, construction debris and traffic.
- c. Handle carefully to avoid damaging insulation products.

2. PRODUCTS

2.1 INSULATION

- a. Duct Wrap. Furnish flexible fiberglass insulation with factory-applied, reinforced, foil-scrim-kraft (FSK) facing, minimum installed thermal resistance of 5.2 "R"-value at 75°F, 2 in. thick, ³/₄ lb. per cu. ft. (pcf) density insulation, which complies with specification HH-B-100B, Type II. Schuller Microlite, Knauf Duct Wrap, or equivalent.
- b. Semi-rigid Duct Board. Furnish flexible, semi-rigid fiberglass insulation with glass mat facing, maximum thermal conductivity "K" factor of 0.26 at 75°F, 1½ in. thick, 1.6 pcf density insulation. Knauf Pipe and Tank Insulation or equivalent.
- c. Rigid Duct Board. Furnish rigid board duct fiberglass insulation with factory-applied, reinforced, foil-scrim-kraft (FSK) facing, minimum thermal resistance of 6 "R"-Value at

Mark Twain School for the Talented and Gifted 23 07 13-1 Org #220 Dallas ISD Construction Services DUCT INSULATION CSP 207459 August 16, 2024 75°F, 1-1/2 in. thick, 3 pcf density insulation. Knauf Insulation Board or equivalent.

d. Insulation Blanket. Furnish flexible fiberglass insulation, 0.6 pcf density, 1½ in. thick, unfaced. Schuller Microlite, Knauf Duct Wrap, or equivalent.

2.2 COATING AND ADHESIVE

- a. Coating (Indoors). Furnish Benjamin Foster 30-35 vapor barrier coating or equivalent. The use of foil faced adhesive backed tape is **not** acceptable.
- b. Coating (Outdoors). Furnish Benjamin Foster Selfas GPM 35-00, white.
- c. Adhesive. Furnish Benjamin Foster 85-20 vapor barrier adhesive or equivalent. The use of foil faced adhesive backed tape is <u>not</u> acceptable.

3. EXECUTION

3.1 GENERAL

a. Defer insulation of ductwork requiring pressure testing until the testing has been successfully completed.

3.2 SCOPE

- a. Supply ductwork. Insulate. This includes pre treated outside air ductwork.
- b. Return ductwork. Insulate where installed below a roof or exposed to outside temperatures. Insulate all return air ductwork on mezzanines and within chases leading and open to mezzanines.
- c. Exhaust or heat recovery return ductwork. Do not insulate.
- d. Outside air ductwork. Insulate.

3.3 FIRE SAFETY REQUIREMENTS

a. Do not extend duct coverings through walls or floors required to be firestopped or required to have a fire resistance rating. Interrupt duct coverings in the immediate vicinity of heat sources such as electric resistance or fuel-burning heaters.

3.4 CONCEALED DUCT, ROUND OR RECTANGULAR

- a. Install duct wrap insulation wrapped tightly on the ductwork, with all circumferential joints butted and longitudinal joints overlapped a minimum of 2 in. Adhere insulation to ductwork with 4 in. wide strips of adhesive at 8 in. on center. In addition, secure insulation to the bottom of rectangular ductwork over 24 in. wide by the use of mechanical fasteners at no more than 18 in. on center.
- b. On circumferential joints, staple the 2 in. flange on the facing with $\frac{9}{16}$ in. flare-door

Mark Twain School for the Talented and Gifted 23 07 13-2DUCT INSULATIONOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

staples on 6 in. centers, and cover with a minimum 3 in. wide strip of glass fabric and coating, or a 3 in. wide strip of 8-ounce canvas adhered with adhesive. Cover all seams, joints, pin penetrations and other breaks with coating reinforced with glass fabric. The use of foil faced adhesive backed tape is <u>not</u> acceptable. <u>At all standing seams</u> furnish and install an additional layer of insulation over the first layer of insulation. Refer to paragraph 3.8 below.

3.5 EXPOSED ROUND DUCT

a. Apply semi-rigid duct board insulation to dry duct. Firmly butt all joints together. Seal longitudinal laps of factory-applied vapor barrier jacket with adhesive. Cover butt joints with a 3 in. wide strip of factory-supplied vapor barrier jacket adhered with adhesive. Do not use adhesive systems employing release paper. The use of foil faced adhesive backed tape is **not** acceptable.

3.6 EXPOSED RECTANGULAR DUCT

- a. Use rigid duct board insulation.
- b. Fill and point up all joints, perforations and exposed edges with coating reinforced with glass fabric or a 3 in. wide strip of 8-ounce canvas adhered with adhesive. Securely fasten insulation to metal surface with adhesive and mechanical fasteners on 12 in. centers. Use sheet metal screws and discs or other approved fasteners. The use of foil faced adhesive backed tape is <u>not</u> acceptable.

3.7 RECTANGULAR DUCTWORK EXPOSED TO WEATHER

a. Insulate the ductwork with rigid duct board insulation, the same as for exposed rectangular ductwork indoors, except add an additional weatherproof outdoor sleave made of aluminum or stainless steel.

3.8 STANDING SEAMS, DAMPER OPERATORS, AND STIFFENERS

a. Insulate standing seams, damper operators, and stiffeners which protrude through the insulation with insulation blanket, covered with 8-ounce canvas coated with vapor barrier coating. Install insulation to allow full access to and adjustment of damper operators. The use of foil faced adhesive backed tape is <u>not</u> acceptable.

END OF SECTION 23 07 13

SECTION 23 08 00 COMMISSIONING OF HVAC

PART 1 GENERAL

- 1. Architect is to include the following requirements of the Contractor at a minimum in the Contract Documents for the mechanical contractor (MC) and mechanical sub-contractors:
 - Provide all personnel, tools, materials, and equipment to support the commissioning process. Facilitate the coordination of the commissioning work by the CxP and

incorporate commissioning activities into the master schedule.

b. Incorporate all commissioning related activities into the project schedule, ensuring that Cx

activities do not delay project completion.

- c. Notify the Owner and the CxP in writing that equipment and systems are ready for functional testing.
- d. Perform equipment startups using authorized manufacturing representatives.
- e. Provide written documentation to the CxP that equipment and systems are fully operational

and ready to be functionally performance tested.

- Perform commissioning tests at the direction of the CxP, including change of season
 - testing.
- g. Attend construction phase commissioning coordination meetings.
- h. Provide qualified personnel for participation in commissioning tests.
- i. Provide equipment, materials, and labor necessary to correct deficiencies found during the

commissioning process.

- j. Attend Testing, Adjusting and Balancing (TAB) review and coordination meetings.
- k. Participate in HVAC systems, assemblies, equipment, and component maintenance

orientations and inspections as directed by the CxP.

- I. Provide information requested by the CxP for commissioning documentation and testing.
- m. Perform all Quality Control functions to ensure equipment and systems are installed

properly. Ensure equipment and systems are brought to a state of readiness and full

functionality prior to commencing the commissioning functional performance testing processes.

n. Provide measuring instruments and HVAC control personnel who are to operate the HVAC

controls during the functional performance Test phases.

- o. Provide qualified personnel for participation in Commissioning tests.
- p. Provide a representative to attend end of warranty testing.
- 2. Commissioning Services Provider (CxP) Requirements: Refer to Section 01 91 00.

END OF SECTION

23 09 00 INSTRUMENTATION AND CONTROL

- 1. Keep control systems and strategies as simple as possible to minimize first cost, improve reliability, and simplify operation. More sophisticated control strategies, shown to save energy or reduce life cycle costs, should be considered but only applied where not detrimental to overall system reliability and maintainability.
- 2. Control architecture
 - 2.1. The building automation system (BAS) consists of field controllers that meet the DISD controls master specification and a Tridium Java Application Control Engine (JACE) controller(s) for integration of field controllers and web-based interface with DISD intranet, or through the internet with a VPN connection.
 - 2.2. The JACE controller will provide programming, scheduling, graphics and monitoring of the HVAC systems. The JACE shall be accessible from any computer on the District's intranet or through the internet with a VPN connection.
 - 2.3. The various control systems at each campus should be identified to determine if a new FMCS/CMCS should be installed or if the existing system can be expanded. The goal is to limit the number of different control systems at a campus.
 - 2.4. Where a JACE building controller is present, the project should expand, or if necessary, provide an additional JACE controller to incorporate and integrate the new field controllers installed in the project.
 - 2.5. The JACE controller will accept LON-based data from the field controller and other proprietary BMCS components at the campus depending on the scope of work.
 - 2.6. All Field controllers (Application Specific Controllers (ASCs) and programmable controllers) shall be Distech or Honeywell and shall be provided by the same contractor that provides the JACE building controller. (Note in construction documents)
 - 2.7. All controllers used shall be LonMark certified devices.
 - 2.8. Include controllers, sensors, actuators, etc. as required for a complete operational system.
- 3. The Facility Management Control System (FMCS) shall be designed in accordance with the following:

3.1. Basic control strategies that are simple in design to allow for ease of maintenance

and long term reliability. All strategies that differ from the master specification shall be approved in writing by the District.

3.2. In accordance with EIA Standard 709.1, LonTalk Protocol for communication between controllers and with the JACE controller.

INSTRUMENTATION AND CONTROL CSP 207459 August 16, 2024

- 3.3. Niagara Framework software shall be used for all programming and network management.
- 4. The FMCS shall include the following programs at a minimum:
 - 4.1. Time of Day Scheduling All equipment shall be operated based on a time schedule programmed through the FMCS central clock system.
 - 4.2. Holiday Scheduling Systems shall be programmed to operate on the night schedule during holidays and weekends. Temporary scheduling shall be available on the JACE scheduler.
 - 4.3. Optimum Start/Stop Based on measurement of indoor and outdoor temperatures and historical data logged by the energy management control system, the optimum start/stop program will calculate the lead time to turn equipment on/off to optimize run times while maintaining the proper temperature during occupancy.
 - 4.4. Night Setback/Setup Maintain a minimum unoccupied building temperature during the heating season and a maximum temperature during the cooling season by enabling the required systems. Outdoor air dampers shall remain closed during unoccupied operation of equipment.
 - 4.5. Packaged Rooftops and Split Systems Single zone Packaged Rooftop Units and split systems of all sizes shall be controlled by a DDC controller and sensor with ability for local occupancy override. Unit sensor shall have LCD display with local occupancy override and temperature override capabilities..
 - 4.6. Chilled Water Plants The BMCS shall enable/disable and monitor freeze protection on the chiller(s). The chiller(s) shall control the functions of the associated chilled water pumps, condenser water pumps and cooling tower fans.
 - 4.7. Cooling Towers The cooling tower fans shall be enabled/disabled through the chillers control panel and not by the BMCS.
 - 4.8. Exhaust Fan Control Only exhaust fans that are associated with the operation of the HVAC system (i.e. relief fans, crawlspace fans, etc.) shall be controlled by the BMCS. All other fans shall be independently controlled.

5. All monitored points provided in the control system shall comply with the District's Master

Specification and be labeled according to the specified naming convention.

- 6. FMCS submittals shall include the following:
 - 6.1. Control drawings with a clearly defined symbols legend
 - 6.2. Schematic drawing for each type of system that is being controlled
 - 6.3. Full Points List detailing and defining all required points
 - 6.4. Software license for network management tool

Mark Twain School for the Talented and Gifted 23 09 00-2INSTRUMENTATION AND CONTROLOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

- 6.5. Matrix with VAV box count and list of major equipment
- 7. The sequences of operation shall include, as a minimum, the following items:
 - 7.1. Consistency with the District's current Energy Conservation Plan
 - 7.2. All interactions and interlocks with other related systems
 - 7.3. Detailed delineation of control between any packaged controls and the building automation system, listing what points the FMCS monitors only and what points are controlled and adjusted by the FMCS
 - 7.4. Written sequences of control for packaged controlled equipment. (Equipment manufacturers' stock sequences may be included, but detailed description will be required)
 - 7.5. Sequences for start-up, warm-up, occupied, and unoccupied periods
 - 7.6. Capacity control and equipment staging sequences
 - 7.7. Temperature and pressure control
 - 7.8. Detailed description of all control strategies such as economizer, demand limiting, hot water reset, etc.
 - 7.9. Sequences for alarms and emergency procedures
 - 7.10. Recommended values for all adjustable settings, set-points, and parameters that are to be set or adjusted by operating staff
 - 7.11. All other control values or settings that will be used for testing and/or operating equipment
- 8. In new construction and major renovations, provide temperature sensors in each classroom for VAV boxes or geothermal heat pump units.
- 9. For building additions/renovations, consider upgrading existing controls and integrating them with a JACE controller. On a case-by-case basis projects shall be considered for implementation of a FMCS system. Typically a major central plant upgrade or replacement of more than 50% of air handlers and air distribution systems would qualify for FMCS implementation. The associated parts of HVAC systems should also be considered for DDC replacement (i.e. when replacing a VAV air handler, the VAV boxes should be addressed as well.)
- 10. DISD master controls specification is a base document which the Architect is required to modify for project specific use. Sequences of operation shall spell out in detail the start-up, shutdown, normal and emergency operating modes, interlocks, safeties and manual/automatic resets for each system. The Specification shall also clearly differentiate between controllers and control sequences furnished and implemented via factory furnished assemblies and those accomplished via the building control network. Roles and responsibilities of the various trades as related to the controls systems and their interfaces shall be clearly defined.
- 11. All database files and files necessary for system access and troubleshooting, including JACE station backup files, shall be loaded onto a USB drive and stored within the building controller enclosure.

Mark Twain School for the Talented and Gifted 23 09 00-3 Org #220 Dallas ISD Construction Services INSTRUMENTATION AND CONTROL CSP 207459 August 16, 2024

- 12. All controller nodes within LNS database files or JACE station files shall contain the corresponding room number for which they serve. This information should be visible in the navigation tree.
- 13. Thermostats in gyms shall have a protective cover
- 14. Where existing equipment (e.g. AHU) receives a new controller, the new controller must be able to communicate with existing equipment controllers (e.g. VAV boxes)

SECTION 232113 - HYDRONIC PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Copper tube and fittings.
 - 2. Steel pipe and fittings.
 - 3. Stainless steel pipe and fittings.
 - 4. Plastic pipe and fittings.
 - 5. Fiberglass pipe and fittings.
 - 6. Piping joining materials.
 - 7. Transition fittings.
 - 8. Dielectric fittings.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of the following:
 - 1. Pipe and tube.
 - 2. Fittings.
 - 3. Joining materials.
 - 4. Transition fittings.
- B. Welding certificates.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Installers of Pressure-Sealed Joints: Installers are to be certified by pressure-seal joint manufacturer as having been trained and qualified to join piping with pressure-seal pipe couplings and fittings.
- B. Steel Support Welding: Qualify procedures and personnel in accordance with AWS D1.1/D1.1M.
- C. Pipe Welding: Qualify procedures and operators in accordance with ASME Boiler and Pressure Vessel Code: Section IX.
 - 1. Comply with ASME B31.9 for materials, products, and installation.
 - 2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.
PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Hydronic piping components and installation are to be capable of withstanding the following minimum working pressures and temperatures unless otherwise indicated:
 - 1. Hot-Water Heating Piping: **100 psig** at **200 deg F**.
 - 2. Chilled-Water Piping: 150 psig at 73 deg F.
 - 3. Makeup-Water Piping: 80 psig at 73 deg F.
 - 4. Condensate-Drain Piping: **150 deg F.**
 - 5. Air-Vent Piping: **180 deg F**.
 - 6. Pressure-Relief-Valve-Inlet and -Outlet Piping: Equal to the pressure of the piping system to which it is attached.
- 2.2 COPPER TUBE AND FITTINGS (1/2-inch through 2-inch piping)
 - A. Hard-Drawn Copper Tube: **Type L, ASTM B88, ASTM 536-84.** Do not use for pipe sizes greater than NPS 2".
 - B. Wrought-Copper, Solder-Joint Fittings: ASME B16.22 pressure fittings. Do not use solder joints on pipe sizes greater than NPS 2".
- 2.3 STEEL PIPE AND FITTINGS (2-1/2-inch and larger piping)
 - A. Steel Pipe: ASTM A53/A53M black steel with plain ends; welded and seamless, Grade B, ASTM 536-84.
 - B. Wrought-Steel Long-Turn Fittings: ASTM A234/A234M; wall thickness to match adjoining pipe.
 - C. Cast- and Forged-Steel Flanges and Flanged Fittings: ASME B16.5, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
 - 1. Material Group: 1.1.
 - 2. End Connections: Butt welding.
 - 3. Facings: Raised face.
 - D. Steel Pipe Nipples: ASTM A733, made of same materials and wall thicknesses as pipe in which they are installed.

2.4 TRANSITION FITTINGS

- A. General Requirements:
 - 1. Same size as pipes to be joined.
 - 2. Pressure rating at least equal to pipes to be joined.
 - 3. End connections compatible with pipes to be joined.

B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

2.5 DIELECTRIC FITTINGS

- A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.
- B. Dielectric Unions:
 - 1. Source Limitations: Obtain dielectric unions from single manufacturer.
 - 2. Description:
 - a. Standard: ASSE 1079.
 - b. End Connections: Solder-joint copper alloy and threaded ferrous.
- C. Dielectric Flanges:
 - 1. Source Limitations: Obtain dielectric flanges from single manufacturer.
 - 2. Description:
 - a. Standard: ASSE 1079.
 - b. Factory-fabricated, bolted, companion-flange assembly.
 - c. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solderjoint copper alloy and threaded ferrous.
- D. Dielectric-Flange Insulating Kits:
 - 1. Source Limitations: Obtain dielectric-flange insulating kits from single manufacturer.
 - 2. Description:
 - a. Nonconducting materials for field assembly of companion flanges.
 - b. Gasket: Neoprene or phenolic.
 - c. Bolt Sleeves: Phenolic or polyethylene.
 - d. Washers: Phenolic with steel backing washers.
- E. Dielectric Nipples:
 - 1. Source Limitations: Obtain dielectric nipples from single manufacturer.
 - 2. Description:
 - a. Standard: IAPMO PS 66.
 - b. Electroplated steel nipple, complying with ASTM F1545.
 - c. End Connections: Male threaded or grooved.
 - d. Lining: Inert and noncorrosive, propylene.

PART 3 - EXECUTION

3.1 INSTALLATION OF PIPING

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements are used to size pipe and calculate friction loss,

expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping at indicated slopes.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Install piping to allow application of insulation.
- J. Select system components with pressure rating equal to or greater than system operating pressure.
- K. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
- L. Install drains, consisting of a tee fitting, NPS 3/4 ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.
- M. Install piping at a uniform grade of 0.2 percent upward in direction of flow.
- N. Reduce pipe sizes using eccentric reducer fitting installed with level side up.
- O. Install branch connections to mains using tee fittings in main pipe, with the branch connected to the bottom of the main pipe. For up-feed risers, connect the branch to the top of the main pipe.
- P. Install air vents and pressure-relief valves in accordance with manufacturer recommendations.
- Q. Install unions in piping, **NPS 2** and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.
- R. Install flanges in piping, NPS 2-1/2 and larger, at final connections of equipment and elsewhere as indicated.
- S. Install shutoff valve immediately upstream of each dielectric fitting.
- T. Install sleeves for piping penetrations of walls, ceilings, and floors.
- U. Install sleeve seals for piping penetrations of concrete walls and slabs.
- V. Install escutcheons for piping penetrations of walls, ceilings, and floors.

3.2 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Soldered Joints: Apply ASTM B813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints in accordance with ASTM B828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B32.
- D. Welded Joints: Construct joints in accordance with AWS D10.12M/D10.12, using qualified processes and welding operators in accordance with "Quality Assurance" Article.
- E. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- F. Plain-End Mechanical-Coupled Joints: Prepare, assemble, and test joints in accordance with manufacturer's written installation instructions.

3.3 INSTALLATION OF DIELECTRIC FITTINGS

- A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
- B. Dielectric Fittings for NPS 2 (DN 50) and Smaller: Use dielectric unions.
- C. Dielectric Fittings for NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Use dielectric flanges.
- D. Dielectric Fittings for NPS 5 (DN 125) and Larger: Use dielectric flange kits.

3.4 INSTALLATION OF HANGERS AND SUPPORTS

- A. Comply with requirements in Section 230529 "Hangers and Supports for HVAC Piping and Equipment" for hangers, supports, and anchor devices.
- B. Install hangers for **copper tubing and steel piping**, with maximum horizontal spacing and minimum rod diameters, to comply with MSS SP-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- C. Support horizontal piping within **12 inches** of each fitting and coupling.
- D. Support vertical runs of **copper tubing and steel piping** to comply with MSS SP-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

3.5 TERMINAL EQUIPMENT CONNECTIONS

- A. Sizes for supply and return piping connections are to be the same as or larger than equipment connections.
- B. Install control valves in accessible locations close to connected equipment.

- C. Install bypass piping with globe valve around control valve. If parallel control valves are installed, only one bypass is required.
- D. Install ports for pressure gauges and thermometers at coil inlet and outlet connections.

3.6 IDENTIFICATION

A. Identify system components. Comply with requirements for identification materials and installation in Section 230553 "Mechanical Identification."

3.7 SYSTEM STARTUP

- A. Perform the following before operating the system:
 - 1. Open manual valves fully.
 - 2. Inspect pumps for proper rotation.
 - 3. Set makeup pressure-reducing valves for required system pressure.
 - 4. Inspect air vents at high points of system and determine if all are installed and operating freely (automatic type), or bleed air completely (manual type).
 - 5. Set temperature controls so all coils are calling for full flow.
 - 6. Inspect and set operating temperatures of hydronic equipment, such as boilers, chillers, cooling towers, to specified values.
 - 7. Verify lubrication of motors and bearings.

3.8 FIELD QUALITY CONTROL

- A. Prepare hydronic piping in accordance with ASME B31.9 and as follows:
 - 1. Leave joints, including welds, uninsulated and exposed for examination during test.
 - 2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
 - 3. Flush hydronic piping systems with clean water; then remove and clean or replace strainer screens.
 - 4. Isolate equipment from piping. If a valve is used to isolate equipment, its closure is to be capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment.
 - 5. Install pressure-relief valve, set at a pressure no more than one-third higher than test pressure, to protect against damage by expanding liquid or other source of overpressure during test.
- B. Perform the following tests on hydronic piping:
 - 1. Use ambient-temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
 - 2. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid.
 - 3. Isolate expansion tanks and determine that hydronic system is full of water.

- 4. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure. Test pressure is not to exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times the "SE" value in Appendix A in ASME B31.9.
- 5. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
- 6. Prepare written report of testing.

END OF SECTION 232113

SECTION 23 21 23 HYDRONIC PUMPS

- 1. General
 - 1.1. Related Documents
 - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
 - 1.2. Summary
 - A. This Section includes the following categories of hydronic pumps for hydronic systems:
 - I. In-line circulators.
 - II. Vertical in-line pumps.
 - III. End-suction pumps.
 - IV. Automatic Condensate pump units
 - B. Related Sections include the following:

I. Division 23 Section "Motors" for general motor requirements.

- II. Division 23 for inertia pads, isolation pads, spring supports, and spring hangers.
- 1.3. Submittals
 - A. Product Data: Include certified performance curves and rated capacities; shipping, installed, and operating weights; furnished specialties; final impeller dimensions; and accessories for each Type of product indicated. Indicate pump's operating point on curves.
 - B. Shop Drawings: Show pump layout and connections. Include Setting Drawings with templates for installing foundation and anchor bolts and other anchorages.
 - I. Wiring Diagrams: Detail wiring for power, signal, and control systems and differentiate between manufacturer-installed and field-installed wiring.
 - C. Maintenance Data: For pumps to include in maintenance manuals specified in Division 1.
- 1.4. Quality Assurance
 - A. UL Compliance: Fabricate and label pumps to comply with UL 778, "Motor- Operated Water Pumps," for construction requirements.
 - B. Product Options: Drawings indicate size, profiles, connections, and dimensional requirements of pumps and are based on the specific types and models indicated. Subject to these specification requirements, other manufacturers' pumps with equal

performance characteristics may be considered. Any additional cost required due to the contractors use of an alternate manufacturer shall be the contractor's responsibility and there shall be no additional cost to the owner.

- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.
- 1.5. Delivery, Storage, And Handling
 - A. Manufacturer's Preparation for Shipping: Clean flanges and exposed machined metal surfaces and treat with anticorrosion compound after assembly and testing. Protect flanges, pipe openings, and nozzles with wooden flange covers or with screwed-in plugs.
 - B. Store pumps in dry location.

C. Retain protective covers for flanges and protective coatings during storage.

- D. Protect bearings and couplings against damage from sand, grit, and other foreign matter.
- E. Comply with pump manufacturer's written rigging instructions.
- 1.6. Coordination
 - A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases.
- 1.7. Extra Materials
 - A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - I. Mechanical Seals: One mechanical seal for each pump.
- 2. Products
 - 2.1. Manufacturers
 - A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - I. In-Line Circulators:
 - a. Armstrong
 - b. Bell & Gossett
 - c.

Grundfos/PACO

- II. Vertical In-Line Pumps:
 - a. Armstrong
 - b. Bell & Gossett

Mark Twain School for the Talented and Gifted 23 21 23-2 Org #220 Dallas ISD Construction Services

- c. Goulds
- d. Grundfos/PACO
- e. Wieman
- f. Peerless
- III. End-Suction Pumps:
 - a. Armstrong
 - b. Bell &

Gossett c.

Weiman

d. PGrundfos/PACO

e.

Peerless

- IV. Automatic Condensate Pumps:
 - a. Armstrong
 - b. Bell & Gossett
 - c. Grundfos/PACO
 - d. Peerless
- V. Feed Water Pumps (Modification of steam systems only)
 - a. Armstrong
 - b. Thrush Preferred
 - c. Other manufactures with approval accepted.
- 2.2. General Pump Requirements
 - A. Pump Units: Factory assembled and tested.
 - B. Motors: Include built-in, thermal-overload protection and greaselubricated ball bearings. Select each motor to be non-overloading over full range of pump performance curve.
 - I. Minimum efficiency as indicated according to IEEE 112, Test Method B. Include motors with higher efficiency than "average standard industry motors" according to IEEE 112, Test Method B.
- 2.3. In-Line Circulators
 - A. Description: Horizontal, in-line, centrifugal, single-stage, bronzefitted, radially split case design; rated for 125-psig minimum working pressure and a continuous water temperature of 225 deg F.
 - I. Casing: Cast iron, with threaded companion flanges for piping connections, and threaded gage tappings at inlet and outlet connections.

- a. Connection Option: Unions at connections for casings that are not available with threaded companion flanges.
- II. Impeller: ASTM B 584, cast bronze, statically and dynamically balanced, closed, overhung, single suction, and keyed to shaft.
- III. Impeller: ASTM B 36/B 36M, rolled-temper-brass fabrication, statically and dynamically balanced, closed, overhung, single suction, and keyed to shaft.

IV. Shaft and Sleeve: Steel shaft with oil-lubricated copper sleeve.

- V. Seals: Mechanical type. Include carbon-steel rotating ring, stainless-steel spring, ceramic seat, and flexible bellows and gasket.
- VI. Pump Bearings: Oil-lubricated, bronze journal and thrust
- type. VII. Motor Bearings: Oil-lubricated, sleeve type.
- VIII. Coupling: Flexible, capable of absorbing torsional vibration and shaft misalignment.
- IX. Motor: Resiliently mounted to pump casing.
- 2.4. Compact In-Line Circulators
 - A. Description: Water cooled, horizontal, in-line, compact design, seal-less, centrifugal, and single stage. Include pump and motor assembled on a common shaft in hermetically sealed unit, without stuffing boxes or mechanical seals. Include lubrication of sleeve bearing and cooling of motor by circulating pumped liquid through motor section, and isolation of motor section from motor-stator windings by corrosion-resistant, nonmagnetic, alloy liner. Include Design rated for 125-psig minimum working pressure and a continuous water temperature of 225 deg F.
 - B. Description: Cartridge type, horizontal, in-line, compact, seal-less, centrifugal, and single stage.
 - Include pump and motor assembled on a common shaft in cartridgetype, hermetically sealed unit, without stuffing boxes or mechanical seals. Include isolation of motor section from motor- stator windings by corrosion-resistant, nonmagnetic, alloy liner. Include Design rated for 125- psig minimum working pressure and a continuous water temperature of 225 deg F.
 - II. Casing: Cast bronze or cast iron, with stainless-steel liner, static O- ring seal to separate motor section from motor stator, and flanged piping connections.

- III. Impeller: Overhung, single suction, closed or open, nonmetallic.
- IV. Shaft and Sleeve: Stainless-steel shaft with carbonsteel sleeve.
- V. Motor: Single speed.
- 2.5. Vertical In-Line Pumps
 - A. Description: Vertical, in-line, centrifugal, flexible-coupled, singlestage, radially split case design. Include vertical-mounting, bronzefitted Design and mechanical seals rate for 125- psig minimum working pressure and a continuous water temperature of 225 deg F.
 - I. Casing: Cast iron, with threaded companion flanges for piping connections smaller than NPS 3, drain plug at low point of volute, and threaded gage tappings at inlet and outlet connections.
 - II. Impeller: ASTM B 584, cast bronze, statically and dynamically balanced, closed, overhung, single suction, and keyed to shaft.
 - III. Wear Rings: Replaceable, bronze casing ring.
 - IV. Shaft and Sleeve: Ground and polished stainless-steel shaft with bronze sleeve.
 - V. Shaft: Ground and polished stainless-steel shaft with axially split spacer coupling.
 - VI. Seals: Mechanical, with carbon-steel rotating ring, stainless-steel spring, ceramic seat, and flexible bellows and gasket.
 - VII. Seals: Stuffing box, with at least four rings of graphiteimpregnated braided yarn with bronze lantern ring between center two graphite rings, and bronze packing gland.
 - VIII. Motor: Directly mounted to pump casing and with lifting and supporting lugs in top of motor enclosure.
- 2.6. Close-Coupled, End-Suction Pumps
 - A. Description: Centrifugal, close-coupled, end-suction, singlestage, bronze- fitted, back-pull-out, radially split case design; rated for 175-psig minimum working pressure and a continuous water temperature of 225 deg F.

- I. Casing: Cast iron, with flanged piping connections, drain plug at low point of volute, and threaded gage tappings at inlet and outlet connections.
 - a. Connection Option: Unions at connections for casings that are not available with threaded companion flanges.
- II. Impeller ASTM B 584, cast bronze, statically and dynamically balanced, closed, overhung, single suction, keyed to shaft, and secured by locking cap screw.
- III. Wear Rings: Replaceable, bronze casing ring.
- IV. Shaft and Sleeve: Steel shaft extension with bronze sleeve and neoprene slinger.
- V. Shaft: Stainless-steel shaft close coupled to motor shaft.
- VI. Seals: Mechanical, with carbon-steel rotating ring, stainless-steel spring, ceramic seat, and flexible bellows and gasket.
- VII. Motor: Directly mounted to pump casing and with supporting legs as integral Part of motor enclosure.
- 2.7. Flexible-Coupled, End-Suction Pumps
 - A. Description: Base-mounted, centrifugal, flexible-coupled, endsuction, single- stage, bronze- fitted, back-pull-out, radially split case design; rated for 175- psig minimum working pressure and a continuous water temperature of 225 deg F.
 - I. Casing: Cast iron, with flanged piping connections, drain plug at low point of volute, and threaded gage tappings at inlet and outlet connections.
 - II. Casing: Cast iron, with flanged piping connections, drain plug at low point of volute, threaded gage tappings at inlet and outlet connections, and integral feet or other means on volute to support weight of casing and attached piping. Casing shall allow removal and replacement of impeller without disconnecting piping.
 - III. Impeller: ASTM B 584, cast bronze, statically and dynamically balanced, closed, overhung, single suction, keyed to shaft, and secured by locking cap screw.
 - IV. Wear Rings: Replaceable, bronze casing ring.
 - V. Shaft and Sleeve: Steel shaft with bronze sleeve.
 - VI. Seals: Mechanical, with carbon-steel rotating ring, stainless-steel spring, ceramic seat, and flexible bellows and gasket.

- VII. Seals: Stuffing box, with at least four rings of graphiteimpregnated braided yarn with bronze lantern ring between center two graphite rings, and bronze packing gland.
- VIII. Coupling: Flexible, capable of absorbing torsional vibration and shaft misalignment.
- IX. Coupling: Flexible-spacer type, capable of absorbing torsional vibration and shaft misalignment; with flange and sleeve section that can be disassembled and removed without removing pump or motor.
- X. Coupling: Flexible-spacer type, capable of absorbing torsional vibration and shaft misalignment for motor sizes of 100 hp and smaller; with flange and sleeve section that can be disassembled and removed without removing pump or motor, for sizes larger than 100 hp.

XI. Coupling: Flexible-spacer type, capable of absorbing torsional

vibration and shaft misalignment; with flange and sleeve section that can be disassembled and removed without removing pump or motor.

- XII. Coupling Guard: Steel, removable, and attached to mounting frame.
- XIII. Mounting Frame: Welded-steel frame and cross members, factory fabricated from ASTM A 36/A 36M channels and angles. Fabricate for mounting pump casing, coupling guard, and motor. Field-drill motormounting holes for field-installed motors.
 - a. Option: Cast-iron frames are acceptable.

XIV. Motor: Secured to mounting frame, with adjustable alignment.

- 2.8. Flexible-Coupled, Double-Suction Pumps
 - A. Description: Base-mounted, centrifugal, flexible-coupled, double-suction, single-stage, bronze- fitted, axially split case design; rated for 175-psig minimum working pressure and a continuous water temperature of 225 deg F, with mechanical seals and impeller mounted between bearings.
 - B. Description: Base-mounted, centrifugal, flexible-coupled, double-suction, single-stage, bronze- fitted, axially split case design; rated for 175-psig minimum working pressure and a continuous water temperature of 250 deg F, with stuffing-box seals. Include impeller mounted between bearings and the following:

- I. Casing: Cast iron; with ASME B16.1, Class 125 flanged pipe connections. Include threaded gage tappings at inlet and outlet connections, vent valve at high point of volute, and threaded drain plug at low point of volute.
- II. Casing: Cast iron; with ASME B16.1, Class 250 flanged pipe connections. Include threaded gage tappings at inlet and outlet connections, vent valve at high point of volute, and threaded drain plug at low point of volute.
 - a. Casing shall allow removal and replacement of impeller without disconnecting piping.
- III. Impeller: ASTM B 584, cast bronze, statically and dynamically balanced, closed, double suction, and keyed to shaft.
- IV. Wear Rings: Replaceable, bronze casing ring.
- V. Shaft and Sleeve: Stainless-steel shaft with bronze sleeve.
- VI. Pump Shaft Bearings: Grease-lubricated ball bearings contained in cast-iron housing.
- VII. Seals: Mechanical, with carbon-steel rotating ring, stainless-steel spring, ceramic seat, and flexible bellows and gasket.
- VIII. Seals: Stuffing box, with at least four rings of graphiteimpregnated braided yarn with bronze lantern ring between center two graphite rings, and bronze packing gland.
- IX. Coupling: Flexible, capable of absorbing torsional vibration and shaft misalignment.
- X. Coupling: Flexible-spacer type, capable of absorbing torsional vibration and shaft misalignment; with flange and sleeve section that can be disassembled and removed without removing pump or motor.
- XI. Coupling: Flexible-spacer type, capable of absorbing torsional vibration and shaft misalignment for motor sizes of 100 hp and smaller; with flange and sleeve section that can be disassembled and removed without removing pump or motor, for sizes larger than 100 hp.
- XII. Coupling: Flexible-spacer type, capable of absorbing torsional vibration and shaft misalignment; with flange and sleeve section that can be disassembled and removed without removing pump or motor.
- XIII. Coupling Guard: Steel, removable, and attached to mounting frame.

- XIV. Mounting Frame: Welded-steel frame and cross members, factory fabricated from ASTM A 36/A 36M channels and angles. Fabricate for mounting pump casing, coupling guard, and motor. Field-drill motormounting holes for field-installed motors.
 - a. Option: Cast-iron frames are acceptable.

XV. Motor: Secured to mounting frame, with adjustable alignment.

- 2.9. Vertical-Mounting, Flexible-Coupled, Double-Suction Pumps
 - A. Description: Base-mounted, centrifugal, flexible-coupled, double-suction, single-stage, bronze- fitted, axially split case design; made for vertical mounting; and rated for 175-psig minimum working pressure and a continuous water temperature of 225 deg F, with mechanical seals.
 - I. Casing: Cast iron; with ASME B16.1, Class 125 flanged pipe connections. Include threaded gage tappings at inlet and outlet connections and threaded drain plug at low point of volute.
 - II. Casing: Cast iron; with ASME B16.1, Class 250 flanged pipe connections. Include threaded gage tappings at inlet and outlet connections and threaded drain plug at low point of volute.
 - III. Impeller: ASTM B 584, cast bronze, statically and dynamically balanced, closed, double suction, mounted between bearings, and keyed to shaft.
 - IV. Wear Rings: Replaceable, bronze casing ring.
 - V. Shaft: Stainless-steel shaft with axially split spacer coupling.
 - VI. Pump Shaft Bearings: Grease-lubricated, ball-type, thrust bearings contained in cast- iron housing.
 - VII. Seals: Mechanical, with carbon-steel rotating ring, stainless-steel spring, ceramic seat, and flexible bellows and gasket.
 - VIII. Seals: Stuffing box, with at least four rings of graphiteimpregnated braided yarn with bronze lantern ring between center two graphite rings, and bronze packing gland.
 - IX. Coupling: Flexible, capable of absorbing torsional vibration and shaft misalignment.
 - X. Coupling: Flexible-spacer type, capable of absorbing torsional vibration and shaft misalignment; with flange and

sleeve section that can be disassembled and removed without removing pump or motor.

- XI. Coupling: Flexible-spacer type, capable of absorbing torsional vibration and shaft misalignment for motor sizes of 100 hp and smaller; with flange and sleeve section that can be disassembled and removed without removing pump or motor, for sizes larger than 100 HP
- XII. Coupling: Flexible-spacer type, capable of absorbing torsional vibration and shaft misalignment; with flange and sleeve section that can be disassembled and removed without removing pump or motor.
- XIII. Baseplate: Steel or cast iron.
- XIV. Mounting Frame: Welded-steel frame and cross members, factory fabricated from ASTM A 36/A 36M channels and angles. Fabricate for mounting pump casing, coupling guard, and motor. Field-drill motormounting holes for field-installed motors.

XV. Motor: Secured to mounting frame, with adjustable alignment.

- 2.10. Pump Specialty Fittings
 - A. Suction Diffuser: Angle or straight pattern, 175-psig pressure rating, cast-iron body and end cap, pump-inlet fitting; with bronze startup and bronze or stainless-steel permanent strainers; bronze or stainless-steel straightening vanes; drain plug; and factory- or field-fabricated support.
 - B. Triple-Duty Valve: Angle or straight pattern, 175-psig pressure rating, cast-iron body, pump- discharge fitting; with drain plug and bronze-fitted shutoff, balancing, and check valve features.
- 2.11. Automatic Condensate Pump Units
 - A. Description: Packaged units with corrosion-resistant pump, plastic tank with cover, and automatic controls. Include factory- or field-installed check valve and a 72-inch- minimum, electrical power cord with plug.
- 3. Execution
 - 3.1. Examination
 - A. Examine equipment foundations and anchor-bolt locations for compliance with requirements for installation.
 - I. Examine roughing-in for piping systems to verify actual locations of piping connections before pump installation.
 - II. Examine foundations and inertia bases for suitable conditions where pumps are to be installed.
 - B. Proceed with installation only after unsatisfactory conditions have been corrected.

Mark Twain School for the Talented and Gifted 23 21 23-10 Org #220 Dallas ISD Construction Services

- 3.2. Pump Installation
 - A. Install pumps according to manufacturer's written instructions.
 - I. Install pumps according to HI 1.1-1.5, "Centrifugal Pumps for Nomenclature, efinitions, Application and Operation."
 - B. Install pumps to provide access for periodic maintenance, including removing motors, impellers, couplings, and accessories.

C. Support pumps and piping separately so piping is not supported by pumps.

- D. Suspend in-line pumps using continuous-thread hanger rod and vibration- isolation hangers. Install seismic bracing as required by authorities having jurisdiction.
- E. Set base-mounted pumps on concrete foundation. Disconnect coupling halves before setting. Do not reconnect couplings until alignment operations have been completed.
 - I. Support pump baseplate on rectangular metal blocks and shims, or on metal wedges with small taper, at points near foundation bolts to provide a gap of 3/4 to 1-1/2 inches between pump base and foundation for grouting.
 - II. Adjust metal supports or wedges until pump and driver shafts are level. Check coupling faces and suction and discharge flanges of pump to verify that they are level and plumb.
- F. Automatic Condensate Pump Units: Install units for collecting condensate and extend to open drain.
- 3.3. Alignment
 - A. Align pump and motor shafts and piping connections after setting them on foundations, after grout has been set and foundation bolts have been tightened, and after piping connections have been made.
 - B. Comply with pump and coupling manufacturers' written instructions.
 - C. Adjust pump and motor shafts for angular and offset alignment by methods specified in HI 1.1- 1.5, "Centrifugal Pumps for Nomenclature, Definitions, Application and Operation."
 - D. After alignment is correct, tighten foundation bolts evenly but not too firmly.Completely fill baseplate with nonshrink, nonmetallic grout while metal blocks and shims or wedges are in place. After grout has cured, fully tighten foundation bolts.
- 3.4. Connections
 - A. Piping installation requirements are specified in other Division 23 Sections.

Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to machine to allow service and maintenance.

- C. Connect piping to pumps. Install valves that are the same size as piping connected to pumps.
- D. Install suction and discharge pipe sizes equal to or greater than diameter of pump nozzles.
- E. Install check valve and throttling valve on discharge side of in-line circulators.
- F. Install nonslam check valve and globe valve on discharge side of vertical in-line pumps.
- G. Install suction diffuser and shutoff valve on suction side of vertical in-line pumps.
- H. Install triple-duty valve on discharge side of vertical in-line pumps.
- I. Install suction diffuser and shutoff valve on suction side of base-mounted pumps.
- J. Install triple-duty valve on discharge side of base-mounted pumps.
- K. Install flexible connectors on suction and discharge sides of base-mounted pumps between pump casing and valves.
- L. Install pressure gages on pump suction and discharge. Install at integral pressure-gage tappings where provided.
- M. Install temperature and pressure-gage connector plugs in suction and discharge piping around each pump.
- N. Install check valve and gate or ball valve on each condensate pump unit discharge.
- O. Install electrical connections for power, controls, and devices.
- P. Electrical power and control wiring and connections are specified in Division 16 Sections.
- Q. Ground equipment.
 - I. Tighten electrical connectors and terminals according to manufacturer's published torque- tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- 3.5. Commissioning
 - A. Verify that pumps are installed and connected according to the Contract Documents.
 - B. Verify that electrical wiring installation complies with manufacturer's written instructions and the Contract Documents.

- C. Perform the following preventive maintenance operations and checks before starting:
 - I. Lubricate bearings.
 - II. Remove grease-lubricated bearing covers, flush bearings with kerosene, and clean thoroughly. Fill with new lubricant according to manufacturer's written instructions.
 - III. Disconnect coupling and check motor for proper rotation that matches direction marked on pump casing.
 - IV. Verify that pumps are free to rotate by hand and that pumps for handling hot liquids are free to rotate with pumps hot and cold. Do not operate pumps if they are bound or drag, until cause of trouble is determined and corrected.
 - V. Check suction piping connections for tightness to avoid drawing air into pumps.
 - VI. Clean strainers.
 - VII. Verify that pump controls are correct for required application.
- D. Starting procedure for pumps with shutoff power not exceeding safe motor power is as follows:
 - I. Prime pumps by opening suction valves and closing drains, and prepare pumps for operation.
 - II. Open cooling water-supply valves in cooling water supply to bearings, where applicable.
 - III. Open cooling water-supply valves if stuffing boxes are water cooled.
 - IV. Open sealing liquid-supply valves if pumps are so fitted.
 - V. Open warm-up valves of pumps handling hot liquids if pumps are not normally kept at operating temperature.
 - VI. Open circulating line valves if pumps should not be operated against dead shutoff.
 - VII. Start motors.
 - VIII. Open discharge valves slowly.
 - IX. Observe leakage from stuffing boxes and adjust sealing liquid valve for proper flow to ensure lubrication of packing. Let packing "run in" before reducing leakage through stuffing boxes; then tighten glands.
 - X. Check general mechanical operation of pumps and motors.

- XI. Close circulating line valves once there is sufficient flow through pumps to prevent overheating.
- E. When pumps are to be started against closed check valves with discharge shutoff valves open, steps are the same, except open discharge valves before starting motors.
- F. Refer to Division 23 for detailed requirements for testing, adjusting, and balancing hydronic systems.
- 3.6. Demonstration
 - A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain hydronic pumps as specified below:
 - I. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining pumps.

II. Review data in maintenance manuals. Refer to Division 1 Section

"Contract Closeout."

- III. Review data in maintenance manuals. Refer to Division 1.
- IV. Schedule training with Owner, through Architect, with at least seven days' advance notice.

SECTION 23 25 00 HVAC WATER TREATMENT

- 1. General
 - 1.1. Related documents
 - A. Drawings and general provisions of the Contract, including General and
 - Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
 - 1.2. Summary
 - A. This Section includes water-treatment systems for the

following:

- I. Heating, hot-water piping (closed-loop system).
- II. Chilled-water piping (closed-loop system).
- III. Condenser water piping (open

system).

- B. Dallas Independent School District (DISD) will contract directly with Garratt- Callahan Company for chemicals
- C. All chemicals required for cleaning and treating of systems prior to Owner acceptance shall be provided as a part of this Section
- 2. Chemical feed system description
 - 2.1. Closed-Loop System: One bypass feeder on each system with isolating and drain valves downstream from circulating pumps, unless otherwise indicated.
 - A. Introduce chemical treatment through bypass feeder when required or indicated by test.
 - 2.2. Open-Loop Systems for Cooling Towers: Chemical feed pumps or Controlled- Release Canister Feed System to feed cooling tower inhibitor and biocides.
 - A. Conductivity controller samples condenser water and operates solenoid bleed-off valve in line to drain. Operates Chemical Pumps or Controller- Release Chemical Feeders.
 - 2.3. Open-Loop, Condenser Water Piping: Pump sequestering agent and corrosion inhibitor from Chemfeed or Controlled-Release Canister Feed System into condenser water supply to tower.
 - A. Intermittently feed biocide to condenser water to achieve a toxic level of the chemical to kill the microbiological organisms present.

HVAC WATER TREATMENT CSP 207459 August 16, 2024

- B. Alternate the use of oxidizing and non-oxidizing biocides.
- C. Automatically feed chemical with electronic solid-state controllers.
- 3. Submittals
 - 3.1. Product Data: Include rated capacities; water-pressure drops; shipping, installed, and operating weights; and furnished products listed below if required in the configuration:
 - A. Pumps.
 - B. Chem-Feed Dual Containment Tanks.
 - C. Controlled-Release Canister Feed

Systems. D. Control equipment and

devices.

- E. Test equipment.
- F. Chemicals.Bypass
- G. Filter Feeder

3.2. Shop Drawings: Detail equipment assemblies indicating dimensions, weights, loads,

required clearances, method of field assembly, components, and location and size of each field connection.

- A. Wiring Diagrams: Detail power and control wiring and differentiate between manufacturer-installed and field-installed wiring.Maintenance Data: For pumps, filters, system controls, and accessories to include in maintenance manuals.
- 4. Performance requirements
 - 4.1. Control build-up of scale and biological growth for maximum efficiency of installed equipment without posing a hazard to operating personnel or the environment.
 - 4.2. Base chemical treatment performance requirements on quality of water available at Project site, HVAC system equipment material characteristics and functional performance characteristics, operating personnel capabilities, and requirements and guidelines of authorities having jurisdiction.
 - A. Closed System: Maintain system essentially free of scale, corrosion, and fouling to sustain the following water characteristics:
 - I. pH: 9-11
 - II. Iron: 0.5 ppm
 - III. Conductivity: \leq 4000 µmhos
 - IV. Nitrite: 600-1500 ppm depending on chill or hot water system

Mark Twain School for the Talented and Gifted23 25 00-2HVAC WATER TREATMENTOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

- B. Condenser Water:: Maintain system essentially free of scale and total suspended solids to sustain the following water characteristics:
 - I. Copper: ≤ 0.15 mpy
 - II. Iron: ≤ 3.00 mpy
 - III. pH: 8-9
 - IV. Conductivity $\leq 3500 \ \mu$ mhos
 - V. Calcium hardness ≤600 ppm
 - VI. Total alkalinity \leq 450 ppm
 - VII. Silica: ≤ 150 ppm
- 5. Quality assurance
 - 5.1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- 6. Maintenance
 - 6.1. Chemicals and service program for maintaining conditions in the circulating water for inhibiting corrosion, scale, and organic growths in the [cooling, chilled-water piping] [heating, hot-water piping] [condenser water piping] and equipment is provided under an existing Dallas Independent School District (DISD) water treatment contract for water treatment services. The contractor is responsible for providing water treatment chemicals and services prior to acceptance by the owner. DISD water treatment services after owner acceptance.

7. Products

- 7.1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - A. Water-Treatment Products:
 - I. Garratt-Callahan Company
- 7.2. Chemical feeding equipment
 - A. Bypass Filter Feeders: Neptune FTF-5DB with legs. Cast iron and steel, for introducing chemicals into system; with drain valve on bottom, and recirculating shutoff valves on sides.
 - I. Capacity: 5 gal. 2.
 - II. Working Pressure: 300 psig.
 - III. Replaceable filter type: 20-micron filter bag.
 - B. Electronic Metering Pumps: Metal and thermoplastic construction.

(For 500

Ton and Above Condenser Water Systems).

- I. Fully enclosed, continuous-duty, 120-V, 60-Hz, singlephase motor.
- II. Manually adjustable stroke length and frequency as available on Pulsafeeder's Series A Metering Pumps.

C. Dual containment, high density polyethylene UV resistant tank system. (For

500 Ton and Above Condenser

- I. Capacity: 65 gallon tank with 92 gallon basin.
- D. G-C Controlled Release Feed System (For Condenser Water Systems Below 500 Tons).
 - I. A total of (3) Model W00428-10 lb. Canisters with accessories and flow indicators shall be used to contain and control the feed of Garratt-Callahan's Controlled-Release Chemicals. The Controlled Release Canister feeding the oxidizing biocide shall have a Pressure Release Valve (PRV).
- E. Packaged Conductivity Controller: Advantage Controllers bleed and feed cooling tower controller with dual biocide timers. Standard features include; four feed modes (Feed & Bleed, % of Time, % of Bleed, Flowmeter Pulse intermittent or continuous sampling, uS or PPM display, flow totalizer, manual test modes, temperature display, biocide cycle of 7, 14, or 28 days, adjustable timers, biocide lockout, and conductivity or time-based biocide pre-bleed time conditions.
- F. Solenoid Valves: Forged-brass body, globe pattern, and general-purpose solenoid enclosure with 120V, continuousduty coil.
- G. Chemical Tubing: Schedule 40, PVC with solvent-cement joints; or
- H. Plastic Ball Valves: Rigid PVC or CPVC body, integral union ends, and PTFE seats and seals. J. Plastic-Body Strainer: Rigid PVC or CPVC with cleanable stainless-steel strainer elements.
- I. Control dissolved solids, based on conductivity, and include the following:
 - I. Digital readout display.
 - II. Temperature-compensated sensor probe adaptable to sample stream manifold.
 - III. High, low, and normal conductance indicator display.
 - IV. High or low conductance alarm light, trip points field adjustable; with silence switch.
 - V. Hand-off-auto switch for solenoid bleed-off

valve.

VI. Bleed-off light to indicate valve

operation.

- VII. Internal adjustable hysteresis or dead band.
- J. Control inhibitor feeding, based on makeup volume, and include the following:
 - I. Solid-state reset counter (accumulator), with selections from 1 to 15.
 - II. Solid-state timer, adjustable from 15 to 300 seconds.
 - III. Test switch.
 - IV. Hand-off-auto switch for chemical pump.
 - V. Illuminated legend to indicate feed when pump is activated.
 - VI. Solid-state lockout timer, adjustable from 15 to 180 minutes, with indicator light.

VII. Lockout timer to deactivate the pump and activate alarm circuits.

- VIII. Electromechanical-type, panel-mounted makeup totalizer to measure amount of makeup water.
- K. Control biocide with an adjustable time programmer and include the following:
 - I. 24-hour timer with 14-day skip feature to permit activation any hour of day.
 - II. Precision, solid-state, bleed-off lockout timer (zero to nine hours) and clock- controlled biocide pump timer (zero to two and one-half hours). Pre-bleed and bleed lockout.
 - III. Solid-state alternator to enable the use of two different formulations. 24-hour digital display of time of day.
 - IV. 14-day LED display of day of week.
 - V. Fast and slow internal clock set controls.
 - VI. Battery backup so clock is not disturbed by power

outages.

- VII. Quartz timekeeping accuracy.
- VIII. Hand-off-auto switches for biocide pumps.
- IX. Biocide A and Biocide B illuminated legends to indicate pump is running.
- 8. Chemical treatment test equipment
 - 8.1. Corrosion Test Coupon Assembly: Constructed of corrosion material, complete with piping, valves, and mild steel and copper coupons. Locate copper coupon

Mark Twain School for the Talented and Gifted 23 25 00-5 Org #220 Dallas ISD Construction Services HVAC WATER TREATMENT CSP 207459 August 16, 2024 downstream from mild steel coupon in the test coupon assembly.

- A. Two station rack for closed-loop systems.
- B. Three-station rack for open condenser water systems.
- 9. Execution
 - 9.1. Installation
 - A. Install treatment equipment level and plumb.
 - 9.2. Start up
 - A. Contractor shall be responsible to provide all equipment start up, cleaning, and water treatment services to properly prepare equipment and components for operation in accordance with manufacturer's recommendations. Upon completion of these start up procedures, the equipment and components shall be drained and inspected by the owner
 - I. If acceptable to the owner, the contractor shall be responsible to provide all labor and materials necessary to refill and restart the systems. The contractor shall coordinate this process with the DISD water treatment contractor to assure all systems are filled and treated.
 - B. At the completion of the process, subject to satisfaction of the owner, the owner should take beneficial acceptance of that portion of the system. All other elements of the systems shall remain the responsibility of the contractor.
 - 9.3. Connections
 - A. Piping installation requirements are specified in other Division 23 Sections.

Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and

maintenance.

- C. Confirm applicable electrical requirements in Division 26 Sections for connecting electrical equipment.
- D. Ground equipment.
- E. Tighten electrical connectors and terminals according to manufacturer's published torque- tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- 9.4. Field quality control
 - A. Engage a factory-authorized service representative to perform startup service.

- B. Inspect field-assembled components and equipment installation, including piping and electrical connections. Report results in writing.
- C. Inspect piping and equipment to determine that systems and equipment have been cleaned, flushed, and filled with water, and are fully operational before introducing chemicals for water-treatment system.
- D. Place HVAC water-treatment system into operation and calibrate controls during the preliminary phase of HVAC systems' startup procedures.
- 9.5. Testing
 - A. Test chemical feed piping as follows:
 - I. Do not enclose, cover, or put piping into operation until it is tested and satisfactory test results are achieved.
 - II. Test for leaks and defects. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
 - III. Leave uncovered and unconcealed new, altered, extended, and replaced water piping until it has been tested and approved. Expose work that has been covered or concealed before it has been tested and approved.
 - IV. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow test pressure to stand for four hours. Leaks and loss in test pressure constitute defects.
 - V. Repair leaks and defects with new materials and retest piping until satisfactory results are obtained.
 - VI. Prepare test reports, including required corrective action.

9.6. Adjusting

- A. Sample boiler water at one-week intervals after boiler startup for a period of five weeks, and prepare certified test report for each required water performance characteristic. Where applicable, comply with ASTM D 3370 and the following standards:
 - I. Silica: ASTM D 859.
 - II. Acidity and Alkalinity: ASTM D 1067.
 - III. Iron: ASTM D 1068.
 - IV. Water Hardness: ASTM D 1126.
- B. Occupancy Adjustments: Within 12 months of Substantial Completion, perform monthly separate water analyses to prove that automatic chemical feed systems are maintaining water quality within performance requirements specified in this Section.

Mark Twain School for the Talented and Gifted 23 25 00-7 Org #220 Dallas ISD Construction Services HVAC WATER TREATMENT CSP 207459 August 16, 2024 Perform analyses at least 21 days apart. Submit written reports of water analysis.

- 9.7. Demonstration
 - A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain HVAC water- treatment systems and equipment.
 - B. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment and schedules.

C. Review manufacturer's safety data sheets for handling of chemicals.

- D. Review data in maintenance manuals, especially data on recommended parts inventory and supply sources and on availability of parts and service. Refer to Division 1 Section "Contract Closeout."
- E. Schedule at least two hours training with Owner.

SECTION 23 31 00 HVAC DUCTS AND CASINGS

1. GENERAL

1.1 SCOPE

a. This section specifies the furnishing and installation of low velocity ductwork and all accessories.

1.2 **REFERENCE STANDARDS**

- a. NFPA Standard 90A.
- b. SMACNA HVAC Duct Construction Standards 1995.
- c. SMACNA Fibrous Glass Duct Construction Standards.

1.3 APPLICABLE PROVISIONS

a. Refer to Section 23 0500, Common Work Results for HVAC Equipment.

1.4 SUBMITTALS

a. Submit manufacturer's technical product data for flex ducts, duct sealant materials, control devices, volume dampers, fire and smoke dampers, access doors, duct mounted smoke detectors, louvers, flues and flue caps, and duct lining. Include sufficient data to substantiate that materials conform to the requirements of this section.

1.5 DELIVERY, STORAGE, AND HANDLING

- a. Deliver control devices, dampers, fire and smoke dampers, etc. properly packaged in factory-fabricated containers.
- b. Store in a clean, dry space in original containers. Protect products from weather, damaging fumes, construction debris and traffic.
- c. Handle carefully to avoid damaging materials.

1.6 GUARANTEES AND WARRANTIES

a. Guarantee all ductwork for one year from the date of final acceptance from all noise, chatter, whistling, or vibration. Ductwork must be free from pulsation under all conditions of operation.

2. PRODUCTS

2.1 DUCT MATERIAL

Mark Twain School for the Talented and Gifted	23 31 00-1	HVAC DUCTS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

a. Except for special ducts specified elsewhere, use prime galvanized steel sheets or coils up to 60 in. wide. Stencil each sheet with proper gauge and manufacturer's name. Stencil coils of sheet steel throughout on 10 ft. centers with gauge and manufacturer's name.

2.2 SEAM AND JOINT SEALANT

a. Furnish Hardcast DT tape with FTA-20 adhesive.

2.3 LOW PRESSURE DUCTWORK (LESS THAN 2 IN. STATIC PRESSURE)

a. Rectangular. Furnish rectangular low pressure ducts, fabricated of sheet metal in the following minimum gauges:

Largest Dimension	U.S. Gauge
12" and less	No. 26
13" to 30"	No. 24
31" to 54"	No. 22
55" to 84"	No. 20
85" and above	No. 18

b. Round. Furnish round, low-pressure ducts which are spiral wound, such as manufactured by United McGill, or shop fabricated round ducts with Pittsburgh lock longitudinal seams. Use the following gauges for shop fabricated ducts:

Diameter	U.S. Gauge
12" and less	No. 26
13" to 30"	No. 24
31" to 42"	No. 22
43" to 60"	No. 20

- c. Low Pressure Insulated Flexible Duct. Furnish factory-fabricated, flexible duct for connections between low velocity trunk ducts and air devices as indicated on the Drawings. Do not use flexible duct in exhaust systems unless specifically indicated on the Drawings. Furnish flexible duct with the following characteristics.
 - (1) Airtight inner liner, insulation and outer jacket. Inner liner of coated steel helix and fabric, substantially bonded together to prevent the duct from collapsing or kinking in short radius bends.
 - (2) Fiberglass insulation at least 1 in. thick and ³/₄ pound per cubic ft. minimum density around the inner liner.
 - (3) Sheath the entire assembly with heavy, outer vapor-barrier jacket or reinforced aluminum foil kraft.

Mark Twain School for the Talented and Gifted	23 31 00-2	HVAC DUCTS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

- (4) Rated at a minimum positive working pressure of $1\frac{1}{2}$ in. of water.
- (5) Where specifically indicated on the Drawings, exhaust ducts must withstand a negative pressure of 1½ in. of water.
- (6) Listed by UL at flame spread rate of not over 25 and smoke developed rate of not over 50, and complying with NFPA Standard 90A, paragraph 113a.
- (7) Acceptable products. Atco, Flexmaster, Thermaflex, Porter, Wiremold.
- d. Volume Dampers. Furnish opposed-blade volume dampers with an appropriate control device, in accordance with SMACNA Duct Manual. Furnish multi blade dampers when blade width exceeds 12 in.
- e. Elbows.
 - (1) Rectangular. Furnish Barber-Colman or equivalent double-wall air foil turning vanes. Job-fabricated turning vanes, if used, must be double thickness vanes of galvanized steel sheets of the same gage metal as the duct in which they are installed. Furnish vanes fabricated for the same angle as the duct offset. As an alternative, furnish radius elbows with a centerline radius of not less than 1½ times the duct width in lieu of vaned elbows, where space and air flow requirements permit.
 - (2) Round and Oval Duct. Furnish elbows with a centerline radius of 1¹/₂ times the duct diameter or duct width. For round ducts, furnish smooth elbows or 5-piece, 90° elbows and 3-piece, 45° elbows.
 - f. Control Devices. For control devices concealed by ceilings, furring, or in other inaccessible locations, furnish extension rods and appropriate recessed-type Young regulators. For ducts which are not concealed, or ducts which are above lay-in ceiling but accessible, furnish heavy-duty, quadrant-type, adjustable regulators having wing nuts for locking in position.
 - g. Remote Operated Dampers. Furnish factory-fabricated volume dampers for remote, manual volume control. Furnish opposed-blade, balanced type, pivoted in bronze bearings and mounted in a channel frame. Operate damper through a flexible-drive cable from a wall-mounted operating knob.

2.4 DOUBLE WALL INSULATED DUCTWORK (Gymnasium)

(1) Furnish and install paint grip galvanized steel double wall spiral seam round ductwork in the gymnasium. Insulation between inner and outer walls shall be 1-inch thick fiberglass meeting the requirements of NFPA 90A. Ductwork shall be as manufactured by Spiral Pipe of Texas or United McGill.

2.5 WELDING EXHAUST DUCTWORK

- a. System Classification. The ductwork system installation shall be constructed as a Class 3 system, as defined by the 1994 Uniform Mechanical Code.
- b. Duct Construction Standards

Mark Twain School for the Talented and Gifted	23 31 00-3	HVAC DUCTS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

- (1) The ductwork shall be constructed and supported in accordance with the following most current standards:
- (2) Round Industrial Duct Construction Standards by SMACNA.
- (3) Accepted Industry Practice for Industrial Duct Construction by SMACNA.
- (4) Fabricate all ductwork and fittings for the dust collection system in accordance with ACGIH Industrial Ventilation Manual.

c.Connections for Ductwork

(1) Connections for ductwork shall be screwed couplings or angle rings welded to the duct (assembled with gasket and bolts) sized and selected in accordance with SMACNA's Round Industrial Duct Construction Standard.

d. Fittings

- (1) Elbows. Provide die stamped or segmented, gored, 90-degree elbows. Elbows shall be next gage higher thickness than ductwork.
- (2) Floor sweeps of 18-gage sheet metal shall be designed with tight-fitting manual-operated doors.
- (3) Blast Gates and Cutoffs. Provide galvanized full-frame, full depth positive seal configurations.
 - e. Supports. Support ductwork to walls where required using angle iron "kneebrace" supports securely anchored to the wall. Paint supports per Section 15052.
 - f. Dust collector ductwork where noted on the plans shall be Torit "Easy Duct". All other ductwork shall be as specified above.
 - g. Ductwork system shall be installed in strict accordance with ACGIH Industrial Ventilation Manual and dust collector and welding exhaust system manufacturers recommendations.

2.6 FUME HOOD DUCTWORK

a. Furnish fume hood exhaust ductwork of No. 20 U.S. Gage, Type 302 stainless steel. Furnish circular ducts and gored elbows having a centerline radius of twice the diameter except where space conditions prohibit.

2.7 DUCTWORK FOR REMOVAL OF GREASE-LADEN VAPORS

- a. Furnish grease ducts acceptable to the authority having jurisdiction for ductwork removing grease-laden vapors such as those from cooking equipment.
- b. Furnish 16 gauge black steel, with liquid-tight continuous external weld on all seams and joints.

Mark Twain School for the Talented and Gifted	23 31 00-4	HVAC DUCTS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

2.8 FIRE AND SMOKE DAMPERS

- a. Quality Standards.
 - (1) Furnish fire and smoke dampers complying with applicable codes, NFPA Standards, and SMACNA Duct Manual.
 - (2) Furnish dampers which bear UL label.
 - (3) Furnish dampers having UL 555 dynamic rating.
- b. Fire Dampers. Furnish fire dampers that are 95% minimum free area, Ruskin DIBDZ, styles C, CR, or CO as applicable, or approved equivalent. Dampers activated by a fusible link designed to react at 165°F.
- c.Smoke Dampers. Furnish a motor-operated, opposed-blade smoke damper. Use a 13 gauge minimum frame with 22 gauge minimum double-wall blades, zinc-plated linkage and elastomeric seals on blade edges and ends. Furnish a blade not more than 8 in. wide. Furnish a damper which meets the requirements of NFPA 90A.
- d. Combination Smoke and Fire Dampers. Combination Smoke and Fire Damper. Furnish Ruskin FSD 60-EFL with a 120-volt motor. Use an actuator that is electro-thermal. Entire assembly shall be UL listed. Unit shall be capable of local manual reset or remote reset from a fire alarm panel; shall contain a motor for use at high temperatures and be listed for that use by UL; and shall be complete with all contactors, etc. for remote reset.
- e. Radiation Damper. Furnish Ruskin CFD or CFDR or approved equivalent. Dampers shall be activated by a fusible link designed to react at 212°F.
- f. Access Doors. Furnish access doors in attached ductwork for inspection. Stencil each door "FIRE DAMPER ACCESS."

2.9 WALL LOUVERS

a. Furnish louvers constructed of 16 gauge, galvanized sheet steel or 0.080 in. minimum thickness, clear anodized, extruded aluminum of storm-proof design. Make offsets in louver blades to prevent water carry-over. Furnish ¼ in. x ¼ in. galvanized hardware cloth, ¼ in. x ¼ in. aluminum screen, 18-16 mesh galvanized screen or 18-16 mesh aluminum screen behind the louver.

2.10 FLUES AND FLUE CAPS

a. Furnish Type B, round or oval, double-wall vent pipe, equal to Metalbestos, including accessories such as vent caps by the same manufacturers. Furnish oval vent where necessary to fit in wall

Mark Twain School for the Talented and Gifted	23 31 00-5	HVAC DUCTS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

construction.

b. Furnish flue caps of such design that wind action from any direction will create a vacuum in the flue. Caps as manufactured by Breidert or equivalent.

2.11 FLEXIBLE CONNECTIONS

a. Where ducts connect to fans or air handling units, furnish "Ventglas" fabric. The fabric must be fire-resistant, waterproof and mildew resistant with a weight of 30 oz. per sq. yd. For outdoors applications, furnish Duall fan connector, Koroseal, black with UV inhibitors.

2.12 FLASHING

a. Furnish flashing not less than No. 26 gauge stainless steel or 16 oz. copper.

2.13 DUCT LINING

a. Furnish 1-inch thick, 1-1/2 pound density liner similar to Schuller Permacote Linacoustic Standard or CertainTeed Toughgard. Secure to duct surfaces with Benjamin Foster 85-25 adhesive and sheet metal fasteners on 12-inch centers. Omit lining as necessary to permit satisfactory operation of air control devices. Coat all exposed edges and additionally the leading edges of cross joints (whether factory coated or not) with adhesive. Liner shall meet requirements of NFPA 90-A.

3. EXECUTION

3.1 GENERAL

a. Erect all ducts in the general locations shown, but conform to all structural and finish conditions of the building. Before fabricating any ductwork, check the physical conditions at the job site and make all necessary changes in cross sections, offsets, and similar items, whether they are specifically indicated or not.

3.2 INSTALLATION

- a. Construction Standards. Use construction methods which follow the requirements outlined above, as well as SMACNA Balancing and Adjusting publications, unless otherwise indicated in these Specifications or the Drawings.
- b. Reinforcement. Reinforce ducts having one side equal to 25

Mark Twain School for the Talented and Gifted	23 31 00-6	HVAC DUCTS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

in. or more in accordance with recommended construction practices of SMACNA.

- c.Plenum Construction. Construct plenum chambers of not less than No. 20 U.S. gauge metal, reinforced with galvanized structural angles.
- d. Cross Breaking or Beading. Cross break or bead sheet metal for rigidity, except ducts which are 12 in. or less in the longest dimension.
- e. Wall Penetrations. Where ducts pass through walls in exposed areas, install suitable escutcheons made of sheet metal angles as closers. At all locations where ductwork passes through floors, install watertight sleeves projecting 3 in. above finished floor and flush with bottom of floor slab. Fabricate sleeves of _ in. thick steel, galvanized after fabrication. Anchor into adjacent floor slab as required. Sleeves are required inside as well as outside chases. Support ducts where passing through floors with steel structural angles of adequate bearing surface, galvanized after fabrication, and resting on top of the sleeve.
- f. Sealing. Seal the entire duct system. Thoroughly clean the duct areas to be sealed prior to application of tape and adhesi
- g. Interior Painting. Paint interior of metal ductwork exposed to view through grilles, registers, and other openings is specified elsewhere in these Specifications. Do not install grilles, registers, or similar items until painting is complete.

3.3 LOW PRESSURE DUCTWORK

- a. Branch splits. At each supply or exhaust duct tap serving two or more air outlets, install a shoetap fitting and volume damper, whether or not indicated on the Drawings. Where indicated on the Drawings, install adjustable, galvanized splitter-dampers pivoted at the downstream end with appropriate control device at each supply duct split, in accordance with SMACNA Duct Construction Manual.
- b. Volume Dampers. Install volume dampers in each return air, outside air and exhaust branch duct, in exhaust connections to hoods or equipment, in each zone at multizone unit discharge, and where otherwise indicated, in accordance with SMACNA Duct Manual.
- c.Controls. For control devices concealed by ceilings, furring, or in other inaccessible locations, install extension rods and appropriate recessed-type Young regulators, mounted on the surface of the ceiling or the furring, unless specified or otherwise indicated on the Drawings. For ducts which are not concealed, or ducts which are above lay-in

Mark Twain School for the Talented and Gifted	23 31 00-7	HVAC DUCTS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

ceiling but accessible, install heavy-duty, quadrant-type, adjustable regulators having wing nuts for locking in position. Saw-mark the ends of all operating rods for dampers and air control devices to indicate damper position.

- d. Remote Operated Dampers. Install remote operated dampers where indicated on the drawings or otherwise required for proper operation. Coordinate exact location of all such dampers and remote knobs with Architect prior to rough-in.
- e. Low Pressure Insulated Flexible Duct. Install in lengths not exceeding 6 ft. Support duct independently of lights, ceiling and piping. Do not support ducts using plastic braided straps.
- f. Low Pressure Duct Supports.
- (1) Horizontal Ducts Up To 40 In. Support horizontal ducts up to and including 40 in. in their greater dimension by means of No. 18 U.S. gauge band iron hangers attached to the ducts by means of screws, rivets or clamps, and fastened to inserts with toggle bolts, beam clamps or other approved means. Place supports on no more than 8 ft. centers. Use clamps to fasten hangers to reinforcing on sealed ducts.
- (2) Horizontal Ducts Larger Than 40 In. Support horizontal ducts larger than 40 in. in their greatest dimension by means of hanger rods bolted to angle iron trapeze hangers. Place supports on no more than 8 ft. centers according to the following:

Angle Length	Angle	Rod Diameter
4 ft.	1½" x 1½" x _"	1/4"
6 ft.	1½" x 1½" x _"	1/4"
8 ft.	2" x 2" x _"	5/16"
10 ft.	3" x 3" x _"	3/8"

(3) Vertical Ducts. Support vertical ducts where they pass through the floor lines with 1½ in. x 1½ in. x 1¼ in. angles for ducts up to 60 in. Above 60 in. increase the angles in strength and size on an individual basis, considering space requirements.

3.4 FUME HOOD DUCTWORK

- a. Seal swaged joints with suitable inert mastic and fasten with corrosion-resistant rivets or by other approved methods.
- b. Install required transitions from duct to equipment and make equipment connections with drawbands.
- c.Install ducts with an upward grade in the direction of flow. Make the grade a minimum of _ in. per ft. Install to eliminate low places in the duct that can collect moisture.

Mark Twain School for the Talented and Gifted	23 31 00-8	HVAC DUCTS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024
3.5 KITCHEN, DISHWASHER, AND SHOWER ROOM EXHAUST DUCTWORK

a. Install kitchen, dishwasher and shower room exhaust ductwork as specified for sheet metal ductwork. In addition, make all joints in the bottom of horizontal runs watertight. Slope horizontal runs to exhaust outlet. Use unlined duct in all such installations.

3.6 FIRE AND SMOKE DAMPERS

- a. Install fire and smoke dampers in accordance with all applicable code requirements.
- b. Install fire and smoke dampers in accordance with all manufacturer's recommendations.
- c.Install fire and smoke dampers in locations as indicated on the Drawings.
- d. As part of the ductwork shop drawing procedure, review the Architectural Drawings to verify the locations and extent of all fire and/or smoke rated construction. Point out any discrepancies discovered between the Architectural and Mechanical Drawings as part of this review, prior to duct fabrication, and request clarification from the Architect/Engineer.
- e. Install an access door at <u>every</u> fire and smoke damper. Locate the access door where it will be most accessible; where possible and accessible, locate in corridors, mechanical rooms, and other similar locations.
- f. Furnish and install at all fire damper smoke damper and fire/smoke damper locations a Setonply nameplate which identifies the device (Fire Damper) and the area it serves(corridor 855). Nameplate shall be installed in an inconspicuous location on the ceiling grid immediately adjacent to the ceiling tile that must be removed to get access to the fire damper.

3.7 FLUES AND FLUE CAPS

a. Install all flues and flue caps required for gas-fired boilers, heaters, and other appliances in accordance with all applicable code requirements and in accordance with all manufacturer's recommendations. Refer to the Drawings for quantities and locations of applicable appliances.

3.8 FLEXIBLE CONNECTIONS

a. Where ducts connect to fans or air handling units, make

Mark Twain School for the Talented and Gifted	23 31 00-9	HVAC DUCTS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

flexible airtight connections. Install so as to maintain a minimum of $\frac{1}{2}$ in. slack in the connections, and a minimum of $2\frac{1}{2}$ in. distance between the edges of the ducts. Also allow a minimum of 1 in. slack for each inch of static pressure on the fan system. Securely fasten fabric to apparatus and to adjacent ductwork by means of galvanized flats or draw bands. Where rectangular connections are made in outdoor locations, seal fabric to metal with mastic. For connections to belted vent sets outdoors, install Duall fan connector, Koroseal, and secure with stainless steel bands.

3.9 ACCESS DOORS

a. Install ductwork access doors in structural angle frames, with sash locks and hinges arranged for convenient access. Construct doors which occur in insulated ducts with an insulation filler.

3.10 FLASHING

a. Where ducts pass through roofs or exterior walls, install suitable flashing to prevent rain or air currents from entering the building.

3.11 DUCT LINING

- a. Install acoustical lining in all rectangular low velocity return air ductwork for the first fifteen feet upstream of each air unit.
- b. Install acoustical lining in all return air sound traps.
- c.Secure lining to duct surfaces with Benjamin Foster 85-25 adhesive and sheet metal fasteners on 12 in. centers. Omit lining as necessary to permit satisfactory operation of air control devices. Coat all exposed edges and leading edges of cross joints with adhesive.

3.12 TESTS

- a. Allowable Leakage. Test ductwork for leaks before concealing. Maximum allowable leakage is 5% of total flow.
- b. Equipment. Include equipment necessary for performing tests, including rotary blower, orifice section and U-tube gage board complete with cocks and rubber tubing.
- c.Risers and Branch. Test duct riser or branch duct including flexible duct runouts in accordance with SMACNA manual.
- d. Mains. Test mains after risers and branches are tied in and all equipment set. Close runout connections and place fan in operation.

Mark Twain School for the Talented and Gifted	23 31 00-10	HVAC DUCTS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

Furnish pressure in mains above design pressure. Visually inspect joints. Repair leaks detected by sound or touch. Release mains for completion after joints are tight.

END OF SECTION 23 3100

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HVAC DUCTS CSP 207459 August 16, 2024

SECTION 23 33 00 AIR DUCT ACCESSORIES

PART 2 PRODUCTS

1.01 AIR TURNING DEVICES/EXTRACTORS

- A. Manufacturers:
 - 1. Carlisle HVAC Products: www.carlislehvac.com.
 - 2. Elgen Manufacturing: www.elgenmfg.com.
 - 3. Krueger: www.krueger-hvac.com.
 - 4. Ruskin Company: www.ruskin.com.
 - 5. Titus: www.titus-hvac.com.

1.02 DUCT ACCESS DOORS

- A. Manufacturers:
 - 1. Elgen Manufacturing: www.elgenmfg.com.
 - 2. Nailor Industries Inc: www.nailor.com.
 - 3. Ruskin Company: www.ruskin.com.
 - 4. SEMCO Incorporated: www.semcoinc.com.

1.03 DUCT TEST HOLES

- A. Temporary Test Holes: Cut or drill in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.
- B. Permanent Test Holes: Factory fabricated, air tight flanged fittings with screw cap. Provide extended neck fittings to clear insulation.
 - 1. Products:
 - 2. Carlisle HVAC Products; Dynair Test Port with Red Cap with O-Ring Seal: www.carlislehvac.co
 - m.

1.04 FLEXIBLE DUCT CONNECTIONS

A. Manufacturers:

1. Carlisle HVAC Products; Dynair Connector Plus G90 Steel Offset Seam Neoprene Fabric:

www.carlislehvac.co

m.

- 2. Elgen Manufacturing: www.elgenmfg.com.
- B. Fabricate in accordance with SMACNA HVAC Duct Construction Standards and as

indicated. C. Flexible Duct Connections: Fabric crimped into metal edging strip.

1.05 VOLUME CONTROL DAMPERS

- A. Manufacturers:
 - 1. Louvers & Dampers, Inc: www.louvers-dampers.com.
 - 2. Nailor Industries Inc: www.nailor.com.
 - 3. Ruskin Company: www.ruskin.com.

PART 3 EXECUTION

2.01 INSTALLATION

AIR DUCT ACCESSORIES CSP 207459 August 16, 2024

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA HVAC Duct Construction Standards. Refer to Section 23 3100 for duct construction and pressure class.
- B. Provide duct test holes where indicated and as required for testing and balancing purposes.

END OF SECTION 23 33 00

SECTION 23 34 26 CENTRIFUGAL HVAC FANS

1. GENERAL

1.1 SCOPE

A. This section specifies the furnishing and installation of fans, including centrifugal types with all supplemental equipment.

1.2 APPLICABLE PROVISIONS

A. Refer to Section 23 0500, Common Work Results for HVAC Equipment.

1.3 SUBMITTALS

- A. Submit product data on all fans, including cut sheets, fan curve, sound data, performance data and accessories provided. Include sufficient data to substantiate that materials conform to the requirements of this section.
- B. Axial Fans. Submit performance curves for at least five blade angles, including maximum and minimum settings. Include curves showing brake horsepower, mechanical efficiency and both static pressure and total pressure plotted against air delivery.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fans and other materials properly packaged in factory-fabricated containers.
- B. Store in a clean, dry space in original containers. Protect products from weather, damaging fumes, construction debris and traffic.
- C. Handle carefully to avoid damaging fans.

2. PRODUCTS

2.1 GENERAL

- A. Furnish fan type, arrangement, rotation, capacity, size, motor horsepower, and motor voltage as indicated on the Drawings.
- B. Rate fans according to appropriate Air Moving and Conditioning Association, Inc. (AMCA) approved test codes and procedures. Furnish fans with sound ratings below the maximums permitted by AMCA standards. All fans furnished must be licensed to bear the Certified Ratings Seal.
- C. Statically and dynamically balance all fans.

2.2 SUPPLEMENTAL EQUIPMENT

Mark Twain School for the Talented and Gifted	23 34 16-1	CENTRIFUGAL HVAC FANS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

- A. Motor Covers. Furnish weatherproof motor covers for installation out of doors. Apply the same finish as used on the fan.
- B. Belt Drives.
 - a. Unless otherwise specified for belt-driven fans, equip the fan motors with variable pitch sheaves. Select the sheave size for the approximate midpoint of adjustment and to provide not less than 20% speed variation from full open to full closed. Size drives for 150% of rated horsepower. Key the fan sheave to the fan shaft.
 - b. Non-adjustable motor sheaves may be furnished for motor sizes over 15 horsepower, at the Contractor's option. However, if changing a Non-adjustable sheave becomes necessary to produce the specified capacity, the change must be made as part of the Work.
 - c. Furnish belt guards and apply the same finish as used for the fan.
- C. Safety Disconnect Switch. Furnish a factory-wired, safety disconnect switch on each unit equipped with a 115 volt single phase motor.
- D. Relief Vents and Air Inlets. Furnish vents and inlets with aluminum frames, ½ in. mesh galvanized bird screens, and dampers.
- E. Prefabricated Roof Curbs. Furnish prefabricated roof curbs with built-in cant strips and lined with glass fiber insulation. Make curbs of No. 18 US gauge galvanized steel or 0.063 in. aluminum with a minimum height of 14 in.. The curb must support the unit in a level position regardless of roof slope. Include on each roof curb a resilient pad for equipment mounting on the top flange.

2.3 CEILING EXHAUST FANS

- A. Furnish ceiling-mounted exhaust fans of the centrifugal direct-drive type, with forward curved wheels.
- B. Furnish an internal, plug-in type motor disconnect.
- C. Furnish external access for wiring.
- D. Furnish with ceiling exhaust grille, mounting frame and hardware. Furnish an aluminum wall louver for through-the-wall applications and a galvanized roof cap for roof exhaust applications.
- E. Construct fan housing of heavy gage galvanized steel.
- F. Line the housing interior with $\frac{1}{2}$ in. acoustical insulation.
- G. Include an aluminum backdraft damper on the outlet duct collar, adaptable for horizontal or vertical discharge.

H. Mount motor on vibration isolators. Mark Twain School for the Talented and Gifted 23 34 16-2 Org #220 Dallas ISD Construction Services

2.4 BELTED VENT SETS

- A. Furnish belt-driven, squirrel-cage, utility set units. Furnish with antifriction, grease lubricated bearings and eliminate fittings.
- B. Mount the fan on anti-vibration devices as specified in the section on Vibration Isolation.
- C. Furnish inlet or outlet screens where no duct is connected.
- D. Drill a ¹/₄ in. drain hole in the lowest part of the scroll on any fan installed outside.

2.5 CABINET-ENCLOSED FAN

- A. Fan Section.
 - a. Casing. Furnish access panels to permit inspection and maintenance. Fabricate a casing from galvanized steel sheets reinforced as required with structural members.
 - b. Fan. Furnish double-inlet, squirrel-cage, centrifugal fans with die-formed impeller blades. Furnish galvanized steel fan scrolls in a secured casing to prevent vibration. Design fans for quiet, slow speed operation at specified rating conditions. Use rigid galvanized steel or aluminum fan wheels which are statically and dynamically balanced. Mount the wheels on a common shaft and fasten the wheels mechanically to the shaft.
 - c. Shaft. Furnish a shaft with adequate stiffness to prevent deflection and vibration. Rate the shaft at maximum rpm 10% below the first critical speed. Make a tachometer groove in the drive end of the shaft.
 - d. Bearings. Furnish antifriction ball bearings, selected for 200,000 hr. minimum average life under actual load and speed conditions. Furnish remote grease fittings on the accessible side of the unit for ease of lubrication. Locate the bearing to be adjustable for accurate alignment of fan wheels in scrolls.
- B. Motors. Furnish motors in accordance with the section on AC Electric Motors. Motors must have grease lubricated ball bearings with Alemite fittings. Select fan motors to be non-overloading at design rpm and at static pressure 15% under design. Mount the fan drive motor on a vibration isolating adjustable base, arranged for positive adjustment of drive alignment and belt tension.
- C. Belt Guard. Furnish a substantial, removable belt guard for drives on the unit exterior. Leave a hole over the tachometer groove.
- D. Filter Section.
 - a. Slide Racks. Furnish suitable galvanized filter slide racks to permit easy removal of filters from the accessible side of unit. Arrange filter slide racks to permit easy removal of filters from the accessible side of unit.
- b. Glass Fiber Filter. Furnish a replaceable, high-velocity filter of glass fiber with gradient density, 2 in. thick. Design filtering element for low pressure drop and high efficiency at net face velocity of 500 ft. per min. The element must also have Mark Twain School for the Talented and Gifted 23 34 16-3 CENTRIFUGAL HVAC FANS

Mark Twain School for the Talented and Gifte Org #220 Dallas ISD Construction Services

a high dust load capacity. Make frames of channel construction, rigid and square with a nominal 2 in. thickness. Fabricate filters using dimensions to suit the arrangement and size of filter slides or racks in which filters are installed.

2.6 IN-LINE CENTRIFUGAL FANS

- A. Furnish in-line fans with backward inclined wheels. Select a fan model with 1-piece inlet cone, heavy gage welded steel casing, internal and external belt guards, and adjustable motor mounts. Air will flow axially.
- B. Furnish lubrication tubes extending from the shaft bearings to the housing or otherwise make the bearings accessible for lubrication.
- C. Furnish with insulated housing and insulated motor cover.
- D. Enclose fan bearings and drive shaft to isolate them from the air stream. Install lubricating tubes extending from the shaft bearings to the housing.

2.7 ROOF-MOUNTED EXHAUST FANS

- A. Furnish centrifugal fans with backward curved aluminum fan wheels. Furnish belt driven fans. The selected motor must have enclosed, pre-lubricated bearings. Furnish a disconnect switch and have the switch and motor factory wired to the junction box. Furnish automatic dampers with curb flanges. Furnish curb.
- B. Connect to a totally enclosed motor to be located in the airstream. Construct the fan hood and venturi base of heavy-gage aluminum.

2.8 WALL-MOUNTED SUPPLY OR EXHAUST FAN (DIRECT DRIVEN)

- A. Furnish direct-driven, propeller-type fans designed for mounting in the wall. Furnish fans with a drive-side, galvanized wire-guard and a standard-duty, automatic shutter.
- B. Mount the fans wheel and motor on a square, flanged panel made of steel and formed with a venturi orifice. Finish the panel in baked enamel. Furnish fans with a drive-side, galvanized wire-guard and a standard-duty, automatic shutter.

2.9 FILTERED MAKEUP AIR UNITS (KITCHEN SUPPLY)

A. Furnish filtered makeup air units with belt driven double width / double inlet, forward curved centrifugal type supply fans. Furnish a formed, reinforced support structure with vibration isolator to prevent noise transmission. Furnish permanently lubricated, heavy duty, ball bearing type motors, carefully matched to the fan load and furnished at the indicated voltage, phase, and enclosure. Furnish a ground and polished steel fan shaft mounted in heavy duct, sealed ball bearings. Select bearings for a minimum (L50) life in excess on 200,000 hr. at maximum cataloged operating speeds. Furnish fully machined cast iron type pulleys, keyed and securely attached to the wheel and motor shafts. Furnish motor sheaves which are adjustable for final system balancing. Size drives for a

Mark Twain School for the Talented and Gifted 23 34 16-4 Org #220 Dallas ISD Construction Services

minimum of 150% of driven horsepower.

- B. Furnish fan wheels of the forward curved type, constructed of heavy gauge steel, and statically and dynamically balanced to ensure smooth, vibration free operation.
- C. Furnish a housing constructed of heavy gauge galvanized steel with removable panels for access to fan components, filters, and controls.
- D. Furnish filters of 1 in. aluminum mesh, sized to provide for optimum removal of contaminated outside air without exceeding the manufacturer's recommendations for maximum velocity.
- E. Furnish a pre-wired control center mounted on the fan housing or curb assembly for the supply fan and its companion kitchen exhaust fan, that includes, but is not limited to, an integral master disconnect switch with fuse blocks for main power connection, magnetic motor starters with thermal overloads and manual reset, fused 115 volt control transformer, and distribution terminal control strip for control wiring connection. Furnish a unit with all electrical components UL Labeled where applicable, and wired in compliance with the National Electrical Code (NFPA 70). Furnish complete wiring, requiring only one point field connection for power service and one point field connection for control voltage. The control center shall be an integral part of the supply fan assembly and shall be of raintight construction for outdoor installation. Where the supply fan is mounted on a sloping metal roof the control panel shall be mounted adjacent to the kitchen hood served by the supply fan, readily accessible above the ceiling.

2.10 UPBLAST KITCHEN EXHAUST FANS

- A. Furnish upblast centrifugal belt driven type fans with housing constructed of heavy gauge aluminum.
- B. Furnish a windband with a rolled bead and additional structural members for added strength.
- C. Furnish a fan wheel which is backward inclined centrifugal type, constructed of aluminum, and statically and dynamically balanced.
- D. Furnish a fan with a built-in grease drain.
- E. Furnish a fan with motors and drives isolated from the airstream.
- F. Furnish motors which are permanently lubricated, heavy duty, ball bearing type, carefully matched to the fan load, and furnished at the indicated voltage, phase, and enclosure. Furnish motors cooled by air drawn from outside the exhaust airstream.
- G. Furnish a fan shaft of ground and polished steel, mounted on heavy duty ball bearings, selected for a minimum average (L50) life in excess of 200,000 hr. at maximum catalogued operating speeds.

Mark Twain School for the Talented and Gifted 23 34 16-5 Org #220 Dallas ISD Construction Services

- H. Furnish pulleys of the fully-machined cast iron type, keyed and securely attached to the wheel and motor shafts. Furnish sheaves that are adjustable for final balance. Furnish drives sized for a minimum of 150% of driven horsepower.
- I. Mount the entire fan and motor assembly on vibration isolators to prevent noise transmission.
- J. Furnish fans bearing the AMCA certified ratings seals for air and sound performance.

2.11 FUME HOOD EXHAUST FAN

- A. Furnish a centrifugal fan using a backward inclined fan wheel constructed entirely of Monel, aluminum, or stainless steel. Fabricate the fan with 12 gauge blades and 10 gauge rim and backplate.
- B. Mount the fan on a steel shaft. Make a housing of cast iron with a minimum thickness of $5/_{16}$ in. Drill a $1/_{4}$ in. drain hole in the lowest part of the scroll. Use an adjustable V-belt drive. Coat all parts in the airstream with three coats of air-dried Heresite. Galvanize all fan components exposed to the weather.

2.12 ACCEPTABLE MANUFACTURERS

- A. Cook
- B. Greenheck
- C. Captiveaire
- D. Twin City Fan.

3. EXECUTION

A. Install fans according to the manufacturer's instructions and in the locations shown on the drawings.

3.1 PROTECTIVE COATINGS

- A. Manufacturer's Standard. Apply manufacturer's standard prime coat and finish to all fans, motors and accessories, except on aluminum surfaces or where special coatings are required.
- B. Galvanizing. After fabrication of the parts, hot-dip all surfaces which require galvanizing. Where galvanizing is specified, a zinc coating may be used. After fabrication, apply the zinc coating and air-dry the coating to 95% pure zinc.
- C. Vinyl Plastic. Coat surfaces, where required, with vinyl plastic, air-dried Heresite, or an approved equivalent. Have the product factory applied to fan wheels and interior surfaces of casings. Apply a minimum of three coats.

Mark Twain School for the Talented and Gifted 23 34 16-6 Org #220 Dallas ISD Construction Services

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SECTION 23 36 00

AIR TERMINAL UNITS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

- 1. Bypass, single-duct air terminal units.
- 2. Modulating, single-duct air terminal units.
- 3. Parallel fan-powered air terminal units.
- 4. Series fan-powered air terminal units.
- 5. Dual-duct air terminal units.
- 6. Induction air terminal units.
- 7. Diffuser-type air terminal units.
- 8. Balancing terminal units.
- 9. Pressure-control terminal units.
- 10. Critical environment control valve.
- 11. Underfloor air distribution terminal units.
- 12. Exhaust single-duct terminal units.
- 13. DOAS, series, fan-powered air terminal units.
- 14. Casing liner.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of air terminal unit.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for air terminal units.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Sustainable Design Submittals:
 - 1. <a>

 Section 2

 1.
 Section 2

 2.
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 - 2. <a>

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- C. Shop Drawings: For air terminal units.
 - 1. Include plans, elevations, sections, and mounting details.
 - 2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

- 3. Include diagrams for power, signal, and control wiring.
- 4. Hangers and supports, including methods for duct and building attachment[, seismic restraints,] and vibration isolation.
- D. Delegated Design Submittal: For vibration isolation[and supports,] [, and seismic restraints] indicated to comply with performance requirements and design criteria, including analysis data[signed and sealed by the qualified professional engineer responsible for their preparation].
 - 1. Materials, fabrication, assembly, and spacing of hangers and supports.
 - 2. Design Calculations: Calculate requirements for selecting vibration isolators[, **supports**,][**and seismic restraints**].

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Floor plans and other details, or BIM model, drawn to scale, indicating the items described in this Section, and coordinated with all building trades.
- B. Seismic Qualification Data: For air terminal units, accessories, and components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- C. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For air terminal units to include in emergency, operation, and maintenance manuals.
 - 1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
 - a. Instructions for resetting minimum and maximum air volumes.
 - b. Instructions for adjusting software set points.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fan-Powered-Unit Filters: Furnish [**one**] **<Insert number>** spare filter(s) for each filter installed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a Qualified Electrical Testing Laboratory, and marked for intended location and application.
- B. Applicable requirements in ASHRAE/IES 90.1, "Section 6 Heating, Ventilating, and Air Conditioning."
- C. Delegated Design: [Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to] design vibration isolation[, supports,][and seismic restraints], including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- D. Seismic Performance: Air terminal units shall withstand the effects of earthquake motions determined in accordance with [ASCE/SEI 7] <Insert requirement>. See Section 230548 "Vibration and Seismic Controls for HVAC."
 - 1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified[and the unit will be fully operational after the seismic event]."
 - 2. Component Importance Factor: [1.5] [1.0].
 - 3. <Insert requirements for Component Amplification Factor and Component Response Modification Factor>.

2.2 BYPASS, SINGLE-DUCT AIR TERMINAL UNITS

- A. <a>

 <u>Couble click here to find, evaluate, and insert list of manufacturers and products.</u>
- B. Description: Pressure-dependent, diverting-damper assembly inside unit casing with control components inside a protective metal shroud. Configuration enables variable volume airflow to individual zones while bypassing the unneeded air to the ceiling plenum for recirculation.
- C. Casing: Minimum [20-gauge-] [22-gauge-] < Insert dimension > thick galvanized steel.
 - 1. Casing Liner: Comply with requirements in "Casing Liner" Article below for ["Casing Liner, Fibrous Glass" Paragraph] ["Casing Liner, Flexible Elastomeric" Paragraph] [with "Antimicrobial Erosion-Resistant Coating" Subparagraph] [with "Foil-Faced Liner" Subparagraph] [with "Solid Metal

Liner" Subparagraph] [with "Perforated Metal Liner" Subparagraph] [with "Specialty Liner" Subparagraph].

- D. Diverter Assembly:
 - 1. Damper, shaft, and heavy-duty self-lubricating bearings.
- E. Attenuator Section: Casing material and thickness matching associated air terminal unit casing. Provide [**absorptive**] [**packless**] attenuator integral with the air terminal unit, with noise transmission loss performance as required in schedules on Drawings.
- F. Hydronic Heating Coils: Copper tube, with mechanically bonded aluminum fins spaced no closer than [0.1 inch (2.5 mm)] [0.08 inch (2.0 mm)]. Include manual air vent and drain valve. Provide hydronic heating coils for air terminal units scheduled on Drawings.
- G. Electric-Resistance Heating Coils: Nickel-chromium heating wire, free of expansion noise and hum, mounted in ceramic inserts in a galvanized-steel housing; with primary automatic, and secondary manual, reset thermal cutouts. Terminate elements in stainless steel, machine-staked terminals secured with stainless steel hardware. Provide electric-resistance heating coils for air terminal units scheduled on Drawings.
 - 1. Stage(s): [One] [Two] [Three].
 - 2. SCR controlled.
 - 3. Access door interlocked disconnect switch.
 - 4. Downstream air temperature sensor with local connection to override dischargeair temperature to not exceed a maximum temperature set point (adjustable).
 - 5. Nickel chrome 80/20 heating elements.
 - 6. Airflow switch for proof of airflow.
 - 7. Fuses in terminal box for overcurrent protection (for coils of more than 48 A).
 - 8. Pneumatic-electric switches and relays.
 - 9. Magnetic contactor for each step of control (for three-phase coils).
- H. Electric Controls:
 - 1. Electric Damper Actuator: 24 V, [spring-return open] [spring-return closed] [fail in last position] [, with microswitch to enable heating control circuit].
 - 2. Electric Thermostat: Wall-mounted electric type with temperature display in Fahrenheit and Celsius, and space temperature set point.
 - 3. Air Volume Controls: Pressure-dependent volume controls with field-adjustable minimum and maximum position stops.
- I. Electronic Controls:
 - 1. Electronic Damper Actuator: 24 V, [spring-return open] [spring-return closed] [capacitor-discharge-return open] [capacitor-discharge-return closed] [fail in last position].
 - 2. Electronic Thermostat: Wall-mounted electronic type with temperature display in Fahrenheit and Celsius, and space temperature set point.
 - 3. Electronic Air Volume Controls: Pressure-dependent volume controls with fieldadjustable minimum and maximum position stops.

Mark Twain School for the Talented and Gifted 23 36 00-4 Org #220 Dallas ISD Construction Services AIR TERMINAL UNITS CSP 207459 August 16, 2024

- J. Direct Digital Controls:
 - 1. Terminal Unit Controller: Pressure-independent, VAV controller and integrated actuator, and electronic airflow transducer with multipoint velocity sensor at air inlet, factory calibrated to minimum and maximum air volumes.
 - a. Occupied and unoccupied operating mode.
 - b. Remote reset of airflow or temperature set points.
 - c. Adjusting and monitoring with portable terminal.
 - d. Communication with temperature-control system specified in Section 230923 "Direct Digital Control (DDC) System for HVAC."
 - 2. Room Sensor: Wall mounted with temperature set-point adjustment and access for connection of portable operator terminal.
 - 3. Terminal Unit Controller, Section 230923: Controller is to be factory mounted and wired by air terminal manufacturer; unit controller, actuators, and room sensors are to be furnished under Section 230923 "Direct Digital Control (DDC) System for HVAC."
- K. Control Sequence: See [Section 230993.11 "Sequence of Operation for HVAC"] [Drawings].

2.3 MODULATING, SINGLE-DUCT AIR TERMINAL UNITS

- A. < <u>Couble click here to find, evaluate, and insert list of manufacturers and products.</u>
- B. Description: Volume-damper assembly inside unit casing with control components inside a protective metal shroud.
- C. Casing: Minimum [**20-gauge-**] [**22-gauge-**] thick galvanized steel.
 - 1. Casing Liner: Comply with requirements in "Casing Liner" Article below for ["Casing Liner, Fibrous Glass" Paragraph] ["Casing Liner, Flexible Elastomeric" Paragraph] [with "Antimicrobial Erosion-Resistant Coating" Subparagraph] [with "Foil-Faced Liner" Subparagraph] [with "Solid Metal Liner" Subparagraph] [with "Perforated Metal Liner" Subparagraph] [with "Specialty Liner" Subparagraph].
 - 2. Air Inlet: Round stub connection or S-slip and drive connections for duct attachment.
 - 3. Air Outlet: S-slip and drive connections[, size matching inlet size].
 - 4. Access: Removable panels for access to parts requiring service, adjustment, or maintenance; with airtight gasket.
- D. Volume Damper: Galvanized steel with peripheral gasket and self-lubricating bearings.
 - 1. Maximum Damper Leakage: AHRI 880 rated, [1] [2] percent of nominal airflow at [3-inch wg (750-Pa)] <Insert value> inlet static pressure.
- E. Velocity Sensors: Multipoint array with velocity inlet sensors.

Mark Twain School for the Talented and Gifted 23 36 00-5 Org #220 Dallas ISD Construction Services

- F. Attenuator Section: Casing material and thickness matching associated air terminal unit casing. Provide [absorptive] [packless] attenuator integral with the air terminal unit, with noise transmission loss performance as required in schedules on Drawings.
- G. Hydronic Heating Coils: Copper tube, with mechanically bonded aluminum fins spaced no closer than [0.1 inch (2.5 mm)] [0.08 inch (2.0 mm)]. Include manual air vent and drain valve. Provide hydronic heating coils for air terminal units scheduled on Drawings.
- H. Electric-Resistance Heating Coils: Nickel-chromium heating wire, free of expansion noise and hum, mounted in ceramic inserts in a galvanized-steel housing; with primary automatic, and secondary manual, reset thermal cutouts. Terminate elements in stainless steel, machine-staked terminals secured with stainless steel hardware. Provide electric-resistance heating coils for air terminal units scheduled on Drawings.
 - 1. Stage(s): [**One**] [**Two**] [**Three**].
 - 2. SCR controlled.
 - 3. Access door interlocked disconnect switch.
 - 4. Downstream air temperature sensor with local connection to override dischargeair temperature to not exceed a maximum temperature set point (adjustable).
 - 5. Nickel chrome 80/20 heating elements.
 - 6. Airflow switch for proof of airflow.
 - 7. Fan interlock contacts.
 - 8. Fuses in terminal box for overcurrent protection (for coils of more than 48 A).
 - 9. Pneumatic-electric switches and relays.
 - 10. Magnetic contactor for each step of control (for three-phase coils).
- I. Electric Controls:
 - 1. Electric Damper Actuator: 24 V, [spring-return open] [spring-return closed] [fail in last position].
 - 2. Electric Thermostat: Wall-mounted electronic type with clock display, temperature display in Fahrenheit and Celsius, and space temperature set point.
 - 3. Air Volume Controls: Pressure-dependent volume controls with field-adjustable minimum and maximum position stops.
- J. Electronic Controls:
 - 1. Electronic Damper Actuator: 24 V, [spring-return open] [spring-return closed] [capacitor-discharge-return open] [capacitor-discharge-return closed] [fail in last position].
 - 2. Electronic Thermostat: Wall-mounted electronic type with temperature set-point display in Fahrenheit and Celsius.
 - 3. Electronic Air Volume Controller: Pressure-independent analog electronic controller, factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to electronic thermostat signal while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at air inlet.

- K. Pneumatic Controls:
 - 1. Pneumatic Damper Actuator: [0 to 13 psig (0 to 90 kPa)] <Insert range> spring range.
 - 2. Pneumatic Thermostat: Wall-mounted pneumatic type [direct acting] [and] [reverse acting] with appropriate mounting hardware.
 - 3. Pneumatic Air Volume Controller: Factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to pneumatic thermostat signal while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at air inlet.
- L. Direct Digital Controls:
 - 1. Terminal Unit Controller: Pressure-independent, VAV controller and integrated actuator, and electronic airflow transducer with multipoint velocity sensor at air inlet, factory calibrated to minimum and maximum air volumes.
 - a. Occupied and unoccupied operating mode.
 - b. Remote reset of airflow or temperature set points.
 - c. Adjusting and monitoring with portable terminal.
 - d. Communication with temperature-control system specified in Section 230923 "Direct Digital Control (DDC) System for HVAC."
 - 2. Room Sensor: Wall mounted with [temperature set-point adjustment and]access for connection of portable operator terminal.
 - 3. Terminal Unit Controller, Section 230923: Controller is to be factory mounted and wired by air terminal manufacturer; unit controllers, integrated actuators, and room sensors to be furnished under Section 230923 "Direct Digital Controls (DDC) for HVAC."
- M. Control Sequence: See [Section 230993.11 "Sequence of Operation for HVAC"] [Drawings] for control sequences.

2.4 PARALLEL FAN-POWERED AIR TERMINAL UNITS

- A. <a>

 <u>Couble click here to find, evaluate, and insert list of manufacturers and products.></u>
- B. Description: Volume-damper assembly and centrifugal fan in parallel arrangement inside unit casing with control components inside a protective metal shroud[; low-profile design].
- C. Casing: Minimum [20-gauge-] [22-gauge-] thick galvanized steel.
 - 1. Casing Liner: Comply with requirements in "Casing Liner" Article below for ["Casing Liner, Fibrous Glass" Paragraph] ["Casing Liner, Flexible Elastomeric" Paragraph] [with "Antimicrobial Erosion-Resistant Coating"

Subparagraph] [with "Foil-Faced Liner" Subparagraph] [with "Solid Metal Liner" Subparagraph] [with "Perforated Metal Liner" Subparagraph] [with "Specialty Liner" Subparagraph].

- 2. Air Inlets: Round stub connections or S-slip and drive connections for duct attachment.
- 3. Air Outlet: S-slip and drive connections.
- 4. Access: Removable panels for access to parts requiring service, adjustment, or maintenance; with airtight gasket and quarter-turn latches.
- 5. Fan: Forward-curved centrifugal, located at plenum air inlet.
- D. Volume Damper: Galvanized steel with flow-sensing ring and peripheral gasket and selflubricating bearings.
 - 1. Maximum Damper Leakage: AHRI 880 rated, [1] [2] percent of nominal airflow at [3-inch wg (750-Pa)] <Insert value> inlet static pressure.
- E. Velocity Sensors: Multipoint array with velocity inlet sensors.
- F. Fan Motor:
 - Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Section 230500 "Common Work Results for HVAC."
 - 2. Type: [Permanent-split capacitor with SCR for speed adjustment] [Electronically commutated motor].
 - 3. Fan-Motor Assembly Isolation: Rubber isolators.
 - 4. Enclosure: [Open dripproof] [Totally enclosed, fan cooled] <Insert type>.
 - 5. Enclosure Materials: [Cast iron] < Insert material>.
 - 6. Motor Bearings: <Insert requirements>.
 - 7. Unusual Service Conditions:
 - a. Ambient Temperature: <Insert deg F (deg C)>.
 - b. Altitude: <**Insert feet** (m)> above sea level.
 - c. High humidity.
 - d. <Insert conditions>.
 - 8. Efficiency: Premium efficient as defined in NEMA MG-1.
 - 9. NEMA Design: <Insert designation>.
 - 10. Service Factor: < Insert value>.
 - 11. Motor Speed: [Single speed] [Variable speed].
 - a. Speed Control: Infinitely adjustable with pneumatic-electric and electronic controls.
 - 12. Electrical Characteristics:
 - a. Horsepower: < Insert horsepower>.
 - b. Volts: [120] [208] [230] [460] <Insert value>.
 - c. Phase: [Single] [Poly].
 - d. Hertz: 60.

Mark Twain School for the Talented and Gifted 23 36 00-8 Org #220 Dallas ISD Construction Services

- e. Full-Load Amperes: < Insert value>.
- f. Minimum Circuit Ampacity: <Insert value>.
- g. Maximum Overcurrent Protection: <Insert amperage>.
- G. Filters:
 - 1. Polyurethane Foam: [**MERV 3**] <**Insert value**>. Minimum efficiency reporting value and average arrestance is in accordance with ASHRAE 52.2.
 - 2. [Flat, Nonpleated] [Pleated] Glass Fiber: Factory-fabricated, self-supported disposable air filter with holding frames. Provide [MERV 6] [MERV 13] <Insert value> filter with minimum efficiency reporting value is to be in accordance with ASHRAE 52.2.
- H. Attenuator Section: Casing material and thickness matching associated air terminal unit casing. Provide [absorptive] [packless] attenuator integral with the [plenum inlet] [and] [discharge outlet] of the air terminal unit, of noise transmission loss performance as required in schedules on Drawings.
- I. Hydronic Heating Coils: Copper tube, with mechanically bonded aluminum fins spaced no closer than [0.1 inch (2.5 mm)] [0.08 inch (2.0 mm)]. Include manual air vent and drain valve. Locate coil in [plenum air inlet] [discharge-air outlet] airstream. Provide hydronic heating coils for air terminal units scheduled on Drawings.
- J. Electric-Resistance Heating Coils: Nickel-chromium heating wire, free of expansion noise and hum, mounted in ceramic inserts in a galvanized-steel housing; with primary automatic, and secondary manual, reset thermal cutouts. Terminate elements in stainless steel, machine-staked terminals secured with stainless steel hardware. Locate coil in discharge-air outlet airstream. Provide electric-resistance heating coils for air terminal units scheduled on Drawings.
 - 1. Stage(s): [One] [Two] [Three].
 - 2. SCR controlled.
 - 3. Access door interlocked disconnect switch.
 - 4. Downstream air temperature sensor with local connection to override dischargeair temperature to not exceed a maximum temperature set point (adjustable).
 - 5. Nickel chrome 80/20 heating elements.
 - 6. Airflow switch for proof of airflow.
 - 7. Fan interlock contacts.
 - 8. Fuses in terminal box for overcurrent protection (for coils of more than 48 A).
 - 9. Pneumatic-electric switches and relays.
 - 10. Magnetic contactor for each step of control (for three-phase coils).
- K. Factory-Mounted and -Wired Controls: Electrical components mounted in control box with removable cover. Incorporate single-point electrical connection to power source.
 - 1. Control Transformer: Factory mounted for control voltage on electric and electronic control units with terminal strip in control box for field wiring of thermostat and power source.

- 2. Wiring Terminations: Fan and controls to terminal strip. Terminal lugs will match quantities, sizes, and materials of branch-circuit conductors. Enclose terminal lugs in terminal box that is sized in accordance with NFPA 70.
- 3. Disconnect Switch: Factory-mounted fuse type.
- L. Control Panel Enclosure: NEMA 250, Type 1, with access panel sealed from airflow and mounted on side of unit.
- M. Electric Controls:
 - 1. Electric Damper Actuator: 24 V, [spring-return open] [spring-return closed] [fail in last position].
 - 2. Electric Thermostat: Wall-mounted electronic type with clock display, temperature display in Fahrenheit and Celsius, and space temperature set point.
 - 3. Air Volume Controls: Pressure-dependent volume controls with field-adjustable minimum and maximum position stops.
- N. Electronic Controls:
 - 1. Electronic Damper Actuator: 24 V, [spring-return open] [spring-return closed] [capacitor-discharge-return open] [capacitor-discharge-return closed] [fail in last position].
 - 2. Electronic Thermostat: Wall-mounted electronic type with temperature set-point display in Fahrenheit and Celsius.
 - 3. Electronic Air Volume Controller: Pressure-independent analog electronic controller, factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to electronic thermostat signal while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at air inlet.
- O. Pneumatic Controls:
 - 1. Pneumatic Damper Actuator: [0 to 13 psig (0 to 90 kPa)] <Insert range> spring range.
 - 2. Pneumatic Thermostat: Wall-mounted pneumatic-type, [direct acting] [reverse acting] [direct or reverse acting as indicated on Drawings], with appropriate mounting hardware.
 - 3. Pneumatic Air Volume Controller: Factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to pneumatic thermostat signal while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at air inlet.
- P. Direct Digital Controls:
 - 1. Terminal Unit Controller: Pressure-independent, VAV controller with integrated actuator and electronic airflow transducer with multipoint velocity sensor at air inlet, factory calibrated to minimum and maximum air volumes.
 - a. Occupied and unoccupied operating mode.

- b. Remote reset of airflow or temperature set points.
- c. Adjusting and monitoring with portable terminal.
- d. Communication with temperature-control system specified in Section 230923 "Direct Digital Control (DDC) System for HVAC."
- 2. Room Sensor: Wall mounted with[temperature set-point adjustment and] access for connection of portable operator terminal.
- 3. Terminal Unit Controller, Section 230923: Controller is to be factory mounted and wired by air terminal manufacturer; unit controllers, actuators, and room sensors are to be furnished under Section 230923 "Direct Digital Control (DDC) System for HVAC."
- Q. Control Sequence: See [Section 230993.11 "Sequence of Operation for HVAC"] [Drawings] for control sequences.

2.5 SERIES FAN-POWERED AIR TERMINAL UNITS

- A. <a>

 Section 2 Comparison of the section of t
- B. Description: Volume-damper assembly and centrifugal fan in series arrangement inside unit casing with control components inside a protective metal shroud.
 - 1. Designed for quiet operation.
 - 2. Low-profile design.
- C. Casing: Minimum [**20-gauge-**] [**22-gauge-**] thick galvanized steel.
 - 1. Casing Liner: Comply with requirements in "Casing Liner" Article below for ["Casing Liner, Fibrous Glass" Paragraph] ["Casing Liner, Flexible Elastomeric" Paragraph] [with "Antimicrobial Erosion-Resistant Coating" Subparagraph] [with "Foil-Faced Liner" Subparagraph] [with "Solid Metal Liner" Subparagraph] [with "Perforated Metal Liner" Subparagraph] [with "Specialty Liner" Subparagraph].
 - 2. Air Inlets: Round stub connections or S-slip and drive connections for duct attachment.
 - 3. Air Outlet: S-slip and drive connections.
 - 4. Access: Removable panels for access to parts requiring service, adjustment, or maintenance; with airtight gasket and quarter-turn latches.
 - 5. Fan: Forward-curved centrifugal.
- D. Volume Damper: Galvanized steel with flow-sensing ring and peripheral gasket and selflubricating bearings.
 - 1. Maximum Damper Leakage: AHRI 880 rated, [1] [2] percent of nominal airflow at [3-inch wg (750-Pa)] <Insert value> inlet static pressure.
- E. Velocity Sensors: Multipoint array with velocity sensors in air inlet.
- F. Fan Motor:

Mark Twain School for the Talented and Gifted 23 36 00-11 Org #220 Dallas ISD Construction Services

- Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Section 230500 "Common Work Results for HVAC."
- 2. Type: [Permanent-split capacitor with SCR for speed adjustment] [Electronically commutated motor].
- 3. Fan-Motor Assembly Isolation: Rubber isolators.
- 4. Enclosure: [Open dripproof] [Totally enclosed, fan cooled] <Insert type>.
- 5. Enclosure Materials: [Cast iron] < Insert material>.
- 6. Motor Bearings: <**Insert requirements**>.
- 7. Unusual Service Conditions:
 - a. Ambient Temperature: < Insert deg F (deg C)>.
 - b. Altitude: < Insert feet (m)> above sea level.
 - c. High humidity.
 - d. <Insert conditions>.
- 8. Efficiency: Premium efficient as defined by NEMA MG-1.
- 9. NEMA Design: < Insert designation>.
- 10. Service Factor: < Insert value>.
- 11. Motor Speed: [Single speed] [Variable speed].
 - a. Speed Control: Infinitely adjustable with pneumatic-electric and electronic controls.
- 12. Electrical Characteristics:
 - a. Horsepower: < Insert horsepower>.
 - b. Volts: [120] [208] [230] [460] <Insert value>.
 - c. Phase: [Single] [Poly].
 - d. Hertz: 60.
 - e. Full-Load Amperes: < Insert value>.
 - f. Minimum Circuit Ampacity: <Insert value>.
 - g. Maximum Overcurrent Protection: <Insert amperage>.
- G. Filters:
 - 1. Polyurethane Foam: [**MERV 3**] <**Insert value**>. Minimum efficiency reporting value and average arrestance in accordance with ASHRAE 52.2.
 - [Flat, Nonpleated] [Pleated] Glass Fiber: Factory-fabricated, self-supported disposable air filter with holding frames. Provide [MERV 6] [MERV 13] <Insert value> filters with minimum efficiency reporting value is to be in accordance with ASHRAE 522.
- H. Attenuator Section: Casing material and thickness matching associated air terminal unit casing. Provide [absorptive] [packless] attenuator integral with the [plenum inlet] [and] [discharge outlet] of the air terminal unit, of noise transmission loss performance as required in schedules on Drawings.
- I. Hydronic Heating Coils: Copper tube, with mechanically bonded aluminum fins spaced no closer than [0.1 inch (2.5 mm)] [0.08 inch (2.0 mm)]. Include manual air vent and

drain valve. Locate coil in discharge outlet airstream. Provide hydronic heating coils for air terminal units scheduled on Drawings.

- J. Electric-Resistance Heating Coils: Nickel-chromium heating wire, free of expansion noise and hum, mounted in ceramic inserts in a galvanized-steel housing; with primary automatic, and secondary manual, reset thermal cutouts. Terminate elements in stainless steel, machine-staked terminals secured with stainless steel hardware. Locate coil in discharge outlet airstream. Provide electric-resistance heating coils for air terminal units scheduled on Drawings.
 - 1. Stage(s): [One] [Two] [Three].
 - 2. SCR controlled.
 - 3. Access door interlocked disconnect switch.
 - 4. Downstream air temperature sensor with local connection to override dischargeair temperature to not exceed a maximum temperature set point (adjustable).
 - 5. Nickel chrome 80/20 heating elements.
 - 6. Airflow switch for proof of airflow.
 - 7. Fan interlock contacts.
 - 8. Fuses in terminal box for overcurrent protection (for coils of more than 48 A).
 - 9. Pneumatic-electric switches and relays.
 - 10. Magnetic contactor for each step of control (for three-phase coils).
- K. Factory-Mounted and -Wired Controls: Electrical components mounted in control box with removable cover. Incorporate single-point electrical connection to power source.
 - 1. Control Transformer: Factory mounted for control voltage on electric and electronic control units with terminal strip in control box for field wiring of thermostat and power source.
 - 2. Wiring Terminations: Fan and controls to terminal strip. Terminal lugs to match quantities, sizes, and materials of branch-circuit conductors. Enclose terminal lugs in terminal box that is sized in accordance with NFPA 70.
 - 3. Disconnect Switch: Factory-mounted fuse type.
- L. Control Panel Enclosure: NEMA 250, Type 1, with access panel sealed from airflow and mounted on side of unit.
- M. Electric Controls:
 - 1. Electric Damper Actuator: 24 V, [spring-return open] [spring-return closed] [fail in last position].
 - 2. Electric Thermostat: Wall-mounted electronic type with clock display, temperature display in Fahrenheit and Celsius[, and space temperature set point].
 - 3. Air Volume Controls: Pressure-dependent volume controls with field-adjustable minimum and maximum position stops.
- N. Electronic Controls:
 - 1. Electronic Damper Actuator: 24 V, [spring-return open] [spring-return closed] [capacitor-discharge-return open] [capacitor-discharge-return closed] [fail in last position].

Mark Twain School for the Talented and Gifted 23 36 00-13 Org #220 Dallas ISD Construction Services AIR TERMINAL UNITS CSP 207459 August 16, 2024

- 2. Electronic Thermostat: Wall-mounted electronic type with temperature display in Fahrenheit and Celsius.
- 3. Electronic Air Volume Controller: Pressure-independent analog electronic controller, factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to electronic thermostat signal while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at air inlet.
- O. Pneumatic Controls:
 - 1. Pneumatic Damper Actuator: [0 to 13 psig (0 to 90 kPa)] <Insert range> spring range.
 - 2. Pneumatic Thermostat: Wall-mounted, pneumatic type, [direct acting] [and] [reverse acting], with appropriate mounting hardware.
 - 3. Pneumatic Air Volume Controller: Factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to pneumatic thermostat while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at air inlet.
- P. Direct Digital Controls:
 - 1. Terminal Unit Controller: Pressure-independent, VAV controller and integrated actuator, and electronic airflow transducer with multipoint velocity sensor at air inlet, factory calibrated to minimum and maximum air volumes.
 - a. Occupied and unoccupied operating mode.
 - b. Remote reset of airflow or temperature set points.
 - c. Adjusting and monitoring with portable terminal.
 - d. Communication with temperature-control system specified in Section 230923 "Instrumentation and Control for HVAC."
 - 2. Room Sensor: Wall mounted with[temperature set-point adjustment and] access for connection of portable operator terminal.
 - 3. Terminal Unit Controller, Section 230923: Controller is to be factory mounted and wired by air terminal unit manufacturer; unit controller, actuators, and room sensors are to be furnished under Section 230923 "Direct Digital Control (DDC) for HVAC".
- Q. Control Sequence: See [Section 230993.11 "Sequence of Operation for HVAC"] [Drawings] for control sequences.

2.6 DUAL-DUCT AIR TERMINAL UNITS

- A. <a>

 Ouble click here to find, evaluate, and insert list of manufacturers and products.>
- B. Description: [**Mixing**] [and] [nonmixing] with two volume dampers inside unit casing with mixing attenuator section and control components inside a protective metal shroud.

- C. Casing: Minimum [**20-gauge-**] [**22-gauge-**] thick galvanized steel.
 - Casing Liner: Comply with requirements in "Casing Liner" Article below for ["Casing Liner, Fibrous Glass" Paragraph] ["Casing Liner, Flexible Elastomeric" Paragraph] [with "Antimicrobial Erosion-Resistant Coating" Subparagraph] [with "Foil-Faced Liner" Subparagraph] [with "Solid Metal Liner" Subparagraph] [with "Perforated Metal Liner" Subparagraph] [with "Specialty Liner" Subparagraph].
 - 2. Air Inlets: Round stub connections or S-slip and drive connections for duct attachment.
 - 3. Air Outlet: S-slip and drive connections.
 - 4. Access: Removable panels for access to parts requiring service, adjustment, or maintenance; with airtight gasket.
- D. Volume Damper: Galvanized steel with peripheral gasket and self-lubricating bearings.
 - 1. Maximum Damper Leakage: AHRI 880 rated, <**Insert number**> percent of nominal airflow at [**3-inch wg** (**750-Pa**)] <**Insert value**> inlet static pressure.
- E. Velocity Sensors: Multipoint array with velocity sensors in each air inlet and air outlet.
- F. Attenuator Section: Casing material and thicknesses matching associated air terminal unit casing. Provide [absorptive] [packless] attenuator integral with the air terminal unit, of noise transmission loss performance as required in schedules on Drawings.
- G. Electric Controls:
 - 1. Electric Damper Actuator, Hot Deck: 24 V, [spring-return open] [spring-return closed] [fail in last position].
 - 2. Electric Damper Actuator, Cold Deck: 24 V, [spring-return open] [spring-return closed] [fail in last position].
 - 3. Electric Thermostat: Wall-mounted electronic type with clock display, temperature display in Fahrenheit and Celsius, and space temperature set point.
 - 4. Air Volume Controls: Pressure-dependent volume controls with field-adjustable minimum and maximum position stops.
- H. Electronic Controls:
 - 1. Electronic Damper Actuator, Hot Deck: 24 V, [spring-return open] [spring-return closed] [capacitor-discharge-return open] [capacitor-discharge-return closed] [fail in last position].
 - 2. Electronic Damper Actuator, Cold Deck: 24 V, [spring- return open] [springreturn closed] [capacitor- discharge- return open] [capacitor- dischargereturn closed] [fail in last position].
 - 3. Electronic Thermostat: Wall-mounted electronic type with temperature set-point display in Fahrenheit and Celsius.
 - 4. Electronic Air Volume Controller: Pressure-independent analog electronic controller, factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to electronic

thermostat signal while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at each air inlet.

- I. Pneumatic Controls:
 - 1. Pneumatic Damper Actuator: [0 to 13 psig (0 to 90 kPa)] <Insert range> spring range.
 - 2. Pneumatic Thermostat: Wall-mounted pneumatic type with appropriate mounting hardware.
 - 3. Pneumatic Air Volume Controller: Factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to pneumatic thermostat signal while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at each air inlet.
- J. Terminal Unit Controller: Pressure-independent, VAV controller with electronic airflow transducer with multipoint velocity sensor at air inlet, factory calibrated to minimum and maximum air volumes.
 - 1. Occupied and unoccupied operating mode.
 - 2. Remote reset of airflow or temperature set points.
 - 3. Adjusting and monitoring with portable terminal.
 - 4. Communication with temperature-control system specified in Section 230923 "Direct Digital Control (DDC) System for HVAC."
- K. Room Sensor: Wall mounted with [temperature set-point adjustment and]access for connection of portable operator terminal.
- L. Terminal Unit Controller, Section 230923: Controllers and actuators are to be factory mounted and wired by air terminal manufacturer; unit controller, actuators, and room sensors are to be furnished under Section 230923 "Direct Digital Control (DDC) System for HVAC."
- M. Control Sequence: See [Section 230993.11 "Sequence of Operation for HVAC"] [Drawings] for control sequences.

2.7 INDUCTION AIR TERMINAL UNITS

- A. <a>

 Ouble click here to find, evaluate, and insert list of manufacturers and products.>
- B. Description: Primary volume-damper and venturi assembly inside unit casing with mechanical induction damper mounted on casing and control components inside a protective metal shroud.
- C. Casing: Minimum 22-gauge-thick galvanized steel.
 - 1. Casing Liner: Comply with requirements in "Casing Liner" Article below for ["Casing Liner, Fibrous Glass" Paragraph] ["Casing Liner, Flexible Elastomeric" Paragraph] [with "Antimicrobial Erosion-Resistant Coating"

Subparagraph] [with "Foil-Faced Liner" Subparagraph] [with "Solid Metal Liner" Subparagraph] [with "Perforated Metal Liner" Subparagraph] [with "Specialty Liner" Subparagraph].

- 2. Air Inlet: Round stub connection for duct attachment.
- 3. Air Outlet: S-slip and drive connections[, size matching inlet size].
- 4. Access: Removable panels for access to parts requiring service, adjustment, or maintenance; with airtight gasket.
- 5. Fan: Forward-curved centrifugal.
- D. Primary Volume Damper: Galvanized steel with peripheral gasket and self-lubricating bearings.
 - 1. Maximum Damper Leakage: AHRI 880 rated, <**Insert number**> percent of nominal airflow at [3-inch wg (750-Pa)] <**Insert value**> inlet static pressure.
- E. Induction Damper: Galvanized-steel, multiblade assembly with self-lubricating bearings.
- F. Hydronic Heating Coils: Copper tube, with mechanically bonded aluminum fins spaced no closer than [0.1 inch (2.5 mm)] [0.08 inch (2.0 mm)]. Include manual air vent and drain valve. Provide hydronic heating coils for air terminal units scheduled on Drawings.
- G. Electric-Resistance Heating Coils: Nickel-chromium heating wire, free of expansion noise and hum, mounted in ceramic inserts in a galvanized-steel housing; with primary automatic, and secondary manual, reset thermal cutouts. Terminate elements in stainless steel, machine-staked terminals secured with stainless steel hardware. Provide electric-resistance heating coils for air terminal units scheduled on Drawings.
 - 1. Stage(s): [One] [Two] [Three].
 - 2. SCR controlled.
 - 3. Access door interlocked disconnect switch.
 - 4. Downstream air temperature sensor with local connection to override dischargeair temperature to not exceed a maximum temperature set point (adjustable).
 - 5. Nickel chrome 80/20 heating elements.
 - 6. Airflow switch for proof of airflow.
 - 7. Fan interlock contacts.
 - 8. Fuses in terminal box for overcurrent protection (for coils of more than 48 A).
 - 9. Pneumatic-electric switches and relays.
 - 10. Magnetic contactor for each step of control (for three-phase coils).
- H. Electric Controls:
 - 1. Electric Damper Actuator: 24 V, [spring-return open] [spring-return closed] [fail in last position].
 - 2. Electric Thermostat: Wall-mounted electronic type with clock display, temperature display in Fahrenheit and Celsius[, and space temperature set point].
 - 3. Air Volume Controls: Pressure-dependent volume controls with field-adjustable minimum and maximum position stops.

- I. Electronic Controls:
 - 1. Electronic Damper Actuator: 24 V, powered open, [spring-return open] [springreturn closed] [capacitor-discharge-return open] [capacitor-discharge-return closed] [fail in last position].
 - 2. Electronic Thermostat: Wall-mounted electronic type with temperature set-point display in Fahrenheit and Celsius.
 - 3. Electronic Air Volume Controller: Pressure-independent analog electronic controller, factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to electronic thermostat signal while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at air inlet.
- J. Pneumatic Controls:
 - 1. Pneumatic Damper Actuator: [0 to 13 psig (0 to 90 kPa)] <Insert range> spring range.
 - 2. Pneumatic Thermostat: Wall-mounted pneumatic type, [direct acting] [reverse acting] [direct or reverse acting as indicated on Drawings], with appropriate mounting hardware.
 - 3. Pneumatic Air Volume Controller: Factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to pneumatic thermostat while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at air inlet.
- K. Direct Digital Controls:
 - 1. Terminal Unit Controller: Pressure-independent, VAV controller with integrated actuator, and electronic airflow transducer with multipoint velocity sensor at air inlet, factory calibrated to minimum and maximum air volumes.
 - a. Occupied and unoccupied operating mode.
 - b. Remote reset of airflow or temperature set points.
 - c. Adjusting and monitoring with portable terminal.
 - d. Communication with temperature-control system specified in Section 230923 "Direct Digital Control (DDC) System for HVAC."
 - 2. Room Sensor: Wall mounted with temperature set-point adjustment and access for connection of portable operator terminal.
 - 3. Terminal Unit Controller, Section 230923: Controller and actuators are to be factory mounted and wired by air terminal unit manufacturer; unit controller, actuator, and room sensors are to be furnished under Section 230923 "Direct Digital Control (DDC) System for HVAC."
- L. Control Sequence: See [Section 230993.11 "Sequence of Operation for HVAC"] [Drawings] for control sequences.

2.8 DIFFUSER-TYPE AIR TERMINAL UNITS

- A. <a>

 A.
- B. Description: Volume-damper, diffuser, controller assembly[and inlet electric heater] and wall-mounted temperature-sensing device[with master-drone capability].
- C. Volume Damper: [Galvanized steel] <Insert material> with peripheral gasket and selflubricating bearings.

D. Diffuser: [Galvanized steel] [Aluminum] <Insert material> with [white] [powder coat] [or] [baked-enamel finish] <Insert color and finish>.

- E. Wall-Mounted Temperature Sensor/Controller:
 - 1. Digital display LCD wall-mounted controller.
 - 2. Intuitive user operation.
 - 3. Controller settings retained during power loss.
 - 4. Communication Interface: [**BACnet**] [**Modbus**] <**Insert protocol**> compatible for integration with building automation system.
 - 5. Operational features:
 - a. Set-point indication.
 - b. Set-point adjustment.
 - c. Changeover temperature indication.
 - d. Changeover temperature set-point adjustment.
 - e. Minimum damper position adjustment for ventilation air.
- F. Accessories:
 - 1. Modular plenum-rated plug-in cables for interconnecting master-drone diffusers.
 - 2. Blank-off panels.
 - 3. Pressure-relief ring.
 - 4. 24 V ac transformer/power supply for master-drone configurations.
 - 5. Plenum-rated, plug-in, diffuser interconnection cables for master-drone configurations.
 - 6. Diffuser back-pan insulation.
 - 7. T-bar mounting frame.
 - 8. Plaster ceiling frame.
- G. Control Sequence: See [Section 230993.11 "Sequence of Operation for HVAC"] [Drawings] for control sequences.

2.9 BALANCING TERMINAL UNITS

A. <a>

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- B. Description: Manually operated volume-damper assembly with locking mechanism inside unit casing with multipoint, center-averaging velocity sensors[for installation above a ceiling].
- C. Casing: Minimum 22-gauge-thick galvanized steel.
 - 1. Leakage: Maximum 2 percent of nominal airflow at 1.5-inch wg (375-Pa) static pressure.
 - 2. Air Inlet: Round stub connection for duct attachment.
 - 3. Air Outlet: S-slip and drive connections.
 - 4. Casing Liner: Comply with requirements in "Casing Liner" Article below for ["Casing Liner, Fibrous Glass" Paragraph] ["Casing Liner, Flexible Elastomeric" Paragraph] [with "Antimicrobial Erosion-Resistant Coating" Subparagraph] [with "Foil-Faced Liner" Subparagraph] [with "Solid Metal Liner" Subparagraph] [with "Perforated Metal Liner" Subparagraph] [with "Specialty Liner" Subparagraph].
- D. Volume Damper: Galvanized steel with peripheral gasket and self-lubricating bearings.
 - 1. Maximum Damper Leakage: AHRI 880 rated, [2] <Insert number> percent of nominal airflow at [3-inch wg (750-Pa)] <Insert value> inlet static pressure.

2.10 PRESSURE-CONTROL TERMINAL UNITS

- A. <a>

 Ouble click here to find, evaluate, and insert list of manufacturers and products.>
- B. Description: Volume-damper assembly inside unit casing with control components inside a protective metal shroud, designed to regulate duct pressure via throttling to control discharge pressure in a variable volume system.
- C. Casing: Minimum 22-gauge-thick galvanized steel.
 - 1. Casing Liner: Comply with requirements in "Casing Liner" Article below for ["Casing Liner, Fibrous Glass" Paragraph] ["Casing Liner, Flexible Elastomeric" Paragraph] [with "Antimicrobial Erosion-Resistant Coating" Subparagraph] [with "Foil-Faced Liner" Subparagraph] [with "Solid Metal Liner" Subparagraph] [with "Perforated Metal Liner" Subparagraph] [with "Specialty Liner" Subparagraph].
 - 2. Air Inlet: Round stub connection for duct attachment.
 - 3. Air Outlet: S-slip and drive connections.
 - 4. Access: Removable panels for access to diverting damper and other parts requiring service, adjustment, or maintenance; with airtight gasket.
 - 5. Damper Assembly: Damper, shaft, and heavy-duty self-lubricating bearings.
- D. Attenuator Section: Construction materials and thicknesses matching associated air terminal unit casing. Provide [absorptive] [packless] attenuator integral with the air terminal unit, of noise transmission loss performance as required in schedules on Drawings.

- E. Direct Digital Controls:
 - 1. Terminal Unit Controller: Pressure-independent controller and integrated [springreturn open] [spring-return closed] [capacitor-discharge-return open] [capacitor-discharge-return closed] [fail-in-last-position] actuator, and electronic airflow transducer with multipoint velocity sensor at air inlet, factory calibrated to minimum and maximum discharge pressures.
 - a. Occupied and unoccupied operating mode.
 - b. Remote reset of discharge pressure set points.
 - c. Adjusting and monitoring with portable terminal.
 - d. Communication with temperature-control system specified in Section 230923 "Direct Digital Control (DDC) System for HVAC."
 - 2. Discharge Static Pressure Sensor: Discharge static pressure sensor to maintain constant static pressure within [**5**] <**Insert number**> percent of set point.
 - 3. Terminal Unit Controller and Discharge Static Pressure Sensor, Section 230923: Controller, actuator, and sensor to be factory mounted and wired by air terminal manufacturer; unit controller, actuator, and sensor are to be furnished under Section 230923 "Direct Digital Control (DDC) System for HVAC."
- F. Control Sequence: See [Section 230993.11 "Sequence of Operation for HVAC"] [Drawings] for control sequences.

2.11 CRITICAL ENVIRONMENT CONTROL VALVE

- A. <a>

 <a>

 A.
 <a>

 <a>

- B. Description: Volume-damper or venturi assembly inside a unit casing with control components inside a protective metal shroud, for general exhaust applications or for exhaust applications where pressurization control via exhaust and supply airflow control is desired and airstream corrosion and contamination may be a concern.
- C. Casing:
 - 1. Material: [Type 304 stainless steel] [or] [Type 316 stainless steel] [Minimum 22-gauge galvanized steel with phenolic coating] <Insert material>.
- D. [Airflow Metering, Option: Calibrated shaft position with self-adjusting, springloaded cone.]
- E. [Sensors, Option: Multipoint,] [Type 316 stainless steel] <Insert material> [, removable].
- F. Direct Digital Controls:
 - 1. Terminal Unit Controller, Section 230923: Controller is to be factory mounted and wired by air terminal manufacturer; unit controller, actuators, and room sensors

are to be furnished under Section 230923 "Direct Digital Control (DDC) System for HVAC."

G. Control Sequence: See [Section 230993.11 "Sequence of Operation for HVAC"] [Drawings] for control sequences.

2.12 UNDERFLOOR AIR DISTRIBUTION TERMINAL UNITS

- A. <a>

 Section 2 Comparison of the section of t
- B. Description: Volume-damper assembly and fan in series arrangement inside low-profile unit casing with control components inside a protective metal shroud within a raised access floor. Design configuration for [pressurized floor cavity supply] [and] [ducted air supply].
- C. Casing: Minimum [20-gauge-] [22-gauge-] thick galvanized steel.
 - 1. Integral floor discharge diffusers.
 - 2. Mixing damper.
 - 3. VAV throttling damper.
 - 4. Leveling feet.
 - 5. Casing Liner: Comply with requirements in "Casing Liner" Article below for ["Casing Liner, Fibrous Glass" Paragraph] ["Casing Liner, Flexible Elastomeric" Paragraph] [with "Antimicrobial Erosion-Resistant Coating" Subparagraph] [with "Foil-Faced Liner" Subparagraph] [with "Solid Metal Liner" Subparagraph] [with "Perforated Metal Liner" Subparagraph] [with "Specialty Liner" Subparagraph].
 - 6. Air Outlet: S-slip and drive connections.
 - 7. Access: Removable panels on top of casing, for access to parts requiring service, adjustment, or maintenance; with airtight gasket and quarter-turn latches.
 - 8. Fan: Forward-curved centrifugal [in double blower configuration] [with double blowers as scheduled].
- D. Volume Damper: Galvanized steel with flow-sensing ring and peripheral gasket and selflubricating bearings.
 - 1. Maximum Damper Leakage: AHRI 880 rated, [1] [2] percent of nominal airflow at [3-inch wg (750-Pa)] <Insert value> inlet static pressure.
 - 2. Damper Position: Normally [open] [closed].
- E. Velocity Sensors: Multipoint array with velocity sensors in air inlets.
- F. Motor:
 - Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Section 230500 "Common Work Results for HVAC."
 - 2. Type: [Permanent-split capacitor with SCR for speed adjustment] [Electronically commutated motor].

Mark Twain School for the Talented and Gifted 23 36 00-22 Org #220 Dallas ISD Construction Services

- 3. Fan-Motor Assembly Isolation: Rubber isolators.
- 4. Enclosure: [Open dripproof] [Totally enclosed, fan cooled] <Insert type>.
- 5. Enclosure Materials: [Cast iron] < Insert material>.
- 6. Motor Bearings: < Insert requirements>.
- 7. Unusual Service Conditions:
 - a. Ambient Temperature: <Insert deg F (deg C)>.
 - b. Altitude: <**Insert feet (m)**> above sea level.
 - c. High humidity.
 - d. <Insert conditions>.
- 8. Efficiency: Premium efficient.
- 9. NEMA Design: < Insert designation>.
- 10. Service Factor: < Insert value>.
- 11. Motor Speed: [Single speed] [Variable speed].
- 12. Electrical Characteristics:
 - a. Horsepower: < Insert horsepower>.
 - b. Volts: [120] [208] [230] [460] <Insert value>.
 - c. Phase: [Single] [Poly].
 - d. Hertz: 60.
 - e. Full-Load Amperes: < Insert value>.
 - f. Minimum Circuit Ampacity: <Insert value>.
 - g. Maximum Overcurrent Protection: <Insert amperage>.
- G. Hydronic Heating Coils: Copper tube, with mechanically bonded aluminum fins spaced no closer than [0.1 inch (2.5 mm)] [0.08 inch (2.0 mm)]. Include manual air vent and drain valve. Locate coil in discharge outlet airstream. Provide hydronic heating coils for air terminal units scheduled on Drawings.
- H. Electric-Resistance Heating Coils: Nickel-chromium heating wire, free of expansion noise and hum, mounted in ceramic inserts in a galvanized-steel housing; with primary automatic, and secondary manual, reset thermal cutouts. Terminate elements in stainless steel, machine-staked terminals secured with stainless steel hardware. Locate coil in discharge outlet airstream. Provide electric-resistance heating coils for air terminal units scheduled on Drawings.
 - 1. Stage(s): [One] [Two] [Three].
 - 2. SCR controlled.
 - 3. Access door interlocked disconnect switch.
 - 4. Downstream air temperature sensor with local connection to override dischargeair temperature to not exceed a maximum temperature set point (adjustable).
 - 5. Nickel chrome 80/20 heating elements.
 - 6. Airflow switch for proof of airflow.
 - 7. Fan interlock contacts.
 - 8. Fuses in terminal box for overcurrent protection (for coils of more than 48 A).
 - 9. Pneumatic-electric switches and relays.
 - 10. Magnetic contactor for each step of control (for three-phase coils).
- I. Factory-Mounted and -Wired Controls: Electrical components mounted in control box with removable cover. Incorporate single-point electrical connection to power source.
 - 1. Control Transformer: Factory mounted for control voltage on electric and electronic control units with terminal strip in control box for field wiring of thermostat and power source.
 - 2. Wiring Terminations: Fan and controls to terminal strip. Verify terminal lugs match quantities, sizes, and materials of branch-circuit conductors. Enclose terminal lugs in terminal box that is sized in accordance with NFPA 70.
 - 3. Disconnect Switch: Factory-mounted fuse type.
- J. Control Panel Enclosure: NEMA 250, Type 1, with access panel sealed from airflow and mounted on side of unit.
- K. Electronic Controls:
 - 1. Electronic Damper Actuator: 24 V, [spring-return open] [spring-return closed] [capacitor-discharge-return open] [capacitor-discharge-return closed] [fail in last position].
 - 2. Electronic Thermostat: Wall-mounted electronic type with temperature set-point display in Fahrenheit and Celsius.
 - 3. Electronic Air Volume Controller: Pressure-independent analog electronic controller, factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to electronic thermostat signal while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at air inlet.
- L. Direct Digital Controls:
 - 1. Terminal Unit Controller: Pressure-independent, VAV controller with integrated actuator and electronic airflow transducer with multipoint velocity sensor at air inlet, factory calibrated to minimum and maximum air volumes.
 - a. Occupied and unoccupied operating mode.
 - b. Remote reset of airflow or temperature set points.
 - c. Adjusting and monitoring with portable terminal.
 - d. Communication with temperature-control system specified in Section 230923 "Direct Digital Control (DDC) System for HVAC."
 - 2. Room Sensor: Set-point adjustment and access for connection of portable operator terminal.
 - 3. Terminal Unit Controller, Section 230923: Controller is to be factory mounted and wired by air terminal manufacturer; unit controller, actuators, and room sensors are to be furnished under Section 230923 "Direct Digital Control (DDC) System for HVAC."
- M. Control Sequence: See [Section 230993.11 "Sequence of Operation for HVAC"] [Drawings] for control sequences.

2.13 EXHAUST SINGLE-DUCT TERMINAL UNITS

- A. <a>

 Section 2 Comparison of the section of t
- B. Description: Volume-damper assembly inside unit casing with control components inside a protective metal shroud, for exhaust applications where pressurization control via exhaust and supply airflow control is desired.
- C. Casing: Minimum [22-gauge-] [20-gauge-] <Insert value> thick galvanized steel.
 - 1. Air Inlet: Round stub connection or S-slip and drive connections for duct attachment.
 - 2. Air Outlet: S-slip and drive connections[, size matching inlet size].
 - 3. Access: Removable panels for access to parts requiring service, adjustment, or maintenance; with airtight gasket.
- D. Volume Damper: Galvanized steel with peripheral gasket and self-lubricating bearings.
 - 1. Maximum Damper Leakage: AHRI 880 rated, [1] [2] percent of nominal airflow at [3-inch wg (750-Pa)] <Insert value> inlet static pressure.
- E. Attenuator Section: Casing material and thickness matching associated air terminal unit casing. Provide [absorptive] [packless] attenuator integral with the air terminal unit, of noise transmission loss performance as required in schedules on Drawings.
- F. Electric Controls:
 - 1. Damper Actuator: 24 V, [spring-return open] [spring-return closed] [fail in last position].
 - 2. Air Volume Controls: Pressure-dependent volume controls with field-adjustable minimum and maximum position stops.
 - 3. Differential Pressure Sensor: Wall-mounted type with set point.
- G. Electronic Controls:
 - 1. Damper Actuator: 24 V, [spring-return open] [spring-return closed] [capacitordischarge-return open] [capacitor-discharge-return closed] [fail in last position].
 - 2. Electronic Air Volume Controller: Pressure-independent analog electronic controller, factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to electronic thermostat signal while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at air inlet.
 - 3. Differential Pressure Sensor: Wall-mounted electronic type with set-point display.
- H. Direct Digital Controls:
 - 1. Terminal Unit Controller: Pressure-independent, controller and integrated [springreturn open] [spring-return closed] [capacitor-discharge open] [capacitordischarge-return closed] [fail-in-last-position] actuator, and electronic airflow

transducer with multipoint velocity sensor at air inlet, factory calibrated to minimum and maximum air volumes.

- a. Occupied and unoccupied operating mode.
- b. Remote reset of airflow or temperature set points.
- c. Adjusting and monitoring with portable terminal.
- d. Communication with temperature-control system specified in Section 230923 "Direct Digital Control (DDC) System for HVAC."
- 2. Room Sensor: Wall mounted with differential pressure set-point adjustment[and access for connection of portable operator terminal].
- 3. Terminal Unit Controller, Section 230923: Controller is to be factory mounted and wired by air terminal manufacturer; unit controller, actuators, and room sensors are to be furnished under Section 230923 "Direct Digital Control (DDC) System for HVAC."
- 4. Damper Actuator: 24 V, [spring-return open] [spring-return closed] [capacitordischarge-return open] [capacitor-discharge-return closed] [fail in last position].
- I. Control Sequence: See [Section 230993.11 "Sequence of Operation for HVAC"] [Drawings] for control sequences.

2.14 DOAS, SERIES, FAN-POWERED AIR TERMINAL UNITS

- A. <a>

 <u>Couble click here to find, evaluate, and insert list of manufacturers and products.</u>
- B. Description: Primary outside-air volume-damper assembly and fan in series arrangement inside unit casing, with control components inside a protective metal shroud, with chilled-water coil for sensible cooling.
- C. Casing: Minimum [**20-gauge-**] [**22-gauge-**] thick galvanized steel.
 - 1. Casing Liner: Comply with requirements in "Casing Liner" Article below for ["Casing Liner, Fibrous Glass" Paragraph] ["Casing Liner, Flexible Elastomeric" Paragraph] [with "Antimicrobial Erosion-Resistant Coating" Subparagraph] [with "Foil-Faced Liner" Subparagraph] [with "Solid Metal Liner" Subparagraph] [with "Perforated Metal Liner" Subparagraph] [with "Specialty Liner" Subparagraph].
 - 2. Air Inlet: Round stub connection or S-slip and drive connections for duct attachment.
 - 3. Air Outlet: S-slip and drive connections[, size matching inlet size].
 - 4. Access: Removable panels for access to parts requiring service, adjustment, or maintenance; with airtight gasket.
- D. Volume Damper: Galvanized steel with peripheral gasket and self-lubricating bearings.
 - 1. Maximum Damper Leakage: AHRI 880 rated, [1] [2] percent of nominal airflow at [3-inch wg (750-Pa)] <Insert value> inlet static pressure.

- E. Velocity Sensors: Multipoint array with velocity inlet sensors.
- F. Fan Motor:
 - Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Section 230500 "Common Work Results for HVAC."
 - 2. Type: [Permanent-split capacitor with SCR for speed adjustment] [Electronically commutated motor].
 - 3. Fan-Motor Assembly Isolation: Rubber isolators.
 - 4. Enclosure: [Open dripproof] [Totally enclosed, fan cooled] <Insert type>.
 - 5. Enclosure Materials: [Cast iron] < Insert material>.
 - 6. Motor Bearings: <Insert requirements>.
 - 7. Unusual Service Conditions:
 - a. Ambient Temperature: <Insert deg F (deg C)>.
 - b. Altitude: < Insert feet (m)> above sea level.
 - c. High humidity.
 - d. <Insert conditions>.
 - 8. Efficiency: Premium efficient as defined in NEMA MG-1.
 - 9. NEMA Design: < Insert designation>.
 - 10. Service Factor: < Insert value >.
 - 11. Motor Speed: [Single speed] [Variable speed].
 - a. Speed Control: Infinitely adjustable with pneumatic-electric and electronic controls.
 - 12. Electrical Characteristics:
 - a. Horsepower: < Insert horsepower>.
 - b. Volts: [120] [208] [230] [460] <Insert value>.
 - c. Phase: [Single] [Poly].
 - d. Hertz: 60.
 - e. Full-Load Amperes: < Insert value>.
 - f. Minimum Circuit Ampacity: <Insert value>.
 - g. Maximum Overcurrent Protection: <Insert amperage>.
- G. Filters:
 - 1. Polyurethane Foam: [**MERV 3**] <**Insert value**>. Minimum efficiency reporting value and average arrestance in accordance with ASHRAE 52.2.
 - [Flat, Nonpleated] [Pleated] Glass Fiber: Factory-fabricated, self-supported disposable air filter with holding frames. Provide [MERV 6] [MERV 13] <Insert value> filter with minimum efficiency reporting value in accordance with ASHRAE 52.2.
- H. Attenuator Section: Casing material and thickness matching associated air terminal unit casing. Provide [absorptive] [packless] attenuator integral with the air terminal unit, of noise transmission loss performance as required in schedules on Drawings.

Mark Twain School for the Talented and Gifted 23 36 00-27 Org #220 Dallas ISD Construction Services AIR TERMINAL UNITS CSP 207459 August 16, 2024

- I. Hydronic Heating Coils: Copper tube, with mechanically bonded aluminum fins spaced no closer than [0.1 inch (2.5 mm)] [0.08 inch (2.0 mm)]. Include manual air vent and drain valve. Provide hydronic heating coils for air terminal units scheduled on Drawings.
- J. Electric-Resistance Heating Coils: Nickel-chromium heating wire, free of expansion noise and hum, mounted in ceramic inserts in a galvanized-steel housing; with primary automatic, and secondary manual, reset thermal cutouts. Terminate elements in stainless steel, machine-staked terminals secured with stainless steel hardware. Provide electric-resistance heating coils for air terminal units scheduled on Drawings.
 - 1. Stage(s): [One] [Two] [Three].
 - 2. SCR controlled.
 - 3. Access door interlocked disconnect switch.
 - 4. Downstream air temperature sensor with local connection to override dischargeair temperature to not exceed a maximum temperature set point (adjustable).
 - 5. Nickel chrome 80/20 heating elements.
 - 6. Airflow switch for proof of airflow.
 - 7. Fan interlock contacts.
 - 8. Fuses in terminal box for overcurrent protection (for coils of more than 48 A).
 - 9. Pneumatic-electric switches and relays.
 - 10. Magnetic contactor for each step of control (for three-phase coils).
- K. Hydronic Cooling Coils: Copper tube, with mechanically bonded aluminum fins spaced no closer than [0.1 inch (2.5 mm)] [0.08 inch (2.0 mm)]. Include manual air vent and drain valve. Locate cooling coils at plenum air inlet. Include galvanized-steel factoryinstalled drip tray [and moisture sensor] for safety in cases where cooling coil temporarily experiences nondesign conditions.
- L. Factory-Mounted and -Wired Controls: Electrical components mounted in control box with removable cover. Incorporate single-point electrical connection to power source.
 - 1. Control Transformer: Factory mounted for control voltage on electric and electronic control units with terminal strip in control box for field wiring of thermostat and power source.
 - 2. Wiring Terminations: Fan and controls to terminal strip. Terminal lugs to match quantities, sizes, and materials of branch-circuit conductors. Enclose terminal lugs in terminal box that is sized in accordance with NFPA 70.
 - 3. Disconnect Switch: Factory-mounted fuse type.
- M. Control Panel Enclosure: NEMA 250, Type 1, with access panel sealed from airflow and mounted on side of unit.
- N. Electric Controls:
 - 1. Electric Damper Actuator: 24 V, [spring-return open] [spring-return closed] [fail in last position].
 - 2. Electric Thermostat: Wall-mounted electronic type with clock display, temperature display in Fahrenheit and Celsius, and space temperature set point.
 - 3. Air Volume Controls: Pressure-dependent volume controls with field-adjustable minimum and maximum position stops.

Mark Twain School for the Talented and Gifted 23 36 00-28 Org #220 Dallas ISD Construction Services AIR TERMINAL UNITS CSP 207459 August 16, 2024

- O. Electronic Controls:
 - 1. Electronic Damper Actuator: 24 V, [spring-return open] [spring-return closed] [capacitor-discharge-return open] [capacitor-discharge-return closed] [fail in last position].
 - 2. Electronic Thermostat: Wall-mounted electronic type with temperature display in Fahrenheit and Celsius.
 - 3. Electronic Air Volume Controller: Pressure-independent analog electronic controller, factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to electronic thermostat signal while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at air inlet.
- P. Pneumatic Controls:
 - 1. Pneumatic Damper Actuator: [0 to 13 psig (0 to 90 kPa)] <Insert range> spring range.

If retaining both direct- and reverse-acting thermostats, indicate location of each type on Drawings.

- 2. Pneumatic Thermostat: Wall-mounted, pneumatic type, [direct acting] [and] [reverse acting], with appropriate mounting hardware.
- 3. Pneumatic Air Volume Controller: Factory calibrated and field adjustable to minimum and maximum air volumes; provides consistent airflow to the space in response to pneumatic thermostat signal while compensating for inlet static-pressure variations of up to 4 inches wg (1000 Pa); includes a multipoint velocity sensor at air inlet.
- Q. Direct Digital Controls:
 - a. Occupied and unoccupied operating mode.
 - b. Remote reset of airflow or temperature set points.
 - c. Adjusting and monitoring with portable terminal.
 - d. Communication with temperature-control system specified in Section 230923 "Direct Digital Control (DDC) System for HVAC."
 - 2. Room Sensor: Wall mounted with temperature set-point adjustment and access for connection of portable operator terminal.
 - 3. Terminal Unit Controller, Section 230923: Controller is to be factory mounted and wired by air terminal manufacturer; unit controller, actuators, and room sensors are to be furnished under Section 230923 "Direct Digital Control (DDC) System for HVAC."
 - 4. Cooling Coil Drip Pan Sensor: Shuts off fan upon detection of moisture in drip pan.
- R. Control Sequence: See [Section 230993.11 "Sequence of Operation for HVAC"] [Drawings] for control sequences.

2.15 CASING LINER

- A. Casing Liner, Fibrous Glass: Fibrous-glass duct liner, complying with ASTM C1071, NFPA 90A or NFPA 90B, and with NAIMA AH124.
 - 1. Minimum Thickness: [1/2 inch (13 mm)] [3/4 inch (19 mm)] [1 inch (25 mm)].
 - a. Maximum Thermal Conductivity:
 - 1) Type I, Flexible: [0.27 Btu x in./h x sq. ft. x deg F (0.039 W/m x K)] <Insert value> at 75 deg F (24 deg C) mean temperature.
 - 2) Type II, Rigid: [0.23 Btu x in./h x sq. ft. x deg F (0.033 W/m x K)] <Insert value> at 75 deg F (24 deg C) mean temperature.
 - 2. Antimicrobial Erosion-Resistant Coating: Apply to surface of liner that will form interior surface of duct to act as a moisture repellent and erosion-resistant coating. Antimicrobial compound is to be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.
 - 3. Foil-Faced Liner: Minimum 0.001-inch (0.03-mm) reinforced, nonporous aluminum foil applied to matted insulation airstream face. [Encapsulate all insulation edges with sheet metal angles and channels, or tape.]
 - 4. Solid Metal Liner: Solid [galvanized sheet metal] <Insert material> encapsulating matted insulation face from airstream.
 - 5. Perforated Metal Liner: Perforated [galvanized sheet metal] <Insert material> encapsulating matted insulation face from airstream.
 - 6. Specialty Liner: < Insert specialty liner in coordination with manufacturers>.
 - 7. [Solvent] [Water]-Based Liner Adhesive: Comply with NFPA 90A or NFPA 90B and with ASTM C916.
 - a. <a>

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 - b. <a>Double click to insert sustainable design text for adhesive.>
- B. Casing Liner, Flexible Elastomeric: Flexible elastomeric duct liner fabricated of preformed, cellular, closed-cell, sheet materials complying with ASTM C534/C534M, Type II, Grade 1; and with NFPA 90A or NFPA 90B.
 - 1. Minimum Thickness: [1/2 inch (13 mm)] <Insert dimension>.
 - 2. Surface-Burning Characteristics: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested in accordance with UL 723; certified by an NRTL.
 - 3. Liner Adhesive: As recommended by insulation manufacturer and complying with NFPA 90A or NFPA 90B.
 - a. <a>

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 - b. Source of the second sec

- 2.16 SOURCE QUALITY CONTROL
 - A. [AHRI 880 Certification: Test, rate, and label assembled air terminal units in accordance with AHRI 880.]
 - B. [AHRI 880: Test and rate assembled air terminal units in accordance with AHRI 880.]
 - C. Water Coils: Factory pressure test to 300 psig (2070 kPa) in accordance with AHRI 410 and ASHRAE 33.

PART 3 - EXECUTION

- 3.1 INSTALLATION, GENERAL
 - A. Comply with Section 230529 "Hangers and Supports for HVAC Piping and Equipment" and Section 233113 "Metal Ducts" for hangers and supports.
 - B. Install air terminal units according to NFPA 90A.
 - C. Install air terminal units level and plumb. Maintain sufficient clearance for normal service and maintenance.
 - D. Install wall-mounted thermostats.

3.2 PIPING CONNECTIONS

- A. Where installing piping adjacent to air terminal unit, allow space for service and maintenance.
- B. Hot-Water [and] [Chilled-Water] Piping: Comply with requirements in Section 232113 "Hydronic Piping" and Section 232116 Hydronic Piping Specialties," and connect heating [and] [cooling] coils to supply piping with shutoff valve, strainer, control valve, and union or flange; and to return piping with balancing valve and union or flange.

3.3 DUCTWORK CONNECTIONS

- A. Comply with requirements in [Section 233113 "Metal Ducts"] [Section 233116 "Nonmetal Ducts"] for connecting ducts to air terminal units.
- B. Make connections to air terminal units with flexible connectors complying with requirements in Section 233300 "Air Duct Accessories."

3.4 ELECTRICAL CONNECTIONS

- A. Install field power to each air terminal unit electrical power connection. Coordinate with air terminal unit manufacturer and installers.
- B. Connect wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- C. Ground equipment in accordance with Section 260526 "Grounding and Bonding for Electrical Systems."
- D. Install electrical devices furnished by manufacturer, but not factory mounted, in accordance with NFPA 70 and NECA 1.
- E. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.
 - 1. Nameplate shall be laminated acrylic or melamine plastic signs, as specified in Section 260553 "Identification for Electrical Systems."
 - 2. Nameplate shall be laminated acrylic or melamine plastic signs with a black background and engraved white letters at least [1/2 inch (13 mm)] < Insert dimension > high.

3.5 CONTROL CONNECTIONS

- A. Install control and electrical power wiring to field-mounted control devices.
- B. Connect control wiring in accordance with Section 260523 "Control-Voltage Electrical Power Cables."

3.6 IDENTIFICATION

A. Label each air terminal unit with drawing designation, nominal airflow, maximum and minimum factory-set airflows[, and coil type]. Comply with requirements in Section 230553 "Identification for HVAC Piping and Equipment" for equipment labels and warning signs and labels.

3.7 STARTUP SERVICE

- A. [Engage a factory-authorized service representative to perform] [Perform] startup service.
 - 1. Complete installation and startup checks in accordance with manufacturer's written instructions.
 - 2. Verify that inlet duct connections are as recommended by air terminal unit manufacturer to achieve proper performance.
 - 3. Verify that controls and control enclosure are accessible.

Mark Twain School for the Talented and Gifted 23 36 00-32 Org #220 Dallas ISD Construction Services AIR TERMINAL UNITS CSP 207459 August 16, 2024

- 4. Verify that control connections are complete.
- 5. Verify that nameplate and identification tag are visible.
- 6. Verify that controls respond to inputs as specified.
- 7. <Insert startup steps if any>.

3.8 ADJUSTING

A. Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC" for air terminal unit testing, adjusting, and balancing.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: [**Owner**] [**Contractor**] will engage a qualified testing agency to perform tests and inspections.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- C. Perform the following tests and inspections[with the assistance of a factoryauthorized service representative]:
 - 1. After installing air terminal units and after electrical circuitry has been energized, test for compliance with requirements.
 - 2. Leak Test: After installation, fill water coils and test for leaks. Repair leaks and retest until no leaks exist.
 - 3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Air terminal unit will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

3.10 DEMONSTRATION

A. [Engage a factory-authorized service representative to train] [Train] Owner's maintenance personnel to adjust, operate, and maintain air terminal units.

END OF SECTION 233600

SECTION 23 37 00 AIR OUTETS AND INLETS

1. GENERAL

1.1 SCOPE

A. This section specifies the furnishing and installation of air distribution devices, including grilles, diffusers, registers, dampers, extractors, and sound attenuators.

1.2 APPLICABLE PROVISIONS

A. Refer to Section 23 0500, Common Work Results for HVAC Equipment.

1.1 SUBMITTALS

A. Submit product data for outlets, grilles, registers, control devices, sound attenuators, and similar equipment. Include sufficient data to substantiate that materials conform to the requirements of this section.

1.1 DELIVERY, STORAGE, AND HANDLING

- A. Deliver air devices properly packaged in factory-fabricated containers.
- B. Store in a clean, dry space in original containers. Protect products from weather, damaging fumes, construction debris and traffic.
- C. Handle carefully to avoid damaging air devices.

2. PRODUCTS

2.1 FINISHES

A. Unless otherwise indicated, paint devices with factory standard white enamel finish.

2.2 DIFFUSERS

- A. Louvered. Furnish louvered, fixed-pattern, multiple cone diffusers with removable center cone, frames and white factory finish.
 - a. Select faces and necks that are circular, rectangular or square, of the size and configuration indicated.
 - b. Construct diffusers and frames of steel.
 - c. Use a frame compatible with the type of ceiling in which the diffuser is installed.
- B. Dampers. Where indicated, furnish an opposed-blade damper easily adjustable through the outlet. Furnish operating rod extensions as required for damper adjustment.

2.3 GRILLES

- A. Supply. Use double-deflection supply grilles made of aluminum.
 - a. Furnish vertical face blades and horizontal rear blades. Furnish solid, extruded aluminum

Mark Twain School for the Talented and Gifted 23 37 00-1 Org #220 Dallas ISD Construction Services AIR OUTLETS AND INLETS CSP 207459 August 16, 2024 blades which are individually adjustable. Space at not more than $_$ in. centers for rear blades and $\frac{1}{2}$ in. centers for face blades and not less than $_$ in. deep.

- b. Employ grille frames of extruded aluminum with welded and mitered corners and mounting gaskets.
- B. Return.
 - a. For ceiling return louvered type, with white factory finish. Use construction and frame styles as specified for ceiling diffusers, but without pattern controllers. Use neck sizes as indicated on the Drawings.
 - b. For wall return, furnish a fixed-blade, aluminum grille, essentially sightproof, having curved or angular break, inclined blades. Space the blades at ½ in. centers to achieve sightproof feature. Furnish hemmed or fully rounded leading edges. Furnish extruded aluminum grille frames with welded and mitered corners. Include mounting gaskets.
- C. Door Grilles. Furnish sightproof door grilles with core of aluminum construction. Finish with prime coat suitable for field painting.

2.4 REGISTERS

- A. Supply. Furnish double-deflection supply registers with aluminum, vertical face blades and horizontal rear blades. Use an integral, key-operated, opposed blade damper.
 - a. Furnish solid, extruded aluminum blades which are individually adjustable. Space not more than ³/₄ in. centers for rear blades and ¹/₂ in. centers for face blades and not less than _ in. deep.
 - b. Furnish grille frames of extruded aluminum with welded and mitered corners and mounting gaskets.
- B. Return and Exhaust. Furnish return and exhaust registers identical to return grilles except for the addition of an integral key-operated, opposed-blade damper.

2.5 SUPPLY AIR SOUND ATTENUATORS

- A. Construct casings of not less than 22 gauge galvanized steel for diameters up to 36 in., and 18 gauge for diameters up to 48 in. Furnish perforated face sheets over acoustical material of not less than 5 pounds per cu. ft. of compressed density glass fiber or mineral wool.
- B. Furnish acoustical liners of the same density around the outside perimeter and in the center baffle of the silencer. Use attenuators with capacity to handle air quantities scheduled at no more than 0.50 in. of water pressure drop with acoustic performance as tabulated below.

Octave Pass Bands (Hz)	63	125	250	500	100 0	200 0	400 0	8000
Attenuation (dB):	4	8	13	25	28	25	20	17

2.6 RETURN AIR SOUND ATTENUATORS

A. Construct casings of not less than 22 gauge galvanized steel. Furnish perforated face sheets over the acoustical material of not less than 24 gauge galvanized steel. Use mineral fiber or

Mark Twain School for the Talented and Gifted 23 37 00-2 Org #220 Dallas ISD Construction Services AIR OUTLETS AND INLETS CSP 207459 August 16, 2024 organic glass acoustical material. Apply fiberglass cloth between filler material and face sheets.

B. Coat solid surfaces with vibration-dampening material to assure that equal attenuation will be provided not only in the direction of air flow, but also through duct silencer walls. Furnish attenuators to handle air quantities as scheduled at no more than 0.25 in. of water pressure drop with acoustic performance as tabulated below.

Octave Pass Bands (Hz)		125	250	500	100 0	200 0	400 0	8000
Attenuation (dB):	3' long:	11	16	23	36	42	34	28
	5' long:	16	25	37	45	44	38	22

2.7 ACCEPTABLE MANUFACTURERS

A. Krueger, Metalaire, Price, Titus.

3. EXECUTION

3.1 COOPERATION WITH OTHER TRADES

A. Coordinate this work with work under Division 16, Electrical, to ensure that intended functions of lighting and air systems are achieved.

3.2 INSPECTION

A. Do not install ceilings adjacent to fixtures until installation of fixtures, air supply assemblies, return air blank-off strips and flexible duct have been properly approved. Remove and reinstall any part of the installation found incorrect.

3.3 INSTALLATION

- A. Diffusers. Mount louvered diffuser outlets tightly against the ceiling. Fasten outlets securely to ductwork with sheet metal screws. For diffusers, attach the frame assembly by a concealed hinge assembly to an outer frame compatible with the type of ceiling in which the diffuser is installed.
- B. Sound Attenuators. Install in accordance with the manufacturer's recommendations.

END OFSECTION 23 3700

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AIR OUTLETS AND INLETS CSP 207459 August 16, 2024

23 74 13 MODULAR OUTDOOR AIR HANDLING UNITS

- 1. General
 - 1.1. Related Documents
 - Drawings and general provisions of the Contract, including
 General and Supplementary Conditions and Division 1

Specification Sections, apply to this Section.

- 1.2. Summary
 - A. This Section includes constant and variable-volume, modular outdoor air- handling units with coils for outdoor installations.
- 1.3. Submittals
 - Product Data: For each type of modular outdoor air-handling unit indicated. Include the following:
 - B. Unit physical characteristics including, shipping and operating weight, unit height, width, and length.
 - I. Certified fan-performance curves with system operating conditions indicated.
 - II. Certified fan-sound power ratings.
 - III. Fan physical characteristics including, but not limited to: dimensions, weight, material, and blade pitch.
 - IV. Certified coil-performance ratings with system operating conditions indicated.
 - V. Motor ratings, electrical characteristics, and motor and fan accessories.
 - VI. Material gages and finishes.
 - VII. Filters with performance characteristics.
 - VIII. Dampers, including housings and

linkages.

- C. Shop Drawings:
 - I. Design Calculations: Calculate requirements for selecting vibration isolators and
 - a. for designing vibration isolation bases.
 - b. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure

MODULAR OUTDOOR AIR HANDLING UNITS CSP 207459 August 16, 2024 and to supported equipment. Include auxiliary motor slides and rails, and base weights.

- b. Wiring Diagrams: Power, signal, and control wiring.
- 1.4. Quality assurance
 - A. Source Limitations: Obtain modular outdoor air-handling units through one source from a single manufacturer.
 - B. Product Options: Drawings indicate size, profiles, and dimensional

requirements of modular outdoor air-handling units and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- D. NFPA Compliance: Modular outdoor air-handling units and components shall be designed, fabricated, and installed in compliance with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems."
- E. ARI Certification: Modular outdoor air-handling units and their components shall be factory tested according to ARI 430, "Central-Station Air-Handling Units," and shall be listed and labeled by ARI.
- F. Comply with NFPA 70 National Electric Code.
- 1.5. Coordination
 - A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.
 - B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 7.
 - C. Coordinate size and location of structural-steel support members.
- 2. Products
 - 2.1. Manufacturers
 - A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - I. Carrier
 - II. Trane

III.

Temtrol

- 2.2. Unit casing
 - A. Air handling unit shall be supplied with a full length, continuous base rail channel.
 - I. The base rail channel shall be formed of 12 gauge minimum galvanized steel and shall support all major components.
 - II. The unit base shall be supplied with a recessed curb mounting location.
 - a. The recessed curb-mounting surface shall provide a continuous surface for field application of curb gasketing to create a weather-tight seal between the curb and unit.
 - III. The frame shall be constructed to permit complete removal of the wall and roof panels without affecting the structural integrity of the unit.
 - B. Air handling unit shall be supplied with double walled panels for walls, roof, and floor constructed of G90 mill galvanized sheet steel. All panels shall

formed and reinforced to provide a rigid assembly.

- I. The exterior casing shall be constructed of 18 gauge minimum galvanized steel.
 - a. Exterior casing screws shall be zinc chromate coated.
- II. The interior lining of the walls and roof panels shall be a perforated lining (in discharge plenums) of 20 gauge minimum galvanized steel.
- III. The interior lining of the floor panels shall be a solid lining of 18 gauge minimum galvanized steel.
- IV. All wall, roof, and floor panels in the air handler shall be supplied with 2" (two inches) of insulation.
 - a. Insulation shall be 1.5 pound per cubic foot in density with a thermal conductivity R of 8.13 BTU/hr-ft2-°F.
 - b. Insulation shall meet the flame and smoke generation requirements of NFPA 90A.
- V. All wall and roof panels shall be completely removable for unit access and removal of components.

VI. Panel removal shall not affect the structural unit

frame. VII. All panels shall be completely gasketed.

- VIII. All panel fasteners shall be secured through standing seams to prevent fastener penetrations that are exposed to the airstream.
- IX. Where supply air temperatures below 50 degrees F are scheduled, air handler shall be designed with a complete thermal break between all interior surfaces and exterior surfaces.
- X. Roof and sidewall seams shall be continuously caulked and covered with formed 20 gauge galvanized seam caps.
- C. Air handling unit shall be supplied with a sloped roof to promote drainage of precipitation and prevent standing water. The roof shall have a minimum pitch of $\frac{1}{4}$ per foot.

2.3. Fans and motors

- A. Air handling unit shall be supplied with a section containing a fan(s) and fan motor(s).
 - I. The fan section shall be supplied with internally mounted double width, double inlet (DWDI) centrifugal type airfoil wheels.
 - a. DWDI fans and unit performance shall be rated and certified in accordance with ARI Standard 430.
 - i. Airfoil fans shall bear the AMCA Seal.
 - ii. Airfoil fan performance shall be based on tests made in accordance with AMCA standards 210 and comply with the requirements of the AMCA certified ratings program for air and sound.
 - ii. Airfoil wheels shall comply with AMCA standard 99-2408-69 and 99-2401-82.
 - iv. Fan sections shall be provided with a door on the coil header side of the unit for fan/motor access.
 - v. All units shall be provided with air discharge locations and directions as shown in the drawings.
 - b. Fan bearings shall be self-aligning, pillow block or flanged type regreasable ball bearings.
 - i. Bearings shall be designed for an average life (L10)of at least 200,000 hours

Mark Twain School for the Talented and Gifted23 741 3-4MODULAR OUTDOOR AIROrg #220HANDLING UNITSDallas ISD Construction ServicesCSP 207459August 16, 2024

- ii. All bearings shall be factory lubricated and equipped with standard hydraulic grease fittings and lube lines extended to the motor side of the fan.
- iii. Fan shall be direct drive and selected for 1.3 service factor.
- iv. Fan discharge shall be connected to the fan cabinet using a flexible connection to insure vibration free operation.
- П. The fan section shall be supplied with an internally mounted fan motor.
 - Fan motors shall be NEMA design ball-bearing a. type with electrical characteristics and horsepower as specified.
 - Motors shall be 1750 RPM, open drip-proof b. or totally enclosed, fan cooled premium efficiency type.
 - Fan motor shall satisfy the Federally mandated C. Energy Policy Act (EPACT).
 - d. The fan motor shall be located within the unit on an adjustable base.
- III. The fan and fan motor shall be isolated on a full width isolator support channel using spring isolators with minimum deflection of 1"
- 2.4. Heating/cooling components
 - Α. Air handling unit shall be supplied with a section designed and selected to cool the airstream as indicated on the schedule.
 - Ι. The cooling coil section shall accommodate cooling coils and/or heating coils.
 - Coil performance shall be certified in accordance a. with ARI Standard 410.
 - Coil casings shall be constructed of 16 gauge b. stainless steel with aluminum fins with drawn collars, and be belled and mechanically expanded to firmly bond the copper tubes to the fins.
 - П. The cooling section shall be supplied with a cooling coil for use with chilled water.
 - a. Cooling coils shall be drainable water coils with a design working pressure of 250 psig at temperatures up to 300°F.

MODULAR OUTDOOR AIR HANDLING UNITS August 16, 2024

- b. Cooling coils shall be tested with 325-psig compressed air under water.
- c. Cooling coil circuiting shall provide free and complete draining and venting when installed in the unit, and shall have vent and drain connections.
- III. Drain pan: Formed sections of 304 stainless-steel sheet complying with requirements of ASHRAE 62. Fabricate pans with slopes in two planes to collect condensate from cooling coils (including coil piping connections and return bends) when units are operating at maximum catalogued face velocity across cooling coil.
 - a. The drain pan shall be double walled construction.
 - b. The drain pan shall have a minimum of 2" insulation.
 - c. Intermediate drain pans shall be provided for any cooling section with a coil height of more than 48" with drop tubes to guide the condensate to the main drain pan.
 - c. Drain pan shall be provided with a condensate connection
- B. Air handler shall be supplied with a section designed and selected to heat the airstream as scheduled on the drawings.
 - I. Each heating section shall accommodate a minimum two-row drainable water coil.
 - a. Coil performance shall be certified in accordance with ARI Standard 410.
 - b. Coil casings shall be constructed of 16 gauge stainless steel with aluminum fins with drawn collars, and be belled and mechanically expanded to firmly bond the copper tubes to the fins.
 - II. The heating section shall be supplied with a heating coil for use with hot water.
 - a. The heating coil shall be drainable water coil with a design working pressure of 250 psig at up to 300°F.
 - b. The heating coil shall be tested with 325-psig compressed air under water.
 - c. Heating coil circuiting shall provide free and complete draining and venting when installed in the unit, and shall have vent and drain connections.

MODULAR OUTDOOR AIR HANDLING UNITS CSP 207459 August 16, 2024

- III. The heating section shall be provided with an electric heater of capacity, voltage and steps of control specified.
 - a. The electric heater shall be an integral part of the unit.
 - b. The electric heater and control panel shall be a UL listed electric duct heater.
 - c. All electric heater elements shall be of 80% nickel and 20% chrome.
 - d. Coil elements shall float freely in ceramic bushings that are
 - e. Coils shall be machine crimped into stainless steel terminals that are insulated with high temperature ceramic insulators.
 - f. Heater casing and support brackets shall be of galvanized steel.
 - g. Heaters shall be supplied with internal wiring and controls, contactors, etc. including control circuit transformer, and automatic reset thermal cutout.
 - h. Heaters shall be supplied with fuses per NEC and UL.
- 2.5. Filters
 - A. Filters: Comply with NFPA 90A.
 - B. Filter Section: Provide filter holding frames arranged for flat orientation, with access doors on both sides of unit. Filters shall be removable from one side.
 - C. Disposable Panel Pre-Filters: Factory-fabricated, viscous-coated, 2 inch flat-panel-type, disposable air filters with holding frames.
 - I. Media: Interlaced glass fibers sprayed with nonflammable adhesive.
 - II. Frame: Galvanized steel with metal grid on outlet side, steel rod grid on inlet side, hinged, and with pull and retaining handles.
 - III. Duct-Mounting Frames: Welded, galvanized steel with gaskets and fasteners, suitable for bolting together into builtup filter banks.
- 2.6. Economizer sections

- A. Air handling unit shall be supplied with an economizer section to provide a means of exhausting air from the air-handling unit.
- B. The economizer section shall consist of multi-leaf, parallel acting, Low-leak blades.
 - I. The return air, outside air, and exhaust air dampers shall be sized for 100% of unit airflow.
 - II. A weatherproof louver and bird screen assembly shall protect the outside and exhaust air dampers from the elements.

2.7. Accessories

- A. Dampers in Inlet section shall be Low leak. Actuators shall be provided and installed in the field by BMCS contractor.
 - I. Damper blades shall be provided with extruded vinyl edge seals and stainless steel jamb seals.
 - II. Damper blades shall be parallel acting.
 - III. Leakage shall not exceed 3.0 cfm/ft2 @ 1" w.g.
- B. Air handling unit shall be supplied with access doors in the fan, filter, and inlet sections on the coil header side, as well as in any sections with welded panels. Doors shall be of double wall construction with a solid liner.
 - I. Doors shall have a minimum thickness of 2".
 - II. Doors shall be attached to the unit by manufacturer provided hinges that comply with ASTM-117.
 - III. Latches shall be positive-action, creating an airtight seal between the door and the unit.
 - IV. Door panels shall be completely gasketed with a closed-cell neoprene gasket.
- C. Air handling unit shall be supplied with the manufacturer's standard curb, shipped loose for field installation by others prior to unit placement. Roof curb shall be a prefabricated galvanized steel-mounting curb.
 - I. Roof curb shall be a perimeter type with a complete perimeter support of the air- handling unit.
 - II. The curb shall be a minimum of 14 inches high.
 - III. Gasketing shall be provided for field mounting between the unit base and the roof curb.
 - IV. Horizontal Discharge Roof Curb: Steel with corrosionprotection coating, insulation, gasketing, and factoryinstalled wood nailer, and configured to convert from

downflow to horizontal airflow; complying with NRCA standards; minimum height of [26 inches].

- V. Isolation Curb: Rigid upper and lower steel structure with vibration isolation springs having 2- inch static deflection and vertical and horizontal restraints; with elastomeric waterproof membrane.
- VI. Cooling and heating coils piping and control valves shall be properly supported and located in an enclosure for protection. Manufacturer shall provide weatherproof enclosure of sufficient size for installation and service of control valves. Enclosure to have hinged access doors.

2.8. Finishes

- A. Air handling unit shall be painted prior to shipment.
 - I. The exterior of the unit shall be coated with a factory applied minimum 1.5 mil epoxy coating.
 - II. The finished unit shall exceed 500-hour salt spray solution (5%)
 without any sign of red rust when tested in accordance with
- 2.9. Controls
 - Air handling unit shall be equipped with a single-point motor starter panel in an enclosure with variable frequency drive(s).
 DDC provided by FMCS contractor.
 - I. Refer to Division 26 sections for requirements for Variable Frequency Drives.
 - II. The enclosure shall mount to the unit air handler and have provisions for cooling from the Air Handler Fan Section. The drive enclosure and cooling provisions shall be engineered to allow the drive to operate in the following environmental conditions:
 - a. Outdoor Ambient Temperature –14°F to 140°F

b. Enclosure Internal Ambient Temperature –14°F-104°F

- c. Humidity 5-90% RH non-
- condensing

ASTM B

- B. Integral Devices. In addition to the requirements of other Division
- 26

Sections, the VFD shall include the following standard devices: 16. Main disconnects.

I. Individual drive fusing

Mark Twain School for the Talented and Gifted23 741 3-9MODULAR OUTDOOR AIROrg #220HANDLING UNITSDallas ISD Construction ServicesCSP 207459August 16, 2024

- II. Electromechanical 3 contactor isolated bypass.
- III. Integrally mounted pilot devices and selector

switches.

- IV. 120 VAC control transformer.
- V. Motor overload relay(s).
- C. Package Construction. The VFD package shall be UL listed and comply with the latest applicable standards of ANSI, IEEE, and NEMA. The NEMA 3R design features shall consist of: 17. Powder coated steel enclosure, with bottom inlet for cooling air and top exhaust air slots.
 - I. Single Point Input Power connection.
- D. Integral Options. The Air Handler shall include the following options:
- 3. Execution
 - 3.1. Examination
 - A. Examine areas and conditions for compliance with requirements for installation tolerances and other conditions affecting performance.
 - B. Examine roughing-in of steam, hydronic, and condensate drainage piping systems and electrical services to verify actual locations of connections before installation.
 - C. Proceed with installation only after unsatisfactory conditions have been corrected.
 - 3.2. Installation
 - A. Concrete Bases: Install floor mounting units on 4-inch- high concrete bases.See Division 23 Section "Basic Mechanical Requirements" for concrete base materials and fabrication requirements.
 - B. Install modular outdoor air-handling units with the following vibration-control devices. Vibration-control devices are specified in Division 23.
 - C. Units with Internally Isolated Fans: Secure units to anchor bolts installed in concrete bases.
 - I. Floor-Mounted Units: Support on concrete bases using neoprene pads. Secure units to anchor bolts installed in concrete bases.
 - II. Floor-Mounted Units: Support on concrete bases using housed- spring isolators. Secure units to anchor bolts installed in concrete bases.

- III. Suspended Units: Suspend units from structural-steel support frame using threaded steel rods and spring hangers.
- IV. Arrange installation of units to provide access space around modular outdoor air-handling units for service and maintenance.
- 3.3. Connections
 - A. Piping installation requirements are specified in other Division 23 Sections.

Drawings indicate general arrangement of piping, fittings, and

specialties.

B. Install piping adjacent to machine to allow service and

maintenance.

- C. Connect piping to modular outdoor air-handling units mounted on vibration isolators with flexible connectors.
- D. Connect condensate drain pans using NPS 1-1/4, Type M copper tubing.
 Extend to nearest equipment or floor drain. Construct deep trap at connection to drain pan and install cleanouts at changes in direction.
- E. Hot- and Chilled-Water Piping: Comply with applicable requirements in Division 23 Section "Hydronic Piping." Connect to supply and return coil tappings with shutoff or balancing valve and union or flange at each connection.
- E. Duct installation and connection requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of ducts and duct accessories. Make final duct connections with flexible connections.
- G. Electrical: Comply with applicable requirements in Division 26 Sections for power wiring, switches, and motor controls.
- H. Ground equipment according to Division 26.
- I. Tighten electrical connectors and terminals according to manufacturer's published torque- tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- 3.4. Startup service
 - A. Final Checks before Startup: Perform the following:
 - I. Verify that unit is secure on mountings and supporting devices and that connections to piping, ducts, and electrical systems are complete. Verify that proper

thermal-overload protection is installed in motors, starters, and disconnect switches.

- II. Perform cleaning and adjusting specified in this Section.
- III. Disconnect fan drive from motor, verify proper motor rotation direction, and verify free fan wheel rotation and smooth bearing operations. Reconnect fan drive system, align belts, and install belt guards.
- IV. Lubricate bearings, pulleys, belts, and other moving parts with factory-recommended lubricants.
- IV. Set zone dampers to fully open position for each

zone.

- V. Set face-and-bypass dampers to full face flow.
- VII. Set outside- and return-air mixing dampers to minimum outside-air setting.
- VIII. Comb coil fins for parallel

orientation. IX. Install clean filters.

- X. Verify that manual and automatic volume control and fire and smoke dampers in connected duct systems are in fully open position.
- XI. Verify that shipping, blocking, and bracing are removed.
- B. Starting procedures for modular outdoor air-handling units include the following:
 - I. Energize motor; verify proper operation of motor, drive system, and fan wheel. Adjust fan to indicated rpm. Replace fan and motor pulleys as required to achieve design conditions.
 - II. Measure and record motor electrical values for voltage and amperage.
 - III. Refer to Division 23 Section for modular outdoor airhandling system testing, adjusting, and balancing.
- 3.5. Adjusting
 - A. Adjust damper linkages for proper damper operation.
- 3.6. Cleaning
 - A. Clean modular outdoor air-handling units internally, on completion of installation, according to manufacturer's written instructions. Clean fan interiors to remove foreign material and

Mark Twain School for the Talented and Gifted23 741 3-12MODULAR OUTDOOR AIROrg #220HANDLING UNITSDallas ISD Construction ServicesCSP 207459August 16, 2024

construction dirt and dust. Vacuum clean fan wheels, cabinets, and coils entering air face.

- B. After completing system installation and testing, adjusting, and balancing modular outdoor air- handling and air-distribution systems, clean filter housings and install new filters.
- 3.7. Demonstration
 - A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain modular outdoor air- handling units. Refer to Division 1 Section "[Closeout Procedures] [Demonstration and Training]."

SECTION 23 81 26 MINI-SPLIT-SYSTEM AIR CONDITIONERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Α. Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- This Section includes the following DX ductless mini-split air conditioners: Α.
 - 1. Cooling and heating units 5 tons and smaller.

1.03 WARRANTY

- Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace Α. components of rooftop air conditioners that fail in materials or workmanship within specified warranty period.
 - 1. Compressors: 5 years
 - 2. Parts and Labor: 1 year

PART 2 – PRODUCTS

2.01 SYSTEM DESIGN

- Α. Split-System Heating and Cooling Units: Self-contained, packaged, matched factoryengineered and assembled, pre-wired indoor and outdoor units; UL listed.
 - 1. Provide refrigerant lines internal to units and between indoor and outdoor units, factory cleaned, dried, pressurized and sealed, with insulated suction line.
- Β. Performance Requirements: See Drawings for additional requirements.

2.02 INDOOR UNITS FOR DUCTLESS SYSTEMS

- Α. Indoor Units: Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, evaporator coil, and controls; wired for single power connection with control transformer.
- Β. Evaporator Coils: Copper tube aluminum fin assembly, galvanized or polymer drain pan sloped in all directions to drain, drain connection, refrigerant piping connections, restricted distributor or thermostatic expansion valve.
 - 1. Construction and Ratings: In accordance with ARI 210/240 and UL listed.

C. Manufacturer: Trane or Carrier.		
Mark Twain School for the Talented and Gifted Org #220 Dallas ISD Construction Services	23 81 26-1	MINI-SPLIT SYSTEM AC CSP 207459 August 16, 2024

2.03 OUTDOOR UNITS

- A. Outdoor Units: Self-contained, packaged, pre-wired unit consisting of cabinet, with compressor and condenser.
 - 1. Refrigerant: R-410A.
 - 2. Construction and Ratings: In accordance with ARI 210/240 with testing in accordance with
 - a. ASHRAE Std 23 and UL listed.
- B. Accessories: Filter drier, high pressure switch (manual reset), low pressure switch (automatic reset), service valves and gage ports, thermometer well (in liquid line).
 - 1. Provide thermostatic expansion valves.
- C. Operating Controls:
 - 1. Control by room thermostat to maintain room temperature setting.

END OF SECTION

26 05 00 COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Electrical equipment coordination and installation.
 - 2. Sleeves for raceways and cables.
 - 3. Common electrical installation requirements

1.03 COORDINATION

- A. Coordinate arrangement, mounting, and support of electrical equipment:
 - 1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
 - 2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
 - 3. To allow right of way for piping and conduit installed at required slope.
 - 4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.
- B. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping.".

PART 2 - EXECUTION

2.01 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

- A. Comply with NECA 1.
- B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

Mark Twain School for the Talented and Gifted	23 00 10-1	COMMON WORK RESULTS FOR
Org #220		ELECTRICAL
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
- D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- E. Right of Way: Give to piping systems installed at a required slope.
- F. Electrical requirements of all equipment furnished by the District, such as kitchen appliances, shop equipment, etc. should be verified. Place such equipment on dedicated circuits.
- G. Limit the number of receptacles on a circuit to seven.
- H. Switches and receptacles shall not be located within chalkboards, markerboards, or tackboards.
- I. Switches to be ivory
- J. Isolated ground receptacles and receptacles for dedicated circuits to be orange.
- K. Refer to educational specifications for quantities of wall receptacles per wall in all teaching spaces.
- L. For classrooms in new schools, new additions, or newly renovated areas outlets per Multi-Media outlet location (classroom) detail.
- M. There shall be no sharing of circuits between rooms or areas.
- N. Isolated ground receptacles shall not share a neutral with other receptacles.
- O. Put no more than three (3) quad power outlets per circuit for any location.
- P. Dedicated isolated ground circuits are not required outside MDF/IDF closets unless required by code.
- Q. Power outlets shall not share back boxes or junction boxes with data outlets.
- R. Refer to existing conditions section for CHPS requirements for renovation projects:

Mark Twain School for the Talented and Gifted	23 00 10-2	COMMON WORK RESULTS FOR
Org #220		ELECTRICAL
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- 1. Re-use or modify existing equipment if it is in good condition. Equipment for which replacement parts are no longer available should be evaluated for replacement. Remove equipment, wiring, conduit, etc. that is not re-used, in lieu of abandoning in place, unless removal is not practical.
- 2. Correct code deficiencies only within the alteration area. Upgrades may be required for equipment supporting the alteration area but located outside of it.
- S. Conduit should be suspended from the building structure, not from lay-in ceiling suspension system or similar means.
- T. Avoid conduits placed under floor slabs.
- U. Aluminum wiring shall not be used.
- V. Use of metal clad (MC) cable / flexible conduit is not allowed.
 1. Exception: Lighting fixture whips, reference section 26 50 00
- W. Circuits for MDF/IDF closets, rack mounted equipment and equipment in communication rooms (telecommunications, fire and security alarms) shall have isolated ground

2.02 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.
- G. Seal space outside of sleeves with grout for penetrations of concrete and masonry
 - 1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

- H. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants.".
- I. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Penetration Firestopping."
- J. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boottype flashing units applied in coordination with roofing work.
- K. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- L. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

2.03 SLEEVE-SEAL INSTALLATION

- A. Install to seal exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

2.04 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION

Mark Twain School for the Talented and Gifted23 00 10-4COMMON WORK RESULTS FOROrg #220ELECTRICALDallas ISD Construction ServicesCSP 207459August 16, 2024

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Mark Twain School for the Talented and Gifted23 00 10-5COMMON WORK RESULTS FOROrg #220ELECTRICALDallas ISD Construction ServicesCSP 207459August 16, 2024

SECTION 26 05 19 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 26-0553 - Identification for Electrical Systems: Identification products and requirements.

1.02 REFERENCE STANDARDS

- A. ASTM B3 Standard Specification for Soft or Annealed Copper Wire.
- B. NECA 1 Standard for Good Workmanship in Electrical Construction; National Electrical

Contractors Association.

- C. NEMA WC 70 Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; National Electrical Manufacturers Association (ANSI/NEMA WC 70/ICEA S-95-658).
- D. NFPA 70 National Electrical Code; National Fire Protection Association.
- E. UL 44 Thermoset-Insulated Wires and Cables.
- F. UL 83 Thermoplastic-Insulated Wires and Cables.
- G. UL 486A-486B Wire Connectors.
- H. UL 486C Splicing Wire Connectors.

1.03 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE MANUFACTURERS

A. Cerro Wire LLC:

www.cerrowire.com.

B. Industrial Wire & Cable, Inc: <u>www.iewc.com.</u>

Mark Twain School for the Talented and Gifted	26 05 19-1	LOW VOLTAGE ELECTRICAL POWER
Org #220		CONDUCTORS AND CABLES
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

C. Southwire Company: www.southwire.com

2.02 ALL CONDUCTORS AND CABLES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose indicated.
- C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- D. Comply with NEMA WC 70.
- E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with

UL 44.

- G. Conductor Materia(Use of aluminum wiring is not allowed):
 - Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
- H. Conductor Color Coding:
 - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
 - 2. Color Coding Method: Integrally colored insulation.
 - 3. Color Code:
 - a. Equipment Ground, All Systems: Green.

2.03 SINGLE CONDUCTOR BUILDING WIRE

- A. Description: Single conductor insulated wire.
- B. Conductor Stranding:
 - 1. Feeders and Branch Circuits:
 - a. Size 10 AWG and Smaller: Solid.
 - b. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation:
 - 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
- E. Conductor: Copper.
- F. Insulation Voltage Rating: 300 volts.
- G. Insulation: NFPA 70, Type THHN/THWN.
2.04 METAL-CLAD CABLE

- A. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used. Only for use for lighting fixture whips.
- B. Conductor Stranding:
 - 1. Size 10 AWG and Smaller: Solid.
 - 2. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation: Type THHN, THHN/THWN, or THHN/THWN-2.
- E. Grounding: Full-size integral equipment grounding conductor.
- F. Armor: Steel, interlocked tape.
- G. Description: NFPA 70, Type MC.
- H. Conductor: Copper. with individual ground wire.
- I. Insulation Voltage Rating: 600 volts.
- J. Insulation Temperature Rating: 75 degrees C.
- K. Insulation Material: Thermoplastic.
- L. Armor Material: Steel.
- M. Armor Design: Interlocked metal tape.

2.05 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.
- C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.

Mark Twain School for the Talented and Gifted	26 05 19-3	LOW VOLTAGE ELECTRICAL POWER
Org #220		CONDUCTORS AND CABLES
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- D. Verify that raceway installation is complete and supported.
- E. Verify that field measurements are as shown on the drawings.
- F. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- Α. Install products in accordance with manufacturer's instructions.
- B. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.
- C. Install metal-clad cable (Type MC) in accordance with NECA 120. MC cable may be used only for final connection to equipment and fixtures, with a maximum length of six (6) feet.
- D. Installation in Raceway:
 - Tape ends of conductors and cables to prevent infiltration of 1. moisture and other contaminants.
 - Pull all conductors and cables together into raceway at same time. 2.
 - Do not damage conductors and cables or exceed manufacturer's 3. recommended maximum pulling tension and sidewall pressure.
 - Use suitable wire pulling lubricant where necessary, except when 4. lubricant is not recommended by the manufacturer.
- E. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- F. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
- G. Terminate cables using suitable fittings. 1.
 - Metal-Clad Cable (Type MC): a. Use listed fittings.
 - - Cut cable armor only using specialized tools to prevent damaging b. conductors or insulation. Do not use hacksaw or wire cutters to cut armor.
- Η. Install conductors with a minimum of 12 inches of slack at each outlet.
- Neatly train and bundle conductors inside boxes, wireways, panelboards and Ι. other equipment enclosures.
- Make wiring connections using specified wiring connectors. J.
 - Make splices and taps only in accessible boxes. Do not pull splices into 1. raceways or make splices in conduit bodies or wiring gutters.

Mark Twain School for the Talented and Gifted	26 05 19-4	LOW VOLTAGE ELECTRICAL POWER
Org #220		CONDUCTORS AND CABLES
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
- 3. Do not remove conductor strands to facilitate insertion into connector.
- 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
- K. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
- L. Insulate ends of spare conductors using vinyl insulating electrical tape.
- M. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified by Architect.
- N. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

O. Install wire and cable securely, in a neat and workmanlike manner, as specified in NECA 1.

Wire shall be run continuously with weld, splice or joint between boxes.

- P. Route wire and cable as required to meet project conditions.
 - 1. Wire and cable routing indicated is approximate unless dimensioned.
 - 2. Where wire and cable destination is indicated and routing is not shown, determine exact routing and lengths required.
 - 3. Include wire and cable of lengths required to install connected devices within 10 ft of

location shown.

- Q. Use wiring methods indicated.
- R. Pull all conductors into raceway at same time.
- S. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
- T. Protect exposed cable from damage.
- U. Support cables above accessible ceiling, using spring metal clips or metal cable ties to support cables from structure or ceiling suspension system. Do not rest cable on ceiling panels.
- V. Use suitable cable fittings and connectors.
- W. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- X. Clean conductor surfaces before installing lugs and

connectors.

- Y. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- Z. Identify and color code wire and cable under provisions of Section 26-0553. Identify each conductor with its circuit number or other designation indicated.

Mark Twain School for the Talented and Gifted	26 05 19-5	LOW VOLTAGE ELECTRICAL POWER
Org #220		CONDUCTORS AND CABLES
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

AA. Contractor shall account for voltage drop when running branch circuits and feeders. The actual routing and/or planned routing of branch circuits and feeders is known only to the contractor. An increase in conductor size is warranted if the load and the length create a voltage drop in excess of those stated in the National Electrical Code. In general, the conductor sizes indicated on the contract documents are coordinated with the overcurrent protection devices only and do not account for voltage drop. The contractor shall account for voltage drop in installation and shall have also accounted for larger conductor sizes as warranted in their bid.

3.03 FIELD QUALITY CONTROL

- A. Perform inspection, testing, and adjusting.
- B. Inspect and test in accordance with NETA STD ATS, except

Section 4.

- C. Perform inspections and tests listed in NETA STD ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.
 - 1. Disconnect surge protective devices (SPDs) prior to performing any high potential testing. Replace SPDs damaged by performing high potential testing with SPDs connected.
- D. Correct deficiencies and replace damaged or defective conductors and cables.
- E. Perform inspections and tests listed in NETA STD ATS, Section

7.3.2.

END OF SECTION

SECTION 26 05 26 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 26-0519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.

1.02 REFERENCE STANDARDS

- A. NFPA 70 National Electrical Code; National Fire Protection Association.
- B. UL 467 Grounding and Bonding Equipment.

1.03 PERFORMANCE REQUIREMENTS

A. Grounding System Resistance: 5 ohms.

1.04 SUBMITTALS

A. Product Data: Provide for grounding electrodes and connections.

B. Test Reports: Indicate overall resistance to ground and resistance of each electrode.

C. Project Record Documents: Record actual locations of components and grounding electrodes.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

- A. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.02 GROUNDING AND BONDING COMPONENTS

A. General Requirements:

Mark Twain School for the Talented and Gifted	26 05 26-1	GROUNDING AND BONDING FOR
Org #220		ELECTRICAL SYSTEMS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- 1. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or
 - testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.
- 2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in addition to requirements of Section 26-0519:

- 1. Use insulated copper conductors unless otherwise indicated.
 - a. Exceptions:
 - 1) Use bare copper conductors where installed underground in direct contact with earth.

2) Use bare copper conductors where directly encased in concrete (not in raceway).

- C. Connectors for Grounding and Bonding:
 - 1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
 - 2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
 - 3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
- 2.03 CONNECTORS AND ACCESSORIES
 - A.Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
 - B.Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressuretype, with at least two bolts.
 - 1. Pipe Connectors: Clamp type, sized for pipe.
 - C.Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
 - D.Grounding Electrode Conductor: Size to meet NFPA 70 requirements and size shown on the drawings.

PART 3 EXECUTION

3.01 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

Mark Twain School for the Talented and Gifted	26 05 26-2	GROUNDING AND BONDING FOR
Org #220		ELECTRICAL SYSTEMS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 - 1. Feeders and branch circuits (as noted on drawings).
 - 2. Receptacle circuits (as noted on drawings)...
 - 3. Flexible raceway runs.
 - 4. Armored and metal-clad cable runs.
- C. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.
- D. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.
- E. Isolated Grounding Receptacle Circuits: Install an insulated equipment grounding conductor connected to the receptacle grounding terminal. Isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.
 - F. Signal and Communication Equipment: For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.
 - G. Metal Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and a separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors.

END OF SECTION

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- **A.** This Section includes the following:
 - **1.** Hangers and supports for electrical equipment and systems.
 - 2. Construction requirements for concrete bases.
- **B.** Related Sections include the following:
 - 1. Section 260548 "Vibration and Seismic Controls for Electrical Systems" for products and installation requirements necessary for compliance with seismic criteria.

1.2 **DEFINITIONS**

- **A.** EMT: Electrical metallic tubing.
- **B.** IMC: Intermediate metal conduit.
- **C.** RMC: Rigid metal conduit.

1.3 SUSTAINABLE DESIGN REQUIREMENTS

- **A.** Comply with project requirements to achieve LEED Certification.
- **B.** Comply with Construction Waste Management plan. Refer to Section 017419.
- C. LEED Compliant Products: Inside the building envelope, use materials that contain acceptable or lower levels of VOC, per referenced standards (SCAQMD Rule #1168 & #1113, Green Seal GS-03, GS-011, GS-036, etc.) Cleaning products used during construction and close-out procedures shall meet Green Seal standards GS-34, GS-37, and GS-40, or the California Code of Regulations. Title 17 Section 94509, VOC standards for cleaning products.
- **D.** Refer to Sections 017419 & 018113 for more information on related LEED Credits:
 - 1. MR Credit 2: Construction Waste Management.
 - **2.** IEQ Credit 4.1: Low Emitting Materials, Adhesives and Sealants.
 - 3. IEQ Credit 4.2: Low Emitting Materials, Paints and Coating...
 - 4. EA Credit 4: Enhanced Refrigeration Management.

Mark Twain School for the Talented and Gifted	26 05 29-1	HANGERS AND SUPPORTS FOR
Org #220		ELECTRICAL SYSTEMS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

1.4 PERFORMANCE REQUIREMENTS

- **A.** Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- **B.** Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- **C.** Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.5 ACTION SUBMITTALS

- **A.** Product Data: For the following:
 - **1.** Steel slotted support systems.
 - **2.** Nonmetallic slotted support systems.
- **B.** Shop Drawings: Show fabrication and installation details and include calculations for the following:
 - 1. Trapeze hangers. Include Product Data for components.
 - 2. Steel slotted channel systems. Include Product Data for components.
 - **3.** Nonmetallic slotted channel systems. Include Product Data for components.
 - **4.** Equipment supports.

1.6 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.7 QUALITY ASSURANCE

- **A.** Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code Steel."
- **B.** Comply with NFPA 70.

1.8 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified together with concrete Specifications.
- **B.** Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Section 077200 "Roof Accessories."

Mark Twain School for the Talented and Gifted	26 05 29-2	HANGERS AND SUPPORTS FOR
Org #220		ELECTRICAL SYSTEMS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- **A.** Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 - **1.** Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Allied Tube & Conduit.
 - **b.** Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. ERICO International Corporation.
 - d. GS Metals Corp.
 - e. <u>Thomas & Betts Corporation</u>.
 - f. Unistrut; Tyco International, Ltd.
 - g. <u>Wesanco, Inc</u>.
 - 2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 - **3.** Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
 - **4.** Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
 - **5.** Channel Dimensions: Selected for applicable load criteria.
- **B.** Nonmetallic Slotted Support Systems: Structural-grade, factory-formed, glass-fiber-resin channels and angles with 9/16-inch- (14-mm-) diameter holes at a maximum of 8 inches (200 mm) o.c., in at least 1 surface.
 - **1.** Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. <u>Manufacturers</u>: Subject to compliance with requirements, provide products by one of the following:
 - a. <u>Allied Tube & Conduit</u>.
 - **b.** Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. Fabco Plastics Wholesale Limited.
 - d. Seasafe, Inc.
 - **3.** Fittings and Accessories: Products of channel and angle manufacturer and designed for use with those items.
 - **4.** Fitting and Accessory Materials: Same as channels and angles[, except metal items may be stainless steel].
 - 5. Rated Strength: Selected to suit applicable load criteria.
- **C.** Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- **D.** Conduit and Cable Support Devices: **[Steel] [Steel and malleable-iron]** hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

Mark Twain School for the Talented and Gifted	26 05 29-3	HANGERS AND SUPPORTS FOR
Org #220		ELECTRICAL SYSTEMS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- **E.** Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- **F.** Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- **G.** Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
 - 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - **a.** Available Manufacturers: Subject to compliance with <u>requirements</u>, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) <u>Hilti Inc</u>.
 - 2) <u>ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.</u>
 - 3) MKT Fastening, LLC.
 - 4) <u>Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit</u>.
 - 2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - **a.** Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) <u>Cooper B-Line, Inc.; a division of Cooper Industries</u>.
 - 2) <u>Empire Tool and Manufacturing Co., Inc</u>.
 - 3) <u>Hilti Inc</u>.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
 - **3.** Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
 - **4.** Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
 - **5.** Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
 - **6.** Toggle Bolts: All-steel springhead type.
 - 7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- **A.** Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- **B.** Materials: Comply with requirements in Section 055000 "Metal Fabrications" for steel shapes and plates.

Mark Twain School for the Talented and Gifted	26 05 29-4	HANGERS AND SUPPORTS FOR
Org #220		ELECTRICAL SYSTEMS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

3.1 APPLICATION

- **A.** Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- **B.** Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT and RMC as scheduled in NECA 1, where its Table 1 lists maximum spacings less than stated in NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.
- **C.** Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with two-bolt conduit clamps
- D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.
- **E.** Non metallic slotted channel to be used only in caustic environments (pool filter rooms) Only stainless steel fasteners and clamps can be used to fasten or support the channels and the RNC conduit present in such spaces.

3.2 SUPPORT INSTALLATION

- **A.** Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- **B.** Raceway Support Methods: In addition to methods described in NECA 1, EMT, RMC, EMT and RNC may be supported by openings through structure members, as permitted in NFPA 70.
- **C.** Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).
- **D.** Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - **1.** To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - **3.** To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - **4.** To Existing Concrete: Expansion anchor fasteners.

Mark Twain School for the Talented and Gifted	26 05 29-5	HANGERS AND SUPPORTS FOR
Org #220		ELECTRICAL SYSTEMS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
- 6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts or Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
- 7. To Light Steel: Sheet metal screws.
- 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- **A.** Comply with installation requirements in Section 055000 "Metal Fabrications" for site-fabricated metal supports.
- **B.** Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- **C.** Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

- **A.** Construct concrete bases of dimensions indicated but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base. Provide 4" high curb for interior mounted equipment and 6" curb for exterior mounted equipment.
- **B.** Use 3000-psi (20.7-MPa), 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Section 033000 "Cast-in-Place Concrete."
- **C.** Anchor equipment to concrete base.
 - **1.** Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - **2.** Install anchor bolts to elevations required for proper attachment to supported equipment.
 - **3.** Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

- **A.** Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - **1.** Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).
- **B.** Touchup: Comply with requirements in Section 099113 "Exterior Painting", Section 099123 "Interior Painting" and Section 099600 "High Performance Coatings" for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.
- **C.** Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

SECTION 26 05 34 RACEWAYS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 26-0526 Grounding and Bonding for Electrical Systems.
- B. Section 26-0529 Hangers and Supports for Electrical Systems.
- C. Section 26-0553 Identification for Electrical Systems.
- D. Section 26-0537 Boxes.

1.02 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical

Contractors Association.

B. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic

Tubing, and Cable; National Electrical Manufacturers Association.

- C. NFPA 70 National Electrical Code; National Fire Protection Association.
- D. UL 360 Liquid-Tight Flexible Steel Conduit.
- E. UL 514B Conduit, Tubing, and Cable Fittings.

1.03 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and shown.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.
- B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- C. Protect PVC conduit from sunlight.

PART 2 PRODUCTS

2.01 RACEWAY REQUIREMENTS

- A. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
- B. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.
- C. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.02 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

- A. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.
- B. Fittings:
 - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.
- C. Description: Interlocked steel construction with PVC jacket.
- D. Fittings: NEMA FB 1.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on drawings.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.
- D. Verify routing and termination locations of conduit prior to

rough-in.

E. Conduit routing is shown on drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install conduit in a neat and workmanlike manner in accordance with NECA 1.

Mark Twain School for the Talented and Gifted	26 05 34-2	RACEWAYS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

- C. Conduit Support:
 - 1. Secure and support conduits in accordance with NFPA 70 and Section 26-0529 using suitable supports and methods approved by the authority having jurisdiction.

2. Provide independent support from building structure. Do not provide support from piping,

ductwork, or other systems.

D. Connections and Terminations:

1. Use suitable adapters where required to transition from one type of conduit to another.

- 2. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
- 3. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
- 4. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
- E. Penetrations:
 - 1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 - 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 - 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
 - 4. Conceal bends for conduit risers emerging above ground.
 - 5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
 - 6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
 - 7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
 - Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07-8400.
- F. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:

1. Where conduits cross structural joints intended for expansion, contraction, or deflection.

- 2. Where conduits are subject to earth movement by settlement or frost.
- G. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
 - 1. Where conduits pass from outdoors into conditioned interior spaces.
 - 2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
- H. Provide grounding and bonding in accordance with Section 26-0526.

Mark Twain School for the Talented and Gifted	26 05 34-3	RACEWAYS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

3.03 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Architectural sections.
- B. Route conduit through roof openings for piping and ductwork wherever possible. Where separate roofing penetration is required, coordinate location and installation method with roofing installation specified in Architectural Section.

3.04 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:
 - 1. Exposed Conduit: Rigid steel conduit
 - 2. Concealed Conduit, Aboveground: Rigid steel conduit, EMT or RNC
 - 3. Underground Conduit: RNC, Type EPC-40 PVC, direct buried.
 - 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC

B. Comply with the following indoor applications, unless otherwise indicated:

- 1. Exposed, Not Subject to Physical Damage: EMT or RNC.
- 2. Exposed and Subject to Severe Physical Damage: Rigid steel conduit
- 3. Concealed in Ceilings and Interior Walls and Partitions: EMT
- 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
- 5. Damp or Wet Locations: Rigid steel conduit
- 6. Raceways for Optical Fiber or Communications Cable in Spaces Used for Environmental Air: EMT
- 7. Raceways for Optical Fiber or Communications Cable Risers in Vertical Shafts: EMT

C.Minimum Raceway Size: 3/4-inch trade size.

D.Raceway Fittings: Compatible with raceways and suitable for use and location.

- 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
- 2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with that material. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer.

END OF SECTION

SECTION 26 05 37 BOXES

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 07-8400 Firestopping.
- B. Section 26-2726 Wiring Devices: Wall plates in finished areas.

1.02 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical

Contractors Association.

B. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic

Tubing, and Cable; National Electrical Manufacturers Association.

C. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; National

Electrical Manufacturers Association.

D. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports; National

Electrical Manufacturers Association.

E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical

Manufacturers Association.

F. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.02 QUALITY ASSURANCE

1.03

- A. Conform to requirements of NFPA 70.
- B. Products: Provide products listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 OUTLET BOXES

 A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.

Mark Twain School for the Talented and Gifted26 05 37-1BOXESOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

- B. Nonmetallic Outlet Boxes: NEMA OS 2.
- C. Cast Boxes: NEMA FB 1, Type FD, aluminum. Provide gasketed cover by box manufacturer. Provide threaded hubs.
- D. Wall Plates for Finished Areas: As specified in Section 26-2726.

2.02 FLOOR BOXES

- A. Floor Boxes: NEMA OS 1, fully adjustable, 1-1/2 inches deep.
- B. Material: Formed steel.
- C. Shape: Rectangular.

2.03 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- B. In-Ground Cast Metal Box: NEMA 250, Type 6, outside flanged, recessed cover box for flush mounting:
 - 1. Material: Galvanized cast iron.
 - 2. Cover: Smooth cover with neoprene gasket and stainless steel cover screws.
 - 3. Cover Legend: "ELECTRIC".

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify exact locations of floor boxes and outlets with Architect prior to rough-in.

3.02 INSTALLATION

- A. Install boxes securely, in a neat and workmanlike manner, as specified in NECA 1.
- B. Install in locations as shown on Drawings, and as required for wire pulling, equipment connections, and as required by NFPA 70.
- C. Set wall mounted boxes at elevations to accommodate mounting heights specified in section for outlet device.
- D. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Refer to Architectural plans and elevations for dimensioning and/or further information as to the exact location.
 1. Adjust outlet box locations up to two feet if required to accommodate intended

purpose.

E. Orient boxes to accommodate wiring devices oriented as specified in Section 26-

2726.

F. Maintain headroom and present neat mechanical appearance.

G. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

- H. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
- I. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Architectural sections.
- J. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes with drawings, Architectural plans and elevations.

K. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan.

- L. Align adjacent wall mounted outlet boxes for switches, thermostats, telephone/data outlets, and similar devices.
- M. Use flush mounting outlet box in finished areas.
- N. Do not install flush mounting box back-to-back in walls; provide minimum 6 inches separation. Provide minimum 24 inches separation in acoustic rated walls.
- O. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- P. Use stamped steel bridges to fasten flush mounting outlet box between studs.
- Q. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- R. Use adjustable steel channel fasteners for hung ceiling outlet box.
- S. Do not fasten boxes to ceiling support wires.
- T. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches of box.
- U. Use gang box where more than one device is mounted together. Do not use

sectional box.

- V. Use gang box with plaster ring for single device outlets.
- W. Use cast outlet box in exterior locations exposed to the weather and wet locations.
- X. Use cast floor boxes for installations in slab on grade; formed steel boxes are acceptable for other installations.
- Y. Set floor boxes level.

3.03 ADJUSTING

- A. Adjust floor boxes flush with finish flooring material.
- B. Adjust flush-mounting outlets to make front flush with finished wall material.
- C. Install knockout closures in unused box openings.

3.04 CLEANING

- A. Clean interior of boxes to remove dust, debris, and other material.
- B. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 26-0519 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

1.02 REFERENCE STANDARDS

- A. ANSI Z535.2 American National Standard for Environmental and Facility Safety Signs.
- B. ANSI Z535.4 American National Standard for Product Safety Signs and Labels.
- C. NFPA 70 National Electrical Code; National Fire Protection Association.
- D. UL 969 Marking and Labeling Systems.

1.03 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

- A. Identification for Equipment:
 - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
- B. Identification for Conductors and Cables:
 - 1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26-0519.
 - 2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.

2.02 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
 - 1. Materials: Engraved three-layer laminated plastic, black letters on white background.
 - 2. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.

Mark Twain School for the Talented and Gifted26 05 53-1IDENTIFICATION OF ELECTRICAL SYSTEMSOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

- B. Identification Labels:
 - 1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
 - 2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.
- C. Locations:
 - 1. Each electrical distribution and control equipment enclosure.
- D. Letter Size:
 - 1. Use 1/4 inch letters for identifying grouped equipment and loads.
- F. Labels: Embossed adhesive tape, with 3/16 inch white letters on black background. Use only for identification of individual wall switches and receptacles, control device stations, and telephone/data outlets.

2.03 WIRE AND CABLE MARKERS

- A. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.
- B. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.
- C. Legend: Power source and circuit number or other designation indicated.
- D. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.
- E. Minimum Text Height: 1/8 inch.
- F. Color: Black text on white background unless otherwise indicated.
- G. Description: Vinyl cloth type self-adhesive wire markers.
- H. Locations: Each conductor at panelboard gutters, pull boxes, outlet boxes, and junction boxes at each load connection.
- I. Legend as follows below:
- J. 120/208V, 3-Phase, 4-Wire: Phase A = Black, Phase B= Red, Phase C = Blue, Neutral = White, Ground = Green, Isolated Ground = Green with yellow stripe.
- K. 277/480V, 3-Phase, 4-Wire: Phase A = Brown, Phase B= Orange, Phase C = Yellow, Neutral = Gray, Ground = Green.

2.04 UNDERGROUND WARNING TAPE

- A. Materials: Use non-detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.
- B. Non-detectable Type Tape: 6 inches wide, with minimum thickness of 4 mil.
- C. Legend: Type of service, continuously repeated over full length of tape.
- D. Color:

Mark Twain School for the Talented and Gifted	26 05 53-2	IDENTIFICATION OF ELECTRICAL SYSTEMS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

2.05 WARNING SIGNS AND LABELS

- A. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.
- B. Warning Signs:
 - 1. Materials: Preprinted aluminum signs, punched or drilled for fasteners with colors, legend, and size required for application.
 - 2. ¹/₄ inch grommets in corners for mounting.
 - 3. Minimum Size: 7 by 10 inches unless otherwise indicated.
- C. Warning Labels:
 - 1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester, or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
 - 2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
 - 3. Minimum Size: 2 by 4 inches unless otherwise indicated.
- D. Description: 3 inch wide polyethylene tape, detectable type colored red with suitable warning legend describing buried electrical lines.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
 - 1. Surface-Mounted Equipment: Enclosure front.
 - 2. Flush-Mounted Equipment: Inside of equipment door.
 - 3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
 - 4. Elevated Equipment: Legible from the floor or working platform.
 - 5. Interior Components: Legible from the point of access.
 - 6. Conductors and Cables: Legible from the point of access.
- C. Install identification products centered, level, and parallel with lines of item being identified.
- D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing, or epoxy cement.
- E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
- F. Install underground warning tape above buried lines with one tape per trench at 3 inches below finished grade.

END OF SECTION

26 08 00 Commissioning of Electrical Systems

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Electrical equipment coordination and installation.
 - 2. Common electrical installation requirements
 - 3. Commissioning of Electrical Systems

1.03 COORDINATION

- A. Contractor shall provide information requested by the CxP for commissioning documentation and testing.
- B. Contractor shall participate in plumbing, mechanical systems, assemblies, equipment and component maintenance orientations and inspections as directed by the CxP.
- C. Contractor shall provide all personnel, tools, materials, and equipment to support the commissioning process. Facilitate the coordination of the commissioning work with the CxP and incorporate commissioning activities into the master construction schedule.
- D. Contractor shall incorporate all commissioning related activities into the construction schedule, ensuring that activities do not delay construction/project completion.
- E. Contractor shall notify the Owner's Representative and the CxP in writing that equipment and systems are ready for functional testing.
- F. Contractor shall perform equipment startups using authorized manufacturing representatives.
- G. Contractor shall provide written documentation to the CxP that equipment and systems are fully operational and ready to be functionally performance tested.
- H. Contractor shall perform commissioning tests at the direction of the CxP.
- I. Contractor shall attend construction phase commissioning coordination meetings.
- J. Contractor shall provide qualified personnel for participation in commissioning tests.

Mark Twain School for the Talented and Gifted	26 08 00-1	COMMISSIONING OF ELECTRICAL SYSTEMS
Org #220 Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- K. Contractor shall provide equipment, materials, and labor necessary to correct deficiencies found during the commissioning process.
- L. Contractor shall perform all quality control functions to ensure equipment and systems are installed properly.
- Μ. Contractor shall ensure equipment and systems are brought to a state of readiness and full functionality prior to commencing the commissioning functional performance testing.
- Contractor shall provide a qualified and owner approved representative to attend end of warranty N. testing.

PART 2 - EXECUTION

- 2.01 COMMON REQUIREMENTS FOR ELECTRICAL COMMISSIONING
 - Α. Tests shall demonstrate the correct installation and operation of each component and system.
 - Β. Functional performance testing reports shall contain Information:
 - 1. Addressing each of the building components tested,
 - 2. The testing methods utilized
 - 3. Include any readings and adjustments made.
 - C. The commissioning agent should review the submittals for commissioned systems for adherence to the owners project requirements prior to approval by the engineer of record.
 - D. Periodic observations during construction
 - 1. The commissioning agent shall perform periodic site observations to observe the guality and craftship of the installation and construction of the commissioned systems.
 - E. Prefunctional checks.
 - Prior to equipment startup, the commissioning agent shall perform prefunctional checks to 1 determine the readiness of the commissioned systems for startup.
 - F. Manuals.

G.

- An operating and maintenance manual shall be provided and include all of the following: 1.
 - Equipment size and selected options for each piece of equipment requiring maintenance. a.
 - Manufacturer's operation manuals and maintenance. b.
 - Name and address of at least one service agency. C.
 - Submittal data indicating all selected options for each piece of equipment and controls. d.
 - Operation and maintenance manuals for each piece of equipment. Required routine e. maintenance actions, cleaning and recommended re-lamping shall be clearly identified.
 - A schedule for inspecting and recalibrating all controls. f.
- A narrative of how each system is intended to operate, including recommended set points. g. Preliminary report/final report.
 - A report of commissioning process activities undertaken through the design and construction 1. phases of the building project shall be completed and provided to the owner or representative

Mark Twain School for the Talented and Gifted 26 08 00-2 COMMISSIONING OF ELECTRICAL SYSTEMS Ora #220 CSP 207459

Dallas ISD Construction Services

August 16, 2024

prior to final inspections. A copy may also be required to be provided to the code official. A final commisisoning report shall be complete and provided to the owner or representative at the completion of the first year warranty period and deferred testing.

- H. A 'systems manual' shall at a minimum include the following:
 - 1. Site, facility, and history information.
 - 2. Site contact information.
 - 3. Instructions for basic o&m.
 - 4. Description of major systems.
 - 5. Site equipment inventory.
 - 6. Copy of all special inspection verifications required.
- I. Training materials should at a minimum include the following:
 - 1. System and equipment overview.
 - 2. Review and demonstration of operation, servicing, and preventative maintenance.
 - 3. Review of systems manual.
 - 4. Review of the drawings on the systems and equipment.
- J. Final commissioning report.
 - 1. A report of test procedures and results identified as "final commissioning report" shall be delivered to the building owner. The report shall include:
 - a) Commissioning plan
 - b) Submittal review report
 - c) Construction phase observation reports
 - d) Construction phase issue and resolution log
 - e) Prefunctional check report
 - f) Startup reports
 - g) Balancing report
 - h) Functional testing report
 - i) Preliminary commissioning report
 - j) Systems manual
 - k) Training logs and materials
 - I) Warranty phase issue and resolution log
 - m) Deferred functional testing report

END OF SECTION

SECTION 26 09 23 LIGHTING CONTROL DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Occupancy sensors.
- B. Time

switches.

C. Daylighting controls.

1.02 RELATED REQUIREMENTS

- A. Section 26-0526 Grounding and Bonding for Electrical Systems.
- B. Section 26-0537 Boxes.

C. Section 26-0553 - Identification for Electrical Systems: Identification products and requirements.

- D. Section 26-2726 Wiring Devices: Devices for manual control of lighting, including wall switches and wall plates.
- E. Section 26-5100 Interior Lighting.

1.02 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction.

B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; National Electrical

Contractors Association.

C. NEMA 410 - Performance Testing for Lighting Controls and Switching Devices with Electronic Fluorescent Ballasts; National Electrical Manufacturers Association.

D. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.03 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.04 DELIVERY, STORAGE, AND PROTECTION

A. Store products in a clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation.

1.06 FIELD CONDITIONS

1.07 WARRANTY

- A. See Architectural Sections for Closeout Submittals, for additional warranty requirements.
- Β. Provide five year manufacturer warranty for all parts on the entire control

system.

C. Provide one year labor warranty on the entire control system.

1.08 SHOP DRAWINGS

- A. Submit shop drawings of each reflected ceiling plan in this project showing the specific locations of all parts of the lighting control system including motion sensors, photocells, smart switches, room controllers, enhanced building controls (only if required), etc. Motion sensors shown shall include sensor type, sensor mounting and other pertinent data to allow evaluation of the proposed system.
 - a. The locations and quantities of sensors shown on the drawings are diagrammatic and indicate only rooms that are to be provided with sensors. Provide additional sensors if required to properly and completely cover the respective room Ensure the best possible installation in the available space and to overcome local difficulties due to space limitations or interference of structural compatents.
- B. Submit a wiring diagram for all motion sensors, photocells, smart switches, room controllers, etc.
- C. Provide sequence of operations and scene descriptions for each space type. Submit a sequence of operations for each unique space type describing the function of each button on each switch and the effects on the lighting in the space. This sequence of operations is to follow the District's standard sequences with the added information describing how the lighting control system pieces/parts work together.
- D. Submit a list of switch types with a list of proposed button labels. This list is to be similar to the button information on lighting control drawings with added information showing switch button layouts and actual labels for this project.

Mark Twain School for the Talented and Gifted 26 09 23-2 LIGHTING CONTROL DEVICES Org #220 Dallas ISD Construction Services

CSP 207459 August 16, 2024

1.09 MOCK-UPS

A. Provide a product demonstration by the manufacturer of the lighting control system including a sample of each piece and part demonstration a complete working system. If a product demonstration is acceptable by Owner or Architect, provide at additional cost, a mock-up of required space types with complete controls for owner/engineer/construction administration review before installation throughout the building.

1.10 PRE-INSTALLATION MEETINGS

A. Meet with the manufacturer of the lighting controls on-site to review installation, wiring methods and exact equipment locations of all components prior to starting installation. At this meeting Contractor shall be trained by the manufacturer or vendor on the installation, setup and functionality of the system. Failure to have this meeting will result in Contractor assuming full responsibility of all costs incurred to move controls and sensors, replace equipment due to product damage, costs due to installation errors or failure to meet the full intent of the design.

PART 2 PRODUCTS

2.01 ALL LIGHTING CONTROL DEVICES

- A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
 - B. Unless specifically indicated to be excluded, provide all required conduit, wiring, connectors, hardware, components, accessories, etc. as required for a complete operating system.
 - C. Battery operated devices and controls are not allowed.
 - D.All programmable switches are to be engraved or permanently labeled during manufacturing so that the function of each button is clearly identified. All labeling or engraving to be of high quality and be provided by the lighting system manufacturer.
 - E. Acceptable manufacturers:
 - a. Acuity nLight
 - b. Nextlight
 - c. Echoflex

2.02 OCCUPANCY SENSORS

- A. All Occupancy Sensors:
 - 1. Description: Factory-assembled commercial specification grade devices for indoor use capable of sensing both major motion, such as walking, and minor

Mark Twain School for the Talented and Gifted 26 09 23-3LIGHTING CONTROL DEVICESOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

motion, such as small desktop level movements, according to published coverage areas, for automatic control of load indicated.

- Sensor Technology:

 Passive Infrared/Ultrasonic Dual Technology Occupancy Sensors:
 Designed to detect occupancy using a combination of both passive infrared and ultrasonic technologies.
- 3. Provide LED to visually indicate motion detection.
- 4. Operation: Unless otherwise indicated, occupancy sensor to have manual operation to turn load on and to turn load off when no occupant presence is detected during an adjustable turn-off delay time interval. All motion sensors to have masking or internal shielding available to control coverage pattern in field. Stickers or other external adhesive masking are not allowed.
- 5. Dual Technology Occupancy Sensors: Field configurable turn-on and holdon activation with settings for activation by either or both sensing technologies.
- 6. Turn-Off Delay: Field adjustable, up to a maximum time delay setting of not less than 5 minutes and 1 minute for testing and not more than 30 minutes. Set to 20 minute time delay.
- 7. Sensitivity: Field adjustable and set to maximum sensitivity.
- 8. Adaptive Technology: Field selectable; capable of self-adjusting sensitivity and time delay according to conditions.
- Compatibility: Suitable for controlling incandescent lighting, low-voltage lighting with electronic and magnetic transformers, fluorescent lighting with electronic and magnetic ballasts, and fractional motor loads, with no minimum load requirements.
- 10. All motion sensors to have masking or internal shielding available to control coverage pattern in the field. Stickers or other external adhesive masking are not allowed.
- B. Wall Switch Occupancy Sensors:
 - 1. All Wall Switch Occupancy Sensors:
 - a. Description: Occupancy sensors designed for installation in standard wall box at standard wall switch mounting height with a field of view of 180 degrees, integrated manual control capability, and no leakage current to load in off mode. For rooms less than 40 square feet only, otherwise provide ceiling mounted sensor.
 - b. Manual-Off Override Control: When used to turn off load while in automatic-on mode, unit to revert back to automatic mode after no occupant presence is detected during the delayed-off time interval.
 - c. Devices are to be Ivory color with Brushed Stainless Steel Cover plates.
- C. Ceiling Mounted Occupancy Sensors:
 - 1. All Ceiling Mounted Occupancy Sensors:
 - a. Description: Low profile occupancy sensors designed for ceiling installation.
 - b. Unless otherwise indicated or required to control the load indicated on the drawings, provide low voltage units, for use with separate compatible accessory power packs.
 - c. Finish: White unless otherwise indicated.
- D. Power Packs for Low Voltage Occupancy Sensors:
 - 1. Description: Plenum rated, self-contained low voltage class 2 transformer and relay compatible with specified low voltage occupancy sensors for switching of line voltage loads.
 - 2. Provide quantity and configuration of power and slave packs with all associated wiring and accessories as required to control the load indicated on the drawings.

Mark Twain School for the Talented and Gifted26 09 23-4LIGHTING CONTROL DEVICESOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

3. Input Supply Voltage: Dual rated for 120/277 V ac.

2.03 TIME SWITCHES

- A. Electronic Time Switches: Electronic, solid-state programmable units with alphanumeric display; 7 day plus holiday schedules, complying with UL 917.
 - 1. Contact Configuration: DPDT
 - 2. Contact Rating: 30-A inductive or resistive, 240-V ac.
 - 3. Program: 8 on-off set points on a 24-hour schedule.
 - 4. Circuitry: Allow connection of a photoelectric relay as substitute for on-off function of a program on selected channels.
 - 5. Battery Backup: For schedules and time clock.
 - 6. Provide override switch at location determined by DISD for maximum 2 hours.

2.04 OUTDOOR PHOTOELECTRIC SWITCHES

- A. Description: Solid state, with SPST dry contacts rated for 1000-VA inductive to operate connected relay, contactor coils, or microprocessor input; complying with UL 773A.
 - 1. Light-Level Monitoring Range: 1.5 to 10 fc, with an adjustment for turn-on and turn-off levels within that range, and a directional lens in front of photocell to prevent fixed light sources from causing turn-off.
 - 2. Time Delay: 15-second minimum, to prevent false operation.
 - 3. Surge Protection: Metal-oxide varistor, complying with IEEE C62.41.1, IEEE C62.41.2, and IEEE 62.45 for Category A1 locations.
 - 4. Mounting: Twist lock complying with IEEE C136.10, with base-and-stem mounting or stem-and-swivel mounting accessories as required to direct sensor to the north sky exposure. Mount on roof 18"+.

2.05 LIGHTING CONTACTOR

- A. Description: Electrically operated and mechanically held, combination type with nonfused disconnect, complying with NEMA ICS 2 and UL 508.
 - 1. Current Rating for Switching: Listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballast with 15 percent or less total harmonic distortion of normal load current).
 - 2. Fault Current Withstand Rating: Equal to or exceeding the available fault current at the point of installation.
 - 3. Enclosure: Comply with NEMA 250.
 - 4. Provide with control and pilot devices as indicated on Drawings, matching the NEMA type specified for the enclosure.

2.06 SMART SWITCHES

- 1. Smart switches to control the luminaires in the space for all on/off, dimming and/or "scene" controls.
- 2. All programmable switches are to be engraved or permanently labeled during manufacturing so that the function of each button is clearly identified. All labeling

Mark Twain School for the Talented and Gifted	26 09 23-5	LIGHTING CONTROL DEVICES
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

or engraving to be of high quality and be provided by the lighting system manufacturer.

3. Where keyed switches are indicated on the plans (group student restrooms only), the "off" feature of the smart switch is to be disabled for a schedule similar to 7AM-5PM. Coordinate and program exact schedule with Dallas ISD.

2.07 ROOM CONTROLLERS

- 1. In the event of a hardware or software or component failure, the lighting in the space is to default to the "on" position.
- 2. Locate the room controller above the lay-in ceiling above the switches near the exit door.Provide a permanent label on the lay-in ceiling grid to identify its location. The label shall say "lighting controller".

2.08 NETWORK CONTROLLER

 Provide network controller be capable of being programmed/reprogrammed via PC software. Controller to be capable of receiving input via contact closure, user PC

software, fire alarm control panel, etc. and issuing building-wide commands to enable/disable a scene at all luminaires inside and outside the building.

2. Include astronomical time clock capable of seven (7) different day types per week,

automatic holiday "shutoff" feature for 24-hours, 12-hour minimum program backup

capabilities or to meet code, whichever is greater.

 BACnet Testing Laboratories (BTL) BACNĚT/IP listed capable of future communication with EMCS

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that openings for outlet boxes are neatly cut and will be completely covered by devices or wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to lighting control devices.
- F. Verify that the service voltage and ratings of lighting control devices are appropriate for the service voltage and load requirements at the location to be installed.

Mark Twain School for the Talented and Gifted 26 09 23-6LIGHTING CONTROL DEVICESOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

G. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes provided under Section 26-0537 as required for installation of lighting control devices provided under this section.
- C. Install lighting control devices in accordance with manufacturer's instructions.
- D. Unless otherwise indicated, connect lighting control device grounding terminal or conductor to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- E. Install lighting control devices plumb and level, and held securely in place.
- F. Where required and not furnished with lighting control device, provide wall plate in accordance with Section 26-2726.
- G. Where applicable, install lighting control devices and associated wall plates to fit completely flush to mounting surface with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- H. Occupancy Sensor Locations:
 - Location Adjustments: Within the design intent, reasonably minor adjustments to locations may be made in order to optimize coverage and avoid conflicts or problems affecting coverage. Motion sensors may be affected by various conditions in the room. It may be necessary for Contractor to make adjustments, change the location or type of sensor to obtain proper operation in a specific room. Contractor/equipment manufacturer shall have final responsibility for proper operation and coverage of the system in each room and should therefore make labor allowance for such changes and adjustments.
 - 2. Locate ultrasonic and dual technology passive infrared/ultrasonic occupancy sensors a minimum of 4 feet from air supply ducts or other sources of heavy air flow and as per manufacturer's recommendations, in order to minimize false triggers.
- J. Lamp Burn-In: Operate lamps at full output for minimum of 30 hours or prescribed period per manufacturer's recommendations prior to use with any dimming controls. Replace lamps that fail prematurely due to improper lamp burn-in.
- K. Unless otherwise indicated, install power packs for lighting control devices above accessible ceiling or above access panel in inaccessible ceiling near the sensor location.
- L. Unless otherwise indicated, install switches on load side of power packs so that switch does not turn off power pack.

Mark Twain School for the Talented and Gifted 26 09 23-7LIGHTING CONTROL DEVICESOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

- M. All portions of the controls mounted above ceiling are to be plenum rated.
- N. Wiring between sensors and control units shall be 18 AWG minimum (standard preferred) or CAT5/5e/6. Wiring shall be plenum rated in plenum spaces and UL listed. Pre-terminated low voltage wiring from the lighting controls manufacturer is preferred.

3.04 SEQUENCES OF OPERATION

- A. The smart switch shall be required to be pressed to turn the lights on in all spaces where a vacancy sensor is required. Otherwise, an occupancy sensor may automatically turn the luminaires on. Two minutes prior to turning the lights off, the lighting controls shall dim the luminaires in the space to 50% of their previous output as a notification to the occupants that the controls will soon turn the lighting off. A momentary "blink" is allowed if luminaires are not dimmable. If the motion sensor is not triggered in two minutes, the lighting in the space is to turn off. If the motion sensor is triggered, the lighting controls shall dim the lighting back up to the previous lighting level and timeout is restarted. In spaces with timer switches, the system shall accept an override signal at any time either before or after the lighting is turned off. The occupant shall not be required to wait for the lights to go out before issuing the override.
- B. Where shown on the plans, a photocell is to be used to measure the light level and signal to the room controller to dim the luminaires continuously (from 100% to 15% or lower, including off) in the daylight zone to maintain a consistent (within +10% and 0%) lighting level in the space.
- C. Typical Classroom:
 - a. Vacancy sensors to be utilized in all classrooms and to deactivate lighting after 20 minutes of inactivity.
 - b. Smart switches in classrooms to have only the following buttons:
 - i. On/off (these may be combined or separate buttons)
 - ii. Scene 1: Teaching wall.
 - iii. Scene 2: AV mode.
 - iv. Dimming control up.
 - v. Dimming control down.
 - c. On/Off Function:
 - d. "On" button to activate lighting to 100% capacity and not return lighting to previous setting. "Off" button to deactivate all room lighting to 0%.
 - e. Teaching wall mode to be provided.
 - f. A/V mode to be provided.
 - g. Dimming functions to be provided for each classroom and be capable of increasing and decreasing lighting levels in all operational modes (general on/off mode, A/V mode and teaching wall mode).
 - h. Where daylighting is required by code, program the system to automatically respond.
- D. Special Instruction Classrooms (science labs, culinary rooms, art rooms and lecture halls, et al):
 - a. These areas are to be controlled the same as typical classrooms except where special condition or architectural components require the controls to be modified.
 - b. Where departure from typical classroom controls is necessary, they should remain as closto typical as possible and require approval from Dallas ISD designated representative.
- E. Corridors and Commons Areas:
 - a. To be controlled through occupancy sensors.
 - b. Where daylighting is required by code, program the system to automatically respond.
- F. Group Student Restrooms:
 - a. To be controlled with occupancy sensors set to deactivate lighting after 20 minutes of inactivity.
 - b. Provide a keyed switch to allow owner to deactivate lighting. See smart switch requirements above for additional information.
 - c. Where daylighting is required by code, program the system to automatically respond.
- G. Offices:
 - a. Vacancy sensors to be provided in all offices and to deactivate lighting after 20 minutes ofinactivity.
 - b. Provide dimming capabilities in all offices.
 - c. Where daylighting is required by code, program the system to automatically respond.
- H. Individual Staff Restrooms: To be controlled with vacancy sensor switch set to deactivate lighting after 20 minutes of inactivity.
- I. Individual Student Restrooms (pre-K, elementary schools, and special needs areas): To be controllewith occupancy sensor switch set to deactivate lighting after 20 minutes of inactivity.
- J. Competition Gymnasiums, Cafeteria and Cafetoriums:
 - a. Lighting control to be designed to provide functionality appropriate for all intended usages.
 - b. Where daylighting is required by code, the system to automatically respond.
- K. Gymnasiums (Auxiliary and Practice):
 - a. To be controlled with occupancy sensors set to deactivate lighting after 20 minutes of inactivity.
 - b. Where daylighting is required by code, program the system to automatically respond.
- L. Theatrical Lighting Controls
 - a. Acceptable Manufacturer: Electronic Theatre Controls (ETC) or Dallas ISD approved equal. Manufacturers submitted for approval are required to meet the following qualifications:

Mark Twain School for the Talented and Gifted 26 09 23-9LIGHTING CONTROL DEVICESOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

- i. Provide phone support free of charge 365 days a year, 24 hours a day.
- ii. Continue to support and repair product after it is discontinued from manufacturing. When possible, provide loaner equipment if repair is needed.
- iii. Provide at least eight (8) factory-trained and authorized lighting service technicians in the state of Texas and 230 nationwide. Manufacture all products in the USA. Quality control is onsite and lead time of standard products is minimal.
- iv. One (1) manufacturer for lighting and rigging systems and sold via authorized dealer.
- v. Four (4) sets of B size (11x17 inch) drawings for approval submitted within 6-8 weeks of
- vi. receipt of order.
- vii. Two (2) year limited warranty on parts and workmanship.
- viii. Unison DRd Dimmer Racks and associated dimmer modules include an eight (8) year
- ix. warranty on parts and workmanship.
- x. All LED fixtures include a five (5) year warranty on parts and workmanship and ten (10)
- xi. year warranty on LED emitters (excluding S4wrd).
- xii. Startup and owner training to be performed by a factory engineer.

3.04 FIELD QUALITY CONTROL

- A. Inspect each lighting control device for damage and defects.
- B. Test occupancy sensors to verify proper operation, including time delays and ambient light thresholds where applicable. Verify optimal coverage for entire room or area. Record test results in written report to be included with submittals.
- M. Correct wiring deficiencies and replace damaged or defective lighting control devices.
- N. After system startup and prior to substantial completion of the project, manufacturer to test the operation of the complete system (all pieces, every space) to ensure the proper operation of the system throughout the range of building operating conditions. Provide documentation of such functional testing in the closeout submittals.
- O. The manufacturer shall provide instruction at the start of the job to contractor regarding the proper installation of the system.
- P. The manufacturer shall provide instruction at the start of the job to Contractor regarding the proper installation of the system.
- Q. As part of the system startup process, the manufacturer shall provide all initial field programming of the system.
- R. Using certified factory representatives, the manufacturer shall inspect the finished installation against the shop drawings and installation instructions.

Mark Twain School for the Talented and Gifted26 09 23-10LIGHTING CONTROL DEVICESOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

A. Using certified factory representatives, the manufacturer shall do functional testing of the finished installation. Submit documentation of the functional testing..

3.05 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.
- B. Adjust occupancy sensor settings to minimize undesired activations while optimizing energy savings, and to achieve desired function as indicated or as directed by Engineer.
- C. Where indicated or as directed by Architect, install factory masking material or adjust integral blinders on passive infrared (PIR) and dual technology occupancy sensor lenses to block undesired motion detection.

3.06 OWNER'S TRAINING AND DEMONSTRATION

- A. Upon completion of testing and adjustment, demonstrate operation of the system to representatives of Owner.
- B. Instruct Owner's personnel in proper maintenance, adjustment, and operation of the motion sensor lighting controls.
- C. Discuss with Owner the time clock feature programming requirements (on/off times and school schedule) and teach them to program the clock feature to match the required schedule.
- D. Upon completion of testing and adjustment (commissioning), Contractor and a direct employee of the equipment manufacturer (who is already familiar with the details of the project) shall demonstrate operation, proper maintenance, troubleshooting and adjustment of the lighting control system and all sensors throughout the building. Owner shall receive a minimum of 4 hours and a maximum of 8 hours in an on-site training session. The length of the training session shall be at the discretion of Owner. Training session shall be filmed/recorded and provided to Owner. The training shall cover the following areas in detail:
 - I. Scope of system: Review the as-built documentation with Owner to detail extent of system. Identify locations of all wall stations, wiring, and panels that fall within the scope of the lighting control system. Define clear lines of scope between lighting control system and EMS functions if applicable.
 - II. Operation of system: Cover normal operation of switches, pushbuttons, LCD interfaces and software (if provided). Provide documentation to Owner showing the operational zoning of controlled circuits and all time-clock events programmed into the Lighting Control System. Show Owner how to change and add/delete events.
 - III. Maintenance and Troubleshooting of system: Detail any required or optional preventive maintenance actions required of Owner. Review step-by-step procedures to troubleshoot all possible failure modes of each component type of the lighting control system. Cover procedure to get lights turned on in any space containing a lighting control system in the event the control system fails. Identify any specialized equipment necessary to support all the above actions.

IV Service and Support of system: Identify nearest direct support contact for the manufacturer and provide both telephone and email contact details.

3.07 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.08 CLOSEOUT ACTIVITIES

- A. Demonstration: Demonstrate proper operation of lighting control devices to Owner's Representative, and correct deficiencies or make adjustments as directed.
- B. Provide a letter in the final documents documenting that Owner (give name of person, date, duration and content of training) received training required in the owner training section.
- C. Warranty: Provide 2 copies of warrantees.
- D. Operating and Maintenance Manuals: Provide 2 complete sets of operating, maintenance, and adjustment instructions and other information necessary for proper operation of the lighting control system. These documents shall be included as part of the project operating and maintenance manuals.
- E. As-built Drawings: Provide 2 complete sets of as-built reflected ceiling plans showing the location and wiring configuration of all motion sensors, room controllers, photocells, etc.
- F. System Functional Testing Documentation: Provide two (2) copies of documentation reporting the manufacturer's start-up adjusting and final testing of the completed installation. Include a list of controllable points to the BMS provider upon completion of lighting controls functional testing.
- G. Software Maintenance Agreement: Provide 2 copies of the software maintenance agreement.
- H. Third Party Commissioning: In addition to functional testing by Contractor and the manufacturer, additional third party commissioning is required to meet IECC requirements.
 The manufacturer shall be present during the third party commissioning process.
 Attend commissioning meetings as request by Dallas ISD's commissioning provider.
 Complete and return any commissioning checklists prior to functional testing. Provide a service technician or programmer that is knowledgeable of the project requirements to assist the commissioning provider during functional testing.
- I. Maintenance Service: Provide a three-year manufacturer's software service agreement with the system. The agreement shall cover all minor updates, bug fixes and maintenance to the software of the system to maintain all original functionality. The software service agreement shall start at the time of substantial completion.

J. System Support: Provide five-year complete system support starting from substantial completion. The entire lighting control system (hardware and software) shall be included in the support. The support shall include phone and email communication (as a minimum) for the duration of the support. The system support shall include all technical support, hardware and software questions, warranty help, etc.

END OF SECTION

SECTION 26 2416

PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY:

- A. Section Includes:
 - 1. Distribution panelboards.
 - 2. Lighting and appliance branch-circuit panelboards.
 - 3. Load centers.

1.3 SUBMITTALS:

- **A.** Product Data: For each type of panelboard, switching and overcurrent protective device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
- B. Shop Drawings: For each panelboard and related equipment.
 - 1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
 - 2. Detail enclosure types and details for types other than NEMA 250, Type 1.
 - 3. Detail bus configuration, current, and voltage ratings.
 - 4. Short-circuit current rating of panelboards and overcurrent protective devices.
 - 5. Include evidence of NRTL listing for series rating of installed devices.
 - 6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 7. Include wiring diagrams for power, signal, and control wiring.
- **C.** Field Quality-Control Reports:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

Mark Twain School for the Talented and Gifted	26 24 16-1	PANELBOARDS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

- **D.** Panelboard Schedules: For installation in panelboards.
- E. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - 1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
 - 2. Time-current curves, including selectable ranges for each type of overcurrent protective device that allows adjustments.
- **F.** Calculation Submittal: Perform a short circuit analysis. Label devices for the arc-flash protection required. Device coordination study and arc flash study performed by the equipment manufacturer are required with wire sizes and run lengths coordinated with the electrician and panel/breaker information coordinated with the submittals.

1.4 QUALITY ASSURANCE:

- A. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.
- **B.** Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- **C.** Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- **D.** Comply with NEMA PB 1.
- **E.** Comply with NFPA 70.
- **1.5** DELIVERY, STORAGE, AND HANDLING:
 - A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating to prevent condensation.
 - **B.** Handle and prepare panelboards for installation according to NEMA PB 1.
- **1.6** PROJECT COORDINATIONS:
 - **A.** Environmental Limitations:

Mark Twain School for the Talented and Gifted26 24 16-2PANELBOARDSOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

- 1. Do not deliver or install panelboards until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above panelboards is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
- 2. Rate equipment for continuous operation under the following conditions unless otherwise indicated:
 - a) Ambient Temperature: Not exceeding 23 deg F (minus 5 deg C) to plus 104 deg F (plus 40 deg C).

1.7 COORDINATION:

- A. Coordinate layout and installation of switchboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- **B.** Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchorbolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

1.8 WARRANTY:

- **A.** Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

1.9 EXTRA MATERIALS:

- **A.** Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Keys: Two spares for each type of panelboard cabinet lock.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PANELBOARDS:

A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

Mark Twain School for the Talented and Gifted26 24 16-3PANELBOARDSOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

- **B.** Enclosures: Flush- and surface-mounted cabinets.
 - 1. Rated for environmental conditions at installed location.
 - a) Indoor Dry and Clean Locations: NEMA 250, Type 1
 - b) Outdoor Locations: NEMA 250, Type 3R
 - c) Corrosive environment Areas ie. pool related panels: NEMA 250, Type 4X stainless steel.
 - 2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
 - 3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
 - 4. Skirt for Surface-Mounted Panelboards: Same gage and finish as panelboard front with flanges for attachment to panelboard, wall, and ceiling or floor.
 - 5. Gutter Extension and Barrier: Same gage and finish as panelboard enclosure; integral with enclosure body. Arrange to isolate individual panel sections.
 - 6. Finishes:
 - a) Panels and Trim: Steel factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
 - b) Back Boxes: Galvanized steel
 - c) Fungus Proofing: Permanent fungicidal treatment for overcurrent protective devices and other components.
 - 7. Directory Card: Inside panelboard door, mounted in transparent card holder frame
- C. Incoming Mains Location: Top and/or bottom as required.
- **D.** Phase, Neutral, and Ground Buses:
 - 1. Material: Tin-plated aluminum
 - 2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.
 - 3. Isolated Ground Bus: Adequate for branch-circuit isolated ground conductors; insulated from box.
 - 4. Split Bus: Vertical buses divided into individual vertical sections.
- E. Conductor Connectors: Suitable for use with conductor material and sizes.
 - 1. Material: Tin-plated aluminum
 - 2. Main and Neutral Lugs: Compression type.
 - 3. Ground Lugs and Bus-Configured Terminators: Compression type.
 - 4. Feed-Through Lugs: Compression type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
 - 5. Subfeed (Double) Lugs: Compression type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.

Mark Twain School for the Talented and Gifted	26 24 16-4	PANELBOARDS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

- **F.** Service Equipment Label: NRTL labeled for use as service equipment for panelboards or load centers with one or more main service disconnecting and overcurrent protective devices.
- **G.** Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
- **H.** Panelboard Short-Circuit Current Rating: Rated for series-connected system with integral or remote upstream overcurrent protective devices and labeled by an NRTL. Include size and type of allowable upstream and branch devices, listed and labeled for series-connected short-circuit rating by an NRTL.
- I. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.
- **J.** All overcurrent protective devices 1200A and above shall contain arc fault reduction maintenance switch with operational lights located on the front of the device with ground fault alarm.
- **K.** Provide 100kA per phase transient surge protection devices on all panelboards to be wired into panels using wire leads no longer than 18 inches.

2.2 DISTRIBUTION PANELBOARDS:

- **A.** Manufacturers: Subject to compliance with requirements, provide products by one of the following(All switchgear to be of one manufacturer)
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial Electrical Distribution.
 - 3. Square D; a brand of Schneider Electric.
- **B.** Panelboards: NEMA PB 1, power and feeder distribution type.
 - 1. Doors: Secured with vault-type latch with tumbler lock; keyed alike.
 - 1. For doors more than 36 inches (914 mm) high, provide two latches, keyed alike.
 - 2. Mains: As indicated on drawings.
 - 3. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.
 - 4. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.
 - 5. Branch Overcurrent Protective Devices: Fused switches.

Mark Twain School for the Talented and Gifted	26 24 16-5	PANELBOARDS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

2.3 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS:

- **A.** Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
- **B.** Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
- C. Mains: As indicated on the drawings.
- **D.** Branch Overcurrent Protective Devices: Plug-in 208V and below Bolt-on 277 V and above circuit breakers, replaceable without disturbing adjacent units.
- **E.** Contactors in Main Bus: NEMA ICS 2, Class A, mechanically held, general-purpose controller, with same short-circuit interrupting rating as panelboard.
 - 1. Internal Control-Power Source: Control-power transformer, with fused primary and secondary terminals, connected to main bus ahead of contactor connection.
- F. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Receive, inspect, handle, and store panelboards according to NEMA PB 1.1.
- **B.** Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.
- C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- **D.** Proceed with installation only after unsatisfactory conditions have been corrected.
- **3.2** INSTALLATION:
 - A. Install panelboards and accessories according to NEMA PB 1.1.

Mark Twain School for the Talented and Gifted	26 24 16-6	PANELBOARDS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

- **B.** Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from panelboards.
- C. Comply with mounting and anchoring requirements specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- **D.** Mount top of trim 90 inches (2286 mm) above finished floor, or such that the uppermost overcurrent device is no more than 78" above finish floor level. Except "Load Centers" in Handicapped Accessible living units where top breaker cannot exceed 48" above finish floor level.
- **E.** Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- F. Install overcurrent protective devices and controllers not already factory installed.
 1. Set field-adjustable, circuit-breaker trip ranges.
- G. Install filler plates in unused spaces.
- **H.** Stub four 1-inch (27-GRC) empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch (27-GRC) empty conduits into raised floor space or below slab not on grade.
- I. Arrange conductors in gutters into groups and bundle and wrap with wire ties

3.3 IDENTIFICATION:

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section "Identification for Electrical Systems."
- **B.** Create a directory to indicate installed circuit loads incorporate Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
- **D.** Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

Mark Twain School for the Talented and Gifted 26 24 16-7PANELBOARDSOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

3.4 FIELD QUALITY CONTROL:

- **A.** Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test as recommended by the manufacturer. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
 - 3. Perform the following infrared scan tests and inspections and prepare reports:
 - a) Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each panelboard. Remove front panels so joints and connections are accessible to portable scanner.
 - b) Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each panelboard 11 months after date of Substantial Completion.
 - c) Instruments and Equipment:
 - a) Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
- **B.** Panelboards will be considered defective if they do not pass tests and inspections.
- **C.** Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
- **3.5** ADJUSTING:
 - A. Adjust moving parts and operable component to function smoothly, and lubricate as recommended by manufacturer.
 - **B.** Set field-adjustable circuit-breaker trip ranges as indicated.
 - C. Load Balancing: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes.
 - 1. Measure as directed during period of normal system loading.
 - 2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. Avoid disrupting critical 24-hour services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.
 - 3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.

Mark Twain School for the Talented and Gifted	26 24 16-8	PANELBOARDS
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

- 4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.
- 2.

END OF SECTION

Mark Twain School for the Talented and Gifted26 24 16-9PANELBOARDSOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

SECTION 26 27 26 WIRING DEVICES

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 26-0526 - Grounding and Bonding for

Electrical Systems.

B. Section 26-0537 - Boxes.

C. Section 26-0553 - Identification for Electrical Systems: Identification products and requirements.

D. Section 26-0923 - Lighting Control Devices: Devices for automatic control of lighting, including occupancy sensors.

1.02 REFERENCE STANDARDS

- A. FS W-C-596 Connector, Electrical, Power, General Specification for; Federal Specification.
- B. NECA 1 Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association.
- C. NEMA WD 1 General Color Requirements for Wiring Devices; National Electrical Manufacturers Association.
- D. NEMA WD 6 Wiring Device -- Dimensional Requirements; National Electrical Manufacturers Association.
- E. NFPA 70 National Electrical Code; National Fire Protection Association.
- F. UL 20 General-Use Snap Switches.
- G. UL 498 Attachment Plugs and Receptacles.
- H. UL 514D Cover Plates for Flush-Mounted Wiring Devices.
- I. UL 943 Ground-Fault Circuit-Interrupters.
- J. UL 1472 Solid-State Dimming Controls.

1.03 SUBMITTALS

A. See Architectural Sections for Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

1.04 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

Mark Twain School for the Talented and Gifted	26 27 26-1	WIRING DEVICES
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Hubbell Incorporated; : www.hubbell-wiring.com.
- B. Pass & Seymour, a brand of Legrand North America, Inc; : www.legrand.us
- C. Cooper/Eaton Wiring Devices:
- D. GE industrial wiring devices
- E. Leviton Manufacturing, Inc: www.leviton.com.

2.02 ALL WIRING DEVICES

- A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- B. Finishes:
 - 1. All Wiring Devices: Ivory with brushed stainless steel wall plate unless otherwise indicated.
 - 2. Wiring Devices Installed in Wet or Damp Locations: Gray with specified weatherproof cover unless otherwise indicated.
 - 4. Isolated Ground Convenience Receptacles: Orange with isolated ground triangle mark on device face.
 - 5. Wiring Devices Connected to Emergency Power: Red.
 - 6. Flush Floor Box Service Fittings: Brown wiring devices with brass cover and ring/flange.

2.03 WALL SWITCHES

- A. All Wall Switches: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20; types as indicated on the drawings.
 - 1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.
- B. Standard Wall Switches: Commercial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw, three way, or four way as indicated on the drawings.

2.04 RECEPTACLES

A. All Receptacles: tamper resistant, self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.

1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for

- back wiring with separate ground terminal screw.
- 2. NEMA configurations specified are according to NEMA WD 6.
- B. Convenience Receptacles:
 - 1. Standard Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R; single or duplex as indicated on the drawings.

Mark Twain School for the Talented and Gifted	26 27 26-2	WIRING DEVICES
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

- 2. Isolated Ground Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R, with ground contacts isolated from mounting strap; single or duplex as indicated on the drawings.
- C. GFI Receptacles:
 - 1. All GFI Receptacles: Provide with feed-through protection, light to indicate ground fault tripped condition and loss of protection, and list as complying with UL 943, class A.
 - 2. Standard GFI Receptacles: Commercial specification grade, duplex, 20A, 125V, NEMA
 - 5-20R, rectangular decorator style.
 - 3. Weather Resistant GFI Receptacles: Commercial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations. Provide weather-proof "while in use" cover.

2.06 WALL PLATES

- A. All Wall Plates: Comply with UL 514D.
 - 1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
 - 2. Size: Standard; .
 - 3. Screws: Metal with slotted heads finished to match wall plate finish.
- B. Stainless Steel Wall Plates: Brushed satin finish, Type 302 stainless steel.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.
- F. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130.

Mark Twain School for the Talented and Gifted	26 27 26-3	WIRING DEVICES
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

- B. Coordinate locations of outlet boxes provided under Section 26-0537 as required for installation of wiring devices provided under this section.
 - 1. Mounting Heights: Unless otherwise indicated, as follows:
 - a. Wall Switches: 48 inches above finished floor.
 - b. Wall Dimmers: 48 inches above finished floor.
 - c. Receptacles: 18 inches above finished floor or 6 inches above counter.
 - 2. Where multiple receptacles, wall switches, or wall dimmers are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
 - 3. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, the engineer to obtain direction prior to proceeding with work.
 - 4. Locate receptacles for electric drinking fountains concealed behind drinking fountain according to manufacturer's instructions.
- C. Install wiring devices in accordance with manufacturer's instructions.
- D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- E. Where required, connect wiring devices using pigtails not less than 6 inches long. Do not connect more than one conductor to wiring device terminals.
- F. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.
- G. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- H. For isolated ground receptacles, connect wiring device grounding terminal only to identified branch circuit isolated equipment grounding conductor. Do not connect grounding terminal to outlet box or normal branch circuit equipment grounding conductor.
- I. Unless otherwise indicated, GFI receptacles may be connected to provide feed-through protection to downstream devices. Label such devices to indicate they are protected by upstream GFI protection.
- J. Install wiring devices plumb and level with mounting yoke held rigidly in place.
- K. Install wall switches with OFF position down.
- L. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.
- M. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- N. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

Mark Twain School for the Talented and Gifted	26 27 26-4	WIRING DEVICES
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

O. Install cover plates on switch, receptacle, and blank outlets in finished areas.

3.04 FIELD QUALITY CONTROL

- A. Perform field inspection, testing, and adjusting in accordance with Section 01-4000.
- B. Inspect each wiring device for damage and defects.
- C. Operate each wall switch, and fan speed controller with circuit energized to verify proper operation.
- D. Test each receptacle to verify operation and proper polarity.
- E. Test each GFCI receptacle for proper tripping operation according to

manufacturer's instructions.

F. Correct wiring deficiencies and replace damaged or defective wiring devices.

3.05 ADJUSTING

A. Adjust devices and wall plates to be flush and level.

3.06 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION

SECTION 26 28 13 FUSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- **A.** Section Includes:
 - 1. Cartridge fuses rated 600-V ac and less for use in control circuits, enclosed switches, switchboards and multi-meter stacks.
 - 2. Spare-fuse cabinets.

1.3 SUBMITTALS

- **A.** Product Data: For each type of product indicated. Include construction details, material, dimensions, descriptions of individual components, and finishes for spare-fuse cabinets. Include the following for each fuse type indicated:
 - 1. Ambient Temperature Adjustment Information: If ratings of fuses have been adjusted to accommodate ambient temperatures, provide list of fuses with adjusted ratings.
 - a. For each fuse having adjusted ratings, include location of fuse, original fuse rating, local ambient temperature, and adjusted fuse rating.
 - b. Provide manufacturer's technical data on which ambient temperature adjustment calculations are based.
 - 2. Dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings.
 - 3. Current-limitation curves for fuses with current-limiting characteristics.
 - 4. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse.
 - 5. Coordination charts and tables and related data.

Mark Twain School for the Talented and Gifted	26 28 13-1
Org #220	
Dallas ISD Construction Services	

FUSES CSP 207459 August 16, 2024

- **B.** Operation and Maintenance Data: For fuses to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - 1. Ambient temperature adjustment information.
 - 2. Current-limitation curves for fuses with current-limiting characteristics.
 - 3. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse.
 - 4. Coordination charts and tables and related data.
- **C.** Calculation Submittal: Perform a short circuit analysis. Label devices for the arc-flash protection required. Device coordination study and arc flash study performed by the equipment manufacturer are required with wire sizes and run lengths coordinated with the electrician and panel/breaker information coordinated with the submittals.

1.4 QUALITY ASSURANCE

- **A.** Source Limitations: Obtain fuses, for use within a specific product or circuit, from single source from single manufacturer.
- **B.** Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- **C.** Comply with NEMA FU 1 for cartridge fuses.
- **D.** Comply with NFPA 70.
- **E.** Comply with UL 248-11 for plug fuses.

1.5 COORDINATION

A. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size and with system short-circuit current levels.

1.6 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 Mark Twain School for the Talented and Gifted 26 28 13-2
 Org #220
 Dallas ISD Construction Services
 FUSES
 CSP 207459
 August 16, 2024

1. Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than two of each size and type.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- **A.** Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Cooper Bussmann, Inc.
 - 2. Edison Fuse, Inc.
 - 3. Ferraz Shawmut, Inc.
 - 4. Littelfuse, Inc.

2.2 CARTRIDGE FUSES

A. Characteristics: NEMA FU 1, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.

2.3 SPARE-FUSE CABINET

- **A.** Characteristics: Wall-mounted steel unit with full-length, recessed piano-hinged door and key-coded cam lock and pull.
 - 1. Size: Adequate for storage of spare fuses specified with 10 percent spare capacity minimum.
 - 2. Finish: Gray, baked enamel.
 - 3. Identification: "SPARE FUSES" in 1-1/2-inch high letters on exterior of door.
 - 4. Fuse Pullers: For each size of fuse, where applicable and available, from fuse manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- **A.** Examine fuses before installation. Reject fuses that are moisture damaged or physically damaged.
- **B.** Examine holders to receive fuses for compliance with installation tolerances and other conditions affecting performance, such as rejection features.

Mark Twain School for the Talented and Gifted	26 28 13-3
Org #220	
Dallas ISD Construction Services	

FUSES CSP 207459 August 16, 2024

- **C.** Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.
- **D.** Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.
- **3.2** FUSE APPLICATIONS
 - **A.** Cartridge Fuses:
 - 1. Service Entrance: Class L, fast acting
 - 2. Feeders: Class J, time delay.
 - 3. Motor Branch Circuits: Class RK1 time delay.
 - 4. Other Branch Circuits: Class RK1, time delay
 - 5. Control Circuits: Class CC, time delay.

3.3 INSTALLATION

- **A.** Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.
- **B.** Install spare-fuse cabinet(s).

3.4 IDENTIFICATION

A. Install labels complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems" and indicating fuse replacement information on inside door of each fused switch and adjacent to each fuse block, socket, and holder.

END OF SECTION

FUSES CSP 207459 August 16, 2024

SECTION 26 28 18 ENCLOSED SWITCHES

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 26-0526 Grounding and Bonding for Electrical Systems.
- B. Section 26-0529 Hangers and Supports for Electrical Systems.
- C. Section 26-0553 Identification for Electrical Systems: Identification products and requirements.
- D. Section 16075 Electrical Identification
- E. Section 26-2813 Fuses.

1.02 REFERENCE STANDARDS

- NECA 1 Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association.
- B. NEMA 250 Enclosures for Electrical Equipment (1000 Volts Maximum).

C. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts

Maximum); National Electrical Manufacturers Association.

- D. NFPA 70 National Electrical Code; National Fire Protection Association.
- E. UL 50 Enclosures for Electrical Equipment, Non-Environmental

Considerations.

- F. UL 50E Enclosures for Electrical Equipment, Environmental Considerations.
- G. UL 98 Enclosed and Dead-Front Switches.

1.03 SUBMITTALS

A. See Architectural Sections for Administrative Requirements, for submittal procedures.

- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for enclosed switches and other installed components and accessories.
- C. Project Record Documents: Record actual locations of enclosed switches.

1.04 QUALITY ASSURANCE

Mark Twain School for the Talented and Gifted26 28 18-1ENCLOSED SWITCHESOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to enclosed switch internal components, enclosure, and finish.

1.06 FIELD CONDITIONS

- A. Maintain ambient temperature between -22 degrees F and 104 degrees F during and after installation of enclosed switches.
- В.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Eaton Corporation; Cutler-Hammer Products: www.eaton.com.
- B. General Electric Company: www.geindustrial.com.
- C. Schneider Electric; Square D Products: www.schneider-

electric.us. D. Siemens: www.sea.siemens.com.

2.02 ENCLOSED SAFETY SWITCHES

- A. Description: Quick-make, quick-break, enclosed safety switches complying with NEMA KS 1, type HD (heavy duty), and listed and labeled as complying with UL 98; ratings, configurations, and features as indicated on the drawings.
- B. Provide products listed and labeled by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet.
 - 2. Ambient Temperature: Between -22 degrees F and 104 degrees F.
- D. Horsepower Rating: Suitable for connected load.
- E. Voltage Rating: Suitable for circuit

voltage.

Mark Twain School for the Talented and Gifted26 28 18-2ENCLOSED SWITCHESOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

F. Provide with switch blade contact position that is visible when the cover is

open.

- G. Conductor Terminations: Suitable for use with the conductors to be installed.
- H. Provide insulated, groundable fully rated solid neutral assembly where a neutral connection is required, with a suitable lug for terminating each neutral conductor.
- Ι. Provide solidly bonded equipment ground bus in each enclosed safety switch, with a suitable lug for terminating each equipment grounding conductor.
- Enclosures: Comply with NEMA KS 1 and NEMA 250, and list and label as J. complying with UL 50 and UL 50E.
 - Environment Type per NEMA 250: Unless otherwise indicated, as 1. specified for the following installation locations:
 - Indoor Clean, Dry Locations: Type 1. Outdoor Locations: Type 3R. a.
 - b.
- K. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.
- Heavy Duty Switches: L.
 - Conductor Terminations: 1.
 - Lug Material: Copper, suitable for terminating copper conductors only. a.
 - 2. Provide externally operable handle with means for locking in the OFF position, capable of accepting three padlocks.

PART 3 EXECUTION

3.01 EXAMINATION

- Verify that field measurements are as shown on the drawings. Α.
- Β. Verify that the ratings of the enclosed switches are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive enclosed safety switches.
- Verify that conditions are satisfactory for installation prior to starting work. D.

3.02 INSTALLATION

- Α. Install enclosed switches in accordance with manufacturer's instructions.
- B. Install enclosed switches securely, in a neat and workmanlike manner in accordance with NECA 1.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required supports in accordance with Section 26-0529.
- E. Install enclosed switches plumb.

- F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed switches such that the highest position of the operating handle does not exceed 79 inches above the floor or working platform.
- G. Provide grounding and bonding in accordance with Section 26-0526.
- H. Provide fuses complying with Section 26-2813 for fusible switches as indicated or as required by equipment manufacturer's recommendations.
- I. Provide identification nameplate for each enclosed switch in accordance with Section 26-0553.

J. Provide label on the front cover indicating name or type of load served. Reference Section

26-0533 Electrical Identification.

K. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

3.03 FIELD QUALITY CONTROL

- A. Perform field inspection in accordance with Architectural Sections.
- C. Correct deficiencies and replace damaged or defective enclosed safety switches or associated components.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

- A. Clean dirt and debris from switch enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

SECTION 26 51 00 INTERIOR LIGHTING

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 26-0537 Boxes.
- B. Section 26-0923 Lighting Control Devices: Automatic controls for lighting including occupancy sensors.
- C. Section 26-2726 Wiring Devices: Manual wall switches.

1.02 REFERENCE STANDARDS

A. ANSI C82.11 - American National Standard for Lamp Ballasts - High Frequency Fluorescent

Lamp Ballasts - Supplements.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical

Contractors Association.

C. NECA/IESNA 500 - Standard for Installing Indoor Commercial Lighting Systems; National

Electrical Contractors Association.

D. NFPA 70 - National Electrical Code; National Fire Protection Association.

E. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures; National Fire

Protection Association.

- F. UL 935 Fluorescent-Lamp Ballasts.
- G. UL 1598 Luminaires.

1.03 SUBMITTALS

A. Product Data: Provide cut sheets including dimensions, ratings, and performance data.

- 1. Provide electronic files of photometric data (.ies) files certified by an independent testing agency in IESNA LM-63 standard format for proposed substitutions.
- B. Certificates for Dimming Ballasts: Manufacturer's documentation of compatibility with dimming controls to be installed.

- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- D. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
- E. Project Record Documents: Record actual connections and locations of luminaires and any associated remote components.

1.04 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Conform to requirements of NFPA 70 and NFPA 101.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.04 DELIVERY, STORAGE, AND PROTECTION

- A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting) and manufacturer's written instructions.
- C. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.05 FIELD CONDITIONS

A. Maintain field conditions within manufacturers required service conditions during and after installation.

1.07 WARRANTY

- A. See Architectural Sections for additional warranty requirements.
- B. Provide five year manufacturer warranty for all LED fixtures. The warranty shall include all luminaire components including, but not limited to, LED arrays, LED drivers, luminaire body and hardware. LED arrays will be considered defective if a total of 15% or more of the individual light emitting diodes fail to illuminate.
- C. Provide a 5 year manufacturer's full warranty for all battery packs.
- D. The warranties shall cover the cost of materials and labor for repair and installation.
- D. Products: Listed and classified by Underwriters Laboratories, Inc. as suitable for the purpose specified and indicated.

2.01 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where

applicable.

- C. Provide products that comply with requirements of NFPA 70 and NFPA 101.
- D. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- E. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, drivers, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- F. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- G. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

2.04 LAMPS

A. All Lamps:

1. Unless explicitly excluded, provide new, compatible, operable lamps in each luminaire.

- 2. Verify compatibility of specified lamps with luminaires to be installed. Where lamps are not specified, provide lamps per luminaire manufacturer's recommendations.
- 3. Minimum Efficiency: Provide lamps complying with all current applicable federal and state lamp efficiency standards.
- 4. Color Temperature Consistency: Unless otherwise indicated, for each type of lamp furnish products which are consistent in perceived color temperature. Replace lamps that are determined to be inconsistent in perceived color temperature.

2.05 EMERGENCY LIGHTING

A. Emergency lighting fixtures:

Use two-lamp, LED, wall-mounted "bug eye" fixtures. Provide vandal resistant housing in all locations. Mount as high as possible to avoid damage. Provide access panel for emergency lighting located in hard ceiling. Lithonia EU2C or Dallas ISD approved equal

- B. Emergency lighting to be separate from other lighting fixtures.
- C. All luminaires used for emergency lighting, including exit lights, to be UL 924 listed.
- D. Emergency battery packs shall be factory installed. Battery backup to operate fixture for at least 90minutes or per code minimum, whichever is greater. All battery backups installed in exterior luminaires to be rated for damp location and rated to operate at 32°F.

Mark Twain School for the Talented and Gifted26 51 00-3INTERIOR LIGHTINGOrg #220CSP 207459Dallas ISD Construction ServicesAugust 16, 2024

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26-0537 as required for installation of luminaires provided under this section.
- B. Install products according to manufacturer's instructions.
- E. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship) and NECA 500 (commercial lighting).
- F. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- G. Support surface mounted luminaires from the building structure with a minimum of two (2) 1/4 inch threaded rods per fixture. Use 1-1/2 inch x 1-1/2 inch steel framing channel where required to span joists and otherwise facilitate structural support.
- H. Mount recessed luminaires in the center of a ceiling tile or as shown on the drawings. Provide support for recessed luminaires by means of bar hangers extended across the main ceiling support members and also supported from the building structure. Install trims tight to mounting surface with no visible light leakage. Install recessed luminaires to permit removal from below. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.
- M. Install clips to secure recessed grid-supported luminaires in place.
- I. Run fixture whips (flex conduit/metal clad cable) from a junction box to each fixture (not to exceed four fixtures per junction box) access plate. Fixture whips between light fixtures are not to be accepted. Whips not to exceed 6'-0" in total length.

- J. Locate all remote drivers above the ceiling above each luminaire or in an adjacent room with a low ceiling for easy access. Mount drivers on rubber insulators.
- K. Move any luminaire up to 6 feet in any direction as directed by Architect at no additional cost.
- L.
- Suspended Ceiling Mounted Luminaires: 1. Do not use ceiling tiles to bear weight of luminaires.
 - 2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
 - Secure surface-mounted and recessed luminaires to ceiling support 3. channels or framing members, or to building structure.
 - Secure pendant-mounted luminaires to building structure. 4.
 - Secure lay-in luminaires to ceiling support channels using listed safety clips at 5. four corners.
 - 6. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.
 - 7. Install suspended luminaires and exit signs using pendants supported from swivel handers.
 - 8. Provide pendant length required to suspend luminaire at indicated height. Refer to Architectural plans and elevations for mounting height.
- Ι. Support luminaires larger than 2 x 4 foot size independent of ceiling framing.
- Install surface mounted exit signs plumb and adjust to align with building lines J. and with each other. Secure to prevent movement.
- Install accessories furnished with each luminaire. N.
- O. Connect luminaires and exit signs to junction box provided using flexible conduit with a maximum length of six (6) feet.
- P. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.
- Q. Bond products and metal accessories to branch circuit equipment

arounding conductor.

R. Install specified lamps in each emergency lighting unit, exit sign, and

luminaire.

- S. Exit Signs:
 - Unless otherwise indicated, connect unit to unswitched power from circuit indicated.

Bypass local switches, contactors, or other lighting controls.

3.04 FIELD QUALITY CONTROL

- Α. See Section 01-4000 - Quality Requirements, for additional requirements.
- Β. Inspect each product for damage and defects.
- C. Operate each luminaire after installation and connection to verify proper operation.

- D. Test self-powered exit signs, emergency lighting units, and fluorescent emergency power supply units to verify proper operation upon loss of normal power supply.
- E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by owner or architect.

3.05 ADJUSTING

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed. Secure locking fittings in place.
- B. Move any luminaire up to six feet in any direction as directed at no additional cost.

3.06 CLEANING

A. Clean surfaces according to NECA 500 (commercial lighting) and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.07 CLOSEOUT ACTIVITIES

- A. Demonstration: Demonstrate proper operation of luminaires, and correct deficiencies or make adjustments as directed.
- B. Provide owener a list of all uminaire types used on the project using manufacturer part numbers.
- C. Parovide owner a list of all LED types used on the project using ANSI and manufacturer codes.
- D. Provide owner a list of battery backup, automatic transfer devices, etc. on the project using manufacturer part numbers. Provide on as-built drawings the location of all remote-mounted battery backups.
- B. Just prior to Substantial Completion, replace all lamps that have failed.

3.08 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

SECTION 26 56 00 EXTERIOR FIXTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- **A.** This Section includes the following:
 - 1. Exterior luminaires with lamps and ballasts.
 - 2. Luminaire-mounted photoelectric relays.
 - 3. Poles and accessories.
- **B.** Related Sections include the following:
 - 1. Division 26 Section "Interior Lighting" for exterior luminaires normally mounted on exterior surfaces of buildings.

1.3 DEFINITIONS

- **A.** CRI: Color-rendering index.
- **B.** HID: High-intensity discharge.
- **C.** Luminaire: Complete lighting fixture, including ballast housing if provided.
- **D.** Pole: Luminaire support structure, including tower used for large area illumination.
- **E.** Standard: Same definition as "Pole" above.

1.4 STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION

- **A.** Dead Load: Weight of luminaire and its horizontal and vertical supports, lowering devices, and supporting structure, applied as stated in AASHTO LTS-4.
- **B.** Live Load: Single load of 500 lbf , distributed as stated in AASHTO LTS-4.
- C. Ice Load: Load of 3 lbf/sq. ft., applied as stated in AASHTO LTS-4.
- **D.** Wind Load: Pressure of wind on pole and luminaire, calculated and applied as stated in AASHTO LTS-4.

Mark Twain School for the Talented and Gifted	26 56 00-1	EXTERIOR FIXTURES
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

1. Wind speed for calculating wind load for poles 50 feet or less in height is 110 mph.

1.5 SUBMITTALS

- **A.** Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:
 - 1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
 - 2. Details of attaching luminaires and accessories.
 - 3. Details of installation and construction.
 - 4. Luminaire materials.
 - 5. Photometric data based on laboratory tests of each luminaire type, complete with indicated lamps, ballasts, and accessories.
 - a. Photometric data shall be certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
 - 6. Photoelectric relays.
 - 7. Ballasts, including energy-efficiency data.
 - 8. Lamps, including average life, lumen output, mercury content (in milligrams) and energy-efficiency data.
 - 9. Materials, dimensions, and finishes of poles.
 - 10. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.
 - 11. Anchor bolts for poles.
 - 12. Manufactured pole foundations.
- B. Shop Drawings:
 - 1. Anchor-bolt templates keyed to specific poles and certified by manufacturer.
 - 2. Design calculations, certified by a qualified professional engineer, indicating strength of screw foundations and soil conditions on which they are based.
 - 3. Wiring Diagrams: Power and control wiring.
- **C.** Pole and Support Component Certificates: Signed by manufacturers of poles, certifying that products are designed for indicated load requirements in AASHTO LTS-4 and that load imposed by luminaire has been included in design.
- **D.** Operation and Maintenance Data: For luminaries and poles to include in emergency, operation, and maintenance manuals.
- E. Warranty: Special warranty specified in this Section.

1.6 QUALITY ASSURANCE

- **A.** Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.
- **B.** Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with IEEE C2, "National Electrical Safety Code."
- **D.** Comply with NFPA 70.

1.7 DELIVERY, STORAGE, AND HANDLING

- **A.** Package aluminum poles for shipping according to ASTM B 660.
- **B.** Store poles on decay-resistant-treated skids at least 12 inches above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.
- **C.** Retain factory-applied pole wrappings on metal poles until right before pole installation. For poles with nonmetallic finishes, handle with web fabric straps.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
 - 1. Warranty Period for Luminaires: Five years from date of Substantial Completion.
 - 2. Warranty Period for Metal Corrosion: Five years from date of Substantial Completion.
 - 3. Warranty Period for Color Retention: Five years from date of Substantial Completion.
 - 4. Warranty Period for Lamps: Replace lamps and fuses that fail within 12 months from date of Substantial Completion; furnish replacement lamps and fuses that fail within the second 12 months from date of Substantial Completion.
 - 5. Warranty Period for Poles: Repair or replace lighting poles and standards that fail in finish, materials, and workmanship within manufacturer's standard warranty period, but not less than three years from date of Substantial Completion.
PART 2 - PRODUCTS

2.1 MANUFACTURERS

- **A.** In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
- **B.** In Exterior Lighting Fixture Schedule where titles below are column or row headings that introduce lists, the following requirements apply to product selection:
 - 1. Basis of Design Product: The design of each item of exterior luminaire and its support is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

2.2 LUMINAIRES, GENERAL REQUIREMENTS

- **A.** Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.
- **B.** Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.
- **C.** Metal Parts: Free of burrs and sharp corners and edges.
- **D.** Sheet Metal Components: Corrosion-resistant aluminum, unless otherwise indicated. Form and support to prevent warping and sagging.
- **E.** Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
- F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.
- **G.** Exposed Hardware Material: Stainless steel.
- **H.** Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
- I. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.

- **J.** Reflecting surfaces shall have minimum reflectance as follows, unless otherwise indicated:
 - 1. White Surfaces: 85 percent.
 - 2. Specular Surfaces: 83 percent.
 - 3. Diffusing Specular Surfaces: 75 percent.
- **K.** Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
- L. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.
- **M.** Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - 1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
 - Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.
 a. Color: As selected by Architect from manufacturer's full range.
- **N.** Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - 1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
 - 2. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20; and seal aluminum surfaces with clear, hard-coat wax.
 - 3. Class I, Clear Anodic Finish: AA-M32C22A41 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
 - 4. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
 - a. Color: As selected by Architect from manufacturer's full range.

2.3 LUMINAIRE-MOUNTED PHOTOELECTRIC RELAYS

A. Comply with UL 773 or UL 773A.

- B. Contact Relays: Factory mounted, single throw, designed to fail in the on position, and factory set to turn light unit on at 1.5 to 3 fc (16 to 32 lx) and off at 4.5 to 10 fc (48 to 108 lx) with 15-second minimum time delay. Relay shall have directional lens in front of photocell to prevent artificial light sources from causing false turnoff.
 - 1. Relay with locking-type receptacle shall comply with NEMA C136.10.
 - 2. Adjustable window slide for adjusting on-off set points.

2.4 LIGHT EMITTING DIODE (LED) DRIVERS AND LAMPS

- A. Low-Temperature Driver Capability: Rated by its manufacturer for reliable starting and operation of indicated lamp(s) at temperatures minus 20 deg C and higher.
 - 1. Driver Characteristics:
 - a. Efficiency: 90 percent, minimum.
 - b. Low sound emitting. Class A
 - c. UL listed.
 - d. Wet location labeled
 - e. Over voltage protection.
 - f. Over current protection.
 - g. Instant start.
 - h. EMC and FCC approved: Power supplies designated by the manufacturer for residential applications must meet FCC requirements for consumer use (FCC 47 CFR Part 18 Consumer Emission Limits).
 - i. Output operating frequency \geq 120 Hz.
 - j. Power supply shall comply with IEEE C.62.41-1991, Class A operation. The line transient shall consist of seven strikes of a 100 kHz ring wave, 2.5 kV level, for both common mode and differential mode.
 - 2. Lamp Characteristics:

100,000 hour minimum life.
Minimum CRI of 80.
Minimum efficacy: 55 lumens per watt (lm/W)
Wet location labeled
Lamps shall deliver at least 70% of initial lumens for at least 25,000 hours.
The change of chromaticity over the lifetime shall be within 0.007 on the CIE 1976 (u',v') diagram.

2.5 POLES AND SUPPORT COMPONENTS, GENERAL REQUIREMENTS

- A. Structural Characteristics: Comply with AASHTO LTS-4.
 - 1. Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of speed indicated in Part 1 "Structural Analysis Criteria for Pole Selection" Article, with a gust factor of 1.3.

- 2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.
- **B.** Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts, unless otherwise indicated.
- **C.** Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.
 - 1. Materials: Shall not cause galvanic action at contact points.
 - 2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication, unless stainless-steel items are indicated.
 - 3. Anchor-Bolt Template: Plywood or steel.
- **D.** Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange. Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete."

2.6 STEEL POLES

- A. Poles: Comply with ASTM A 500, Grade B, carbon steel with a minimum yield of 46,000 psig (317 MPa); 1-piece construction up to 40 feet in height with access handhole in pole wall.
 - 1. Shape: as indicated
 - 2. Mounting Provisions: Butt flange for bolted mounting on foundation or breakaway support.
- **B.** Steel Mast Arms: type as indicated, continuously welded to pole attachment plate. Material and finish same as pole.
- **C.** Brackets for Luminaires: Detachable, cantilever, without underbrace.
 - 1. Adapter fitting welded to pole and bracket, then bolted together with stainless steel bolts.
 - 2. Cross Section: Tapered oval, with straight tubular end section to accommodate luminaire.
 - 3. Match pole material and finish.
- **D.** Pole-Top Tenons: Fabricated to support luminaire or luminaires and brackets indicated, and securely fastened to pole top.
- **E.** Steps: Fixed steel, with nonslip treads, positioned for 15-inch vertical spacing, alternating on opposite sides of pole; first step at elevation 10 feet above finished grade.

- **F.** Intermediate Handhole and Cable Support: Weathertight, 3-by-5-inch handhole located at midpoint of pole with cover for access to internal welded attachment lug for electric cable support grip.
- **G.** Grounding and Bonding Lugs: Welded 1/2-inch threaded lug, complying with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.
- **H.** Cable Support Grip: Wire-mesh type with rotating attachment eye, sized for diameter of cable and rated for a minimum load equal to weight of supported cable times a 5.0 safety factor.
- I. Platform for Lamp and Ballast Servicing: Factory fabricated of steel with finish matching that of pole.
- J. Prime-Coat Finish: Manufacturer's standard prime-coat finish ready for field painting.
- **K.** Galvanized Finish: After fabrication, hot-dip galvanize complying with ASTM A 123/A 123M.
- L. Factory-Painted Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - 1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
 - 2. Interior Surfaces of Pole: One coat of bituminous paint, or otherwise treat for equal corrosion protection.
 - 3. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.
 - a. Color: As selected by Architect from manufacturer's full range.

2.7 ALUMINUM POLES

- **A.** Poles: Seamless, extruded structural tube complying with ASTM B 429, Alloy 6063-T6 with access handhole in pole wall.
- **B.** Poles: ASTM B 209, 5052-H34 marine sheet alloy with access handhole in pole wall.
 - 1. Shape: as indicated
 - 2. Mounting Provisions: Butt flange for bolted mounting on foundation or breakaway support.

- **C.** Pole-Top Tenons: Fabricated to support luminaire or luminaires and brackets indicated, and securely fastened to pole top.
- **D.** Grounding and Bonding Lugs: Welded 1/2-inch threaded lug, complying with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.
- **E.** Brackets for Luminaires: Detachable, with pole and adapter fittings of cast aluminum. Adapter fitting welded to pole and bracket, then bolted together with stainless-steel bolts.
 - 1. Tapered oval cross section, with straight tubular end section to accommodate luminaire.
 - 2. Finish: Same as pole
- F. Prime-Coat Finish: Manufacturer's standard prime-coat finish ready for field painting.
- **G.** Aluminum Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - 1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
 - 2. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20; and seal aluminum surfaces with clear, hard-coat wax.
 - 3. Class I, Clear Anodic Finish: AA-M32C22A41 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
 - 4. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
 - 5. Anodized
 - a. Color: As selected by Architect from manufacturer's full range.

2.8 DECORATIVE POLES

- **A.** Pole Material: as indicated
- **B.** Mounting Provisions:
 - 1. Bolted to concrete foundation.
- **C.** Fixture Brackets:
 - 1. Cast ductile iron.
 - 2. Cast gray iron.
 - 3. Cast aluminum.

D. Pole Finish: as indicated

2.9 POLE ACCESSORIES

A. Base Covers: Manufacturers' standard metal units, arranged to cover pole's mounting bolts and nuts. Finish same as pole.

PART 3 - EXECUTION

3.1 LUMINAIRE INSTALLATION

- **A.** Install lamps in each luminaire.
- **B.** Fasten luminaire to indicated structural supports.
 - 1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.
- **C.** Adjust luminaires that require field adjustment or aiming.

3.2 POLE INSTALLATION

- **A.** Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on the pole.
- **B.** Clearances: Maintain the following minimum horizontal distances of poles from surface and underground features, unless otherwise indicated on Drawings:
 - 1. Fire Hydrants and Storm Drainage Piping: 60 inches.
 - 2. Water, Gas, Electric, Communication, and Sewer Lines: 5 feet.
 - 3. Trees: 15 feet.
- **C.** Concrete Pole Foundations: Set anchor bolts according to anchor-bolt templates furnished by pole manufacturer. Concrete materials, installation, and finishing requirements are specified in Division 03 Section "Cast-in-Place Concrete."
- **D.** Foundation-Mounted Poles: Mount pole with leveling nuts, and tighten top nuts to torque level recommended by pole manufacturer.
 - 1. Use anchor bolts and nuts selected to resist seismic forces defined for the application and approved by manufacturer.
 - 2. Grout void between pole base and foundation. Use nonshrink or expanding concrete grout firmly packed to fill space.
 - 3. Install base covers, unless otherwise indicated.
 - 4. Use a short piece of 1/2-inch- (13-mm-) diameter pipe to make a drain hole through grout. Arrange to drain condensation from interior of pole.

Mark Twain School for the Talented and Gifted	26 56 00-10	EXTERIOR FIXTURES
Org #220		CSP 207459
Dallas ISD Construction Services		August 16, 2024

3.3 BOLLARD LUMINAIRE INSTALLATION

- **A.** Align units for optimum directional alignment of light distribution.
- **B.** Install on concrete base with top 4 inches above finished grade or surface at bollard location. Cast conduit into base, and shape base to match shape of bollard base. Finish by troweling and rubbing smooth. Concrete materials, installation, and finishing are specified in Division 03 Section "Cast-in-Place Concrete."

3.4 CORROSION PREVENTION

- **A.** Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.
- **B.** Steel Conduits: Comply with Division 26 Section "Raceway and Boxes for Electrical Systems." In concrete foundations, wrap conduit with 0.010-inch thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.5 GROUNDING

- **A.** Ground metal poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."
 - 1. Install grounding electrode for each pole, unless otherwise indicated.
 - 2. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.
- **B.** Ground nonmetallic poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."
 - 1. Install grounding electrode for each pole.
 - 2. Install grounding conductor and conductor protector.
 - 3. Ground metallic components of pole accessories and foundations.

3.6 FIELD QUALITY CONTROL

- **A.** Inspect each installed fixture for damage. Replace damaged fixtures and components.
- **B.** Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.
 - 1. Verify operation of photoelectric controls.
- **C.** Illumination Tests:

- 1. Measure light intensities at night. Use photometers with calibration referenced to NIST standards. Comply with the following IESNA testing guide(s):
 - a. IESNA LM-64, "Photometric Measurements of Parking Areas."
 - b. IESNA LM-72, "Directional Positioning of Photometric Data."
- **D.** Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

END OF SECTION

27 05 00 COMMON WORK RESULTS FOR COMMUNICATIONS

1. Introduction

- 1.1. Sub-contractor developing the submittals for the technology infrastructure shall have an employee on staff who is a BICSI certified RCDD to produce the design documents.
- 2. E-RATE and Bond Program Coordination
 - 2.1. E-RATE is a federally funded technology infrastructure installation program for schools and library facilities. Each year, DALLAS ISD applies for this funding for network connectivity and Internet access for a number of their educational facilities. Coordination between E-RATE funded and Bond funded projects is vital to assure Dallas ISD gets the highest return from all funding sources. New schools and additions shall require full technology and technology supporting systems as a part of the project. Application by Dallas ISD for E-Rate funding will be made on each of these projects following the division of contractor scope. Existing campuses will receive E-Rate funded data network maintenance separate from full construction projects.
- 3. Technology Definitions, Acronyms, and Symbols
 - 3.1. Definitions and Acronyms
 - I. AFF Above Finished Floor.
 - II. ANSI American National

Standards Institute. III. AWG -

American Wire Gauge.

IV. BICSI - Building Industry Consulting Services

International, Inc. V. CMP - Communications Plenum

Cable.

VI. CMR - Communications Riser

Cable. VII. COW – Computer On

Wheels

VIII. Dataport - Single Category 6 or newer jack connected to a single

cable segment. IX. DISD – Dallas ISD or Dallas Independent

School District.

X. District – Dallas ISD

XI. Duplex electrical outlet - (2) electrical receptacles.

Mark Twain School for the Talented and Gifted	27 05 00-1	COMMON WORK RESULTS FOR
Org #220		COMMUNICATIONS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

XII. Duplex-Dataport - (2) Single Category 6 dataports
or newer. XIII. EF - Entrance Facility.
XIV. EIA - Electronic Industries Alliance.
XV. Electrical Outlet - Single 120 Volt power
receptacle. XVI. EMT - Electrical Metallic
Conduit.

XVII. ER - Equipment Rooms (i.e. MDF, IDF).

XVIII. FDC - Fiber Distribution Center (Rack or Wall

Mounted). XIX. FOC - Fiber Optic Cable.

XX. GC – General Contractor

XXI. GRC - Galvanized Rigid Conduit.

XXII. HVAC - Heating, Ventilation, & Air

Conditioning. XXIII. IDF - Intermediate

Distribution Frame.

XXIV. IMC - Intermediate Metallic Conduit.

XXV. ITS - Information and

Technology Services. XXVI. IWB -

Interactive White Board.

XXVII. MDF - Main Distribution

Frame. XXVIII. MPP -

Multipurpose Plenum Cable. XXIX.

MPR - Multipurpose Riser Cable.

XXX. OFNP - Optical Fiber Non-Metallic Plenum Rated.

XXXI. OFNR - Optical Fiber Non-Metallic

Riser Rated. XXXII. OTDR- Optical Time

Domain Reflectometer.

XXXIII. Portable - Permanent classroom space (not

swing space). XXXIV. POS - Point of sale

XXXV. PSTN – Public switched telephone network

XXXVI. RDP - Rate Demarcation Point

Mark Twain School for the Talented and Gifted	27 05 00-2	COMMON WORK RESULTS FOR
Org #220		COMMUNICATIONS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

XXXVII. Quad-Electrical Outlet- (4) electrical receptacles.

XXXVIII. RCDD – Registered Communications Distribution Designer

XXXIX. RMU – Rack Mount Unit

(1.75") XL. SCS - Structured

Cabling System.

XLI. Swing Space - Temporary portable building in support of construction.

XLII. TIA - Telecommunication Industry Association.

XLIII. TMGB - Telecommunications Main

Grounding Busbar. XLIV. TR – Telecommunication

Room

XLV. UL - Underwriters Laboratory.

XLVI. UPS - Uninterruptible Power

Supply. XLVII. UTP - Unshielded

Twisted Pair.

XLVIII. VoIP – Voice over IP or Voice over Internet Protocol

XLIX. WAP - Wireless Access Point.

- 9. New School / School Additions / Existing Building Renovations
 - 9.1. Campus Wide Infrastructure.
 - I. Telephone (For Informational Purposes Only)

a. The following description of telephone system is mainly for reference purposes:

- i. Phone systems and service to the building will be provided by Service
 - Provide
 - r.
- ii. Conduit and support infrastructure installation shall be installed by contractor.
- iii. Cabling installed based on the Responsibility

Chart

b. Existing Building

Mark Twain School for the Talented and Gifted	27 05 00-3	COMMON WORK RESULTS FOR
Org #220		COMMUNICATIONS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

i. Shall be current Fujitsu PBX system or VOIP if the building has been updated overall.

ii. There are no plans at this time to put phones in existing classrooms.

5. Wireless Access Points

5.1. See the Premise Wiring Specification 271501 document for specifics on the Wireless Access Points (WAP).

6. Electrical

- 6.1. Electrical Panels
 - I. The distribution panels for the technology system (i.e. MDF/IDF equipment, classroom computers, digital displays, projectors, et al.) should be isolated from all other panels and not contain anything, but technology power, this
 - II. Panels should be labeled as technology electrical panels.
 - III. Circuits are not to be shared between rooms.
- 6.2. Surge Protection
 - I. Technology electrical distribution panels shall be provided with surge
 - II. Surge Protectors are to be mounted close to panels.
- 6.3. Lightning Protection Systems
 - I. Telecommunications Entrance Facilities Surge Arresters and Suppressors.
 - II. Carbon elements or gas charged elements connected to all copper lines running into the building from outside service providers and between buildings (e.g. to portable buildings, the field house, remote entrance gates,
 - III. Copper cable runs between buildings.
 - a. Systems manufactured by service provider are to be installed by the Cabling

Contractor.

- 6.4. General Electrical Items
 - I. Dedicated outlets should be orange colored

receptacles. II. Dallas ISD prefers the use of

wall outlets.

Mark Twain School for the Talented and Gifted	27 05 00-4	COMMON WORK RESULTS FOR
Org #220		COMMUNICATIONS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- III. Outlets required in center of room:
 - a. Flush-faced floor mounted with whips to outlet box. Run conduit from floor box to nearest wall, within wall, to 6 inches above suspended ceiling.
 - Tombstone outlets or data/power poles are not preferred, must review with Dallas
 ISD ITS prior to using these types of outlets.
- 6.5. Grounding
 - I. Grounded power outlets shall use a separate ground wire run from each outlet box back to a common, dedicated, isolated earth ground.
 - II. All the electrical power provided in the MDF/IDF rooms will be provided via dedicated isolated ground circuits.

III. To minimize cost, dedicated isolated ground circuits are NOT required outside the $\ensuremath{\mathsf{MDF}}\xspace$

closet unless required by code.

IV. Power outlets and the data outlets shall each be provided with

separate back boxes. V. All racks and ladder trays shall be grounded.

- 6.6. Raceway
 - I. Wall surface-applied enclosed metal raceways are to be considered for electrical and data cabling only where the installation of wiring within the wall cavity is not allowed or possible.
 - II. Electrical/cable raceways cast into the concrete floor system and raised flooring systems will not be used due to the cost.
 - III. All raceways shall be installed as discretely as possible with little or no disturbance to classroom functionality or aesthetics.

IV. Dallas ISDs desires not to have more than one (1) vertical raceway per wall, where possible.

- a. Large rooms with more than standard numbers of drops, additional entrances into the room, and vertical drops may be required due to quantity and length of cable. Verify with Dallas ISD ITS (Technology Department).
- 7. Fire Suppression Systems
 - 7.1. Provide high-temperature sprinkler heads in all Distribution Rooms (MDF and IDF)

7.2. Typical, install wall-mounted side discharge sprinkler heads with wire baskets in Distribution Rooms.

Mark Twain School for the Talented and Gifted27 05 00-5COMMON WORK RESULTS FOROrg #220COMMUNICATIONSDallas ISD Construction ServicesCSP 207459August 16, 2024

- 7.3. When heads are required in ceiling, they are to be arranged so that they are not directly over the equipment in the room.
- 7.4. Exception: Due to the value of the equipment a Dry Pipe System in the MDF room may be required. Verify with the Technology Department, during design phase, to obtain written determination.

8. Cabling

- 8.1. Campus Addition or Renovation at Existing Campus.
 - I. Cabling type should be based on what is in the existing MDF

or IDF closets. a. New IDF: All cabling is to be Category 6

or newer.

b. If adding to an existing closet, match the cabling in the individual racks Category 6

or

newer.

9. MDF & IDF Requirements

- 9.1. General Requirements
 - I. Main Distribution Facility rooms shall be referred to as MDFs.
 - II. Intermediate Distribution Facility rooms shall be referred to as IDFs. IDFs will be sequentially numbered, e.g. IDF1, IDF2, IDF3, etc.
 - III. Door locks shall be Proxy Card compliant, network integrated and managed, but also provide for keyed access.
 - IV. Floors shall be a level, smooth hard sealed concrete surface.

V. Wall and floor surfaces color shall be a light, flat color to enhance ambient light reflection.

- 9.2. Important Coordination Items.
 - I. MDF and IDF rooms shall be designated and used for data/telecom

transport facilities only. a. No transformer or electrical switch gear should be placed in the space.

b. No Hatches, Access Doors or Panels or Access Pathways to other areas (e.g. Roof

Access) are allowed.

9.3. Electrical Service Related To Technology Systems

Mark Twain School for the Talented and Gifted	27 05 00-6	COMMON WORK RESULTS FOR
Org #220		COMMUNICATIONS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

- I. Lighting
 - a. MDF & IDF Rooms: Lighting shall consist of LED lighting and controls. Lighting levels must meet IES and code recommended light levels at all areas of the room.
- II. Power
 - a. MDF & IDF New Facilities:
 - i. Power consists of single or multiple "Power Clusters."

ii. Central UPS - A 10 KVA or larger UPS shall be located in the MDF.

a. Sized and configured to support the MDF and all IDFs for 1 hour

b. Power for the MDF and each IDF shall run through the Central

- UP
 - S.

c. Power feeders and panels for each IDF shall extend from the

Central UPS to the outlets in each IDF.

- iii. Two (2) additional empty power conduits and back boxes, with pull strings, shall also be provided and installed adjacent to the power outlets for the rack equipment. These conduits should be run back to the electrical panel(s) for the technology system.
- b. MDF & IDF Existing Facilities:
 - i. Shall consist of single or multiple "Power Clusters."
 - ii. Central UPS system shall be installed in or near the MDF at existing schools. A 10 KVA or larger UPS shall be used.

a. Sized to support the MDF and all IDFs for 30 minutes minimum.

b. Power for the MDF and each IDF shall run through the Central

UP

S.

Mark Twain School for the Talented and Gifted Org #220 Dallas ISD Construction Services 27 05 00-7 COMMON WORK RESULTS FOR COMMUNICATIONS CSP 207459 August 16, 2024

- iii. Remote UPSs in IDFs may be required to support the outlets in each IDF, if it is impractical to extend UPS-based feeders to each IDF,.
 - c. Cumulatively, the central and remote UPSs should be sized to support all equipment in the MDF and all IDFs for 1 hour.
- iv. Two (2) additional empty power conduits and back boxes, with pull strings, shall also be provided and installed adjacent to the power outlets for the rack equipment. These conduits should be run back to the electrical panel(s) for the technology system. The conduit end locations are to approved by Dallas ISD ITS. The conduits are to be clearly labeled with caps to prevent dust and debris.
- 9.4. MDF Room Requirements
- 9.5. New MDF rooms:
 - I. High Schools shall be no less than 20' x 20' in unobstructed floor area.
 - II. Middle School shall be no less than 10' x 20' in unobstructed floor area.
 - III. Elementary School shall be no less than 10' x 10' in

unobstructed floor area. IV.All ceiling heights 10' AFF.

- 9.6. Typical MDF will house the following equipment:
 - I. Two (2) or more Open Frame Racks with vertical and horizontal wire management. When open floor mounted racks are used, install ladder rack cable tray from the rack to the wall for stability and cable support.
 - II. Twenty-four (24) or forty-eight (48) port, Category 6 or newer patch panels for termination of the horizontal cable plant served from this room.
 - III. Category 6 or newer patch cords provided by Equipment Racking (Rack &

Stack) Contractor. IV. Fiber Optic Patch Panels where fiber backbone from

each Public Service provider, IDF and portable building are terminated.

- V. Fiber Optic jumpers installed on patch panels shall be 5 meters in length, pending individual installation requirements.
- VI. Rack space (see Figure 27 05 00-02, CATV Equipment) for broadband head-end and associated equipment, termination of broadband video backbones, and for wiring associated with video served out of this MDF.
- VII. Rack space (see Figure 27 05 00-02, Security Rack) for installation of surveillance servers and termination of camera cables.

Mark Twain School for the Talented and Gifted	27 05 00-8	COMMON WORK RESULTS FOR
Org #220		COMMUNICATIONS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

VIII. Rack space (see Figure 27 05 00-02, PA Clock System Rack) for installation of the Clock and

Programming Systems, and the Public Address and Intercom System.

- IX. One or more fire rated plywood backboards (4'x8'x¾" ACX) will be installed for termination of voice cables, voice backbones, and other auxiliary equipment.
- X. A fire rated plywood backboard(s) (4'x8'x³/₄" ACX fire rated), should be installed (with the smooth good face exposed to the room) for termination of voice cables, voice backbones, and other auxiliary equipment. If painted, leave the fire rating identification type & class of plywood must remain unpainted and legible.

XI. If plywood is not fire rated, it should be painted on both sides and all edges with flame-

retardant white or off-white paint. Smooth side exposed to the room.

- XII. Telephone System Wall mounted, floor mounted, or rack mounted: Demarc Extensions, if required, to be installed by Cabling Contractor.
- XIII. Security System Wall or rack mounted security system controller: Demarc Extensions, if required, to be installed by Cabling Contractor. Telephone numbers for these systems to be coordinated by contacting Dallas ISD ITS for the arrangement and order by DALLAS ISD IT Staff. Dallas ISD Facilities Staff will program the system. Testing of the system will require close coordination between Dallas ISD Staff, Cabling Contractor, GC, and Dallas ISD Central Dispatch.
- XIV. Fire Alarm Wall or rack mounted Fire Alarm system controller: Demarc Extensions, if required, to be installed by Cabling Contractor. Telephone numbers for these systems to be coordinated by contacting Dallas ISD ITS for the arrangement and order by DALLAS ISD IT Staff. Dallas ISD Facilities Staff will program the system. Testing of the system will require close coordination between Dallas ISD Staff, Cabling Contractor, GC, Dallas ISD Central Dispatch, and local Emergency Services Providers.

XV. Elevator cab emergency phones: Demarc Extensions to be installed by cabling contractor.

Travelling cables to be installed by Elevator Subcontractor. Telephone numbers to be coordinated by contacting Dallas ISD ITS for the arrangement and order by Dallas ISD IT Staff. Testing will require close coordination between Dallas ISD Staff, Elevator Subcontractor, Cabling Contractor, GC, and Dallas ISD Central Dispatch.

XVI. Central Power Uninterruptible Power System (UPS): Mminimum 10KVA or sized to service MDF and all IDF rooms. Electrical cables and panels, sized

Mark Twain School for the Talented and Gifted	27 05 00-9	COMMON WORK RESULTS FOR
Org #220		COMMUNICATIONS
Dallas ISD Construction Services		CSP 207459
		August 16, 2024

appropriately, shall be installed from the MDF to each associated IDF room and terminated as the main electrical feeds for the IDFs.

XVII. Rack mounted Power Strips

- XVIII. Security for IT Equipment in remodeled or existing schools, (e.g. sharing space with equipment storage closets or placing equipment in commons areas in the school): In these circumstances, Network Equipment should be housed in Lockable, Free-Standing Equipment Cabinets with enough room in them to allow for cable management to the sides of; rather than in front of or behind the equipment. This is to allow better cable management and improved air flow for the enclosed equipment.
- XIX. New rack shall be mounted with a minimum of 36" clearance from the face and rear of the rack and 24" clearance from the side.
- XX. Main Grounding Buss bar connected to the main building grounding system.

XXI. Rate Demarcation Point (RDP): RDP equipment for interface to the Public Switched

Telephone Network or high speed data circuits. Typically, these services are arranged for and

ordered by DALLAS ISD IT Staff. They are cabled / installed from the property line to the facility Demarc by the various service providers. Dial tone (or data system connectivity) is provided / configured / tested by the various service providers. Contact Dallas ISD ITS early in the Design Phase to assure coordination of the work and schedule.

- XXII. Cable Runway System (ladder racks) will be installed above the racks in the MDF and IDFs to support and manage the backbone and horizontal cables entering the room to the racks and equipment within the room. Each rack shall be secured to the nearest wall. Use the proper termination and entrance equipment such as waterfalls, support, and bonding equipment.
- XXIII. Ladder racks shall be a minimum of 12" wide.
- XXIV. Install two (2) 4" cabling conduit runs from the MDF to property line at a point designated by the local Service Providers, using a multi-channel Innerduct (Basis of design: MaxCell preferred) system or standard 1-1/4" innerducts that would also include a pull string in each channel. External end shall terminate in a pull box specified by service provider and per applicable standards. Internal end shall come up on the same wall as the RDP.
- XXV. Service Provider(s) will install cabling between property line and RDP Demarc and make arrangements to provide dial tone and/or data system connection services into the facility. Contact Dallas ISD ITS early in the Design Phase to assure coordination of the work and schedule.

Mark Twain School for the Talented and Gifted	27 05 00-10 COMMON WORK RESULTS FOR
Org #220	COMMUNICATIONS
Dallas ISD Construction Services	CSP 207459
	August 16, 2024



Mark Twain School for the Talented and Gifted Org #220 Dallas ISD Construction Services 27 05 00-11 COMMON WORK RESULTS FOR COMMUNICATIONS CSP 207459 August 16, 2024



Figure 27 05 00 - 03: Typical MDF Room - Elevation View

Mark Twain School for the Talented and Gifted 27 05 00-12 COMMON WORK RESULTS FOR Org #220 Dallas ISD Construction Services

COMMUNICATIONS CSP 207459 August 16, 2024

10. Not Used.

11. IDF Requirements

- 11.1. Typical IDF Houses all proximal horizontal cabling, cross-connects, and network equipment is the TR (Telecommunication Room) or IDF (Intermediate Distribution Frame). For purposes of this document "IDF" will be used. IDFs will be sequentially numbered IDF1, IDF2, IDF3, etc.
 - I. New IDF rooms shall be no less than 10'x10' in

unobstructed floor area. II. 10' ceilings, AFF.

- III. IDFs will be placed so that no drop cable length will exceed 285' (86 meters) for the permanent link; or 328' (100 meters) for the complete channel inclusive of all cross- connects.
- IV. New IDF will consist of the following equipment:
 - a. One (1) or more Open Frame Rack(s) with horizontal and vertical cable management. When open floor mounted racks are used, install ladder rack cable tray from the rack to the wall for stability and cable support.
 - b. 24 and/or 48 port, Category 6 or newer patch panels for termination of the horizontal cabling for that area.
 - c. Category 6 or newer patches cords provided by Equipment Racking (Rack & Stack) Contractor.

d. Rack mounted fiber optic patch panel for termination of the fiber optic backbone.

- e. Duplex fiber optic jumpers of a quantity to fully connect installed patch panels. 20% shall be 3' (1 m) in length, 30% shall be 6' (2 m) in length and 50% shall be 9' (3 m) in length.
- f. Rack mounted Power Strips: Provide.
- V. Remodeled or existing schools, security for IT Equipment (e.g. sharing space with equipment storage closets or placing equipment in commons areas in the school): In these circumstances, Network Equipment should be housed in Lockable, Free-Standing Equipment Cabinets with enough room in them to allow for cable management to the sides of; rather than in front of or behind the equipment. This is to allow better cable management and improved air flow for the enclosed equipment.
- VI. New rack shall be mounted with a minimum of 48" clearance from the face and rear of the rack and 24" clearance from the side.

Mark Twain School for the Talented and Gifted	27 05 00-13 COMMON WORK RESULTS FOR
Org #220	COMMUNICATIONS
Dallas ISD Construction Services	CSP 207459
	August 16, 2024

- VII. Equipment racks located side-by-side, the new rack must be secured to the existing rack with vertical cable management for additional stability. Ladder rack pathway to each rack shall be connected perpendicular to adjacent wall.
- VIII. Racks separated in a single room, the ladder rack should be run between the two to provide a cable pathway between racks. Ladder racking is to be secured to the nearest wall.
- IX. Ladder racks shall be a minimum of

12" wide. X. Central Power Termination (fed

from MDF).

XI. One wall surface in the IDF shall have a $4'x4'x''_4$ " (minimum) sheet of plywood installed with

the bottom edge at 48" AFF as a supporting backboard for wall-mounted equipment.

XII. Plywood backboard to fire rated (4'x4'x³/₄" ACX fire rated), should be installed with the smooth side exposed to room, for termination of voice cables, voice backbones, and other auxiliary equipment. If painted, leave the fire rating identification type & class of plywood must remain unpainted and legible.

XIII. If plywood is not fire rated, it should be painted on both sides and all edges with flame-

retardant white or off-white paint. Smooth plywood face facing room.

- XIV. Grounding Buss bar connecting the building grounding system.
- XV. Room access shall be controlled by electronic Access Control.



Figure 27 05 00 - 04: Typical IDF Room - Plan View

Mark Twain School for the Talented and Gifted 27 05 00-15 COMMON WORK RESULTS FOR Org #220 **Dallas ISD Construction Services**

COMMUNICATIONS CSP 207459 August 16, 2024



Figure 27 05 00 - 05: Typical IDF Room - Elevation View

12. Door Access Control for MDF & IDFs

- 12.1. Electronic Access Control. The system requires the following components for either of two conditions.
 - I. Condition One: Typical Wall Construction- Accessible wall and

door frame: II. Store room lock

III. Door Position Reader

Mark Twain School for the Talented and Gifted27 05 00-16COMMON WORK RESULTS FOROrg #220COMMUNICATIONSDallas ISD Construction ServicesCSP 207459August 16, 2024

- IV. Electric Strike
- V. Door Locking Device AIR-PWRINJ4 Power Injector 1140/1250
- VI. Door Control Panel- CIAC-GW-K9 Cisco Physical Access Gateway
- VII. Card Reader- CON-SNT-GWK9 SMARTNET 8X5XNBD Cisco Physical Access
- VIII. Provide Category 6 or newer connectivity to door control, if required
- IX. Condition Two: Solid Wall Construction-Inaccessible wall and door frame
- X. Store room lock
- XI. Surface mounted Door Position Reader- mounted on secure side of door
- XII. Surface mounted "MAG" lock
- XIII. Surface mounted Passive Infrared Reader
- XIV. Surface mounted Exit Push Button to release the "MAG" lock
- XV. Door Locking Device AIR-PWRINJ4 Power Injector 1140/1250
- XVI. Door Control Panel- CIAC-GW-K9 Cisco Physical Access Gateway
- XVII. Card Reader-CON-SNT-GWK9 SMARTNET 8X5XNBD Cisco Physical Access
- 12.2. In both cases, the Architect will be responsible for designing all the required components, power, data and coordinate with Dallas ISD Technology Division, for inclusion in the construction documents.
- 12.3. In both cases, systems are to be installed by a Cisco Certified Vendor with Trained / Certified Technicians. System is to be installed, connected, configured, programmed and tested for connectivity of all components to be visible at the DALLAS ISD Central Security Console via the DALLAS ISD Data Network.
- 12.4. For other IP-based equipment (e.g. clocks, cameras, digital signage equipment, etc.) requiring network drops, drop counts and locations are to be identified by the Architect and/or installing contractors for inclusion in the Network Cabling Contractor's Scope of Work. Dallas ISD Technology Division and Cabling Subcontractor should be notified immediately if additional network drops are required. In all cases, this type of equipment is to be procured, installed and configured by qualified subcontractors acting under the authority of the GC.
- 13. Power Clusters for MDF & IDFs
 - 13.1. The total number of "Power Clusters" in all the telecommunications rooms in the school shall serve as the basis for sizing the central UPS.
 - 13.2. Each active rack in the MDF and IDFs will be provided with one (1) power cluster composed of the following power elements to be wall-mounted at 7'-3" AFF (See Figure 27 05 00-06).

Mark Twain School for the Talented and Gifted	27 05 00-17 COMMON WORK RESULTS FOR
Org #220	COMMUNICATIONS
Dallas ISD Construction Services	CSP 207459
	August 16, 2024

13.3. Two (2) UPS-backed 208v 20A Twist Lock Receptacles (NEMA 6L-20) on two (2) circuits.

13.4. Two (2) 208v 20A Twist Lock Receptacles (NEMA 6L-20) on two (2) commercially powered circuits.



Wire Management (Data) 2 post rack

> Free Standing Equipment Cab (UPS/Equipment) 4 postDATE: 03-30- 2018

Mark Twain School for the Talented and Gifted Org #220 Dallas ISD Construction Services 27 05 00-18 COMMON WORK RESULTS FOR COMMUNICATIONS CSP 207459 August 16, 2024 Figure 27 05 00 - 06: Typical Telecom Room Power Cluster

- 13.6. Base level design for an MDF is to have three (3) racks and two (2) power clusters.
- 13.7. Base level design for an IDF is to have two (2) racks and one (1) power cluster.
- 13.8. Typically, equipment for no more than 200 network drops shall be powered by any single power cluster. In situations where deviations from this general rule are required, Dallas ISD Technology Division shall be consulted prior to finalizing room sizing and layout.
- 13.9. Labeling must indicate which source is utilized for each L6-20 receptacle.
- 13.10. A minimum of two power clusters will be required in the MDF –
- 13.11. One for WAN equipment, central switching equipment and other building services; the other for equipment to service workstation outlets (with no more than 200 planned data ports on any one cluster).
- 13.12. If more than 200 data ports are planned for any one closet, additional power clusters and racks may be required with a commensurate increase in the size/number of breakers, panels and feeders as well as a potential increase in the capacity of the UPS.
- 14. Design Criteria for Central Power Uninterruptible Power System (UPS).
 - 14.1. System shall provide one (1) hour of continuous operation without degradation of the power supplying the MDF/IDFs.
 - 14.2. UPS shall include appropriate modules or cards to allow Ethernet or Fast Ethernet connectivity to the DALLAS ISD Data Network (RJ45 connection(s))

14.3. UPS shall include SNMP functionality for monitoring and remote access into the system.

14.4. UPS shall support power to all racks and cabinets within the MDF and associated IDFs but not convenience outlets.

14.5. Typically, the MDF will have at least two active racks and one additional rack for future use.

- 14.6. IDFs will have at least one active rack with one additional rack for future use.
- 14.7. In some circumstances, more than the number of racks mentioned above may be required in a given room typically to support more drops than required in a base configuration. Rack counts, drop counts and room sizes must be adjusted during the design phase as required to accommodate the equipment required in any given room.
- 15. IT Room Counts/Requirements:

Mark Twain School for the Talented and Gifted	27 05 00-19 COMMON WORK RESULTS FOR
Org #220	COMMUNICATIONS
Dallas ISD Construction Services	CSP 207459
	August 16, 2024

- 15.1. Dallas ISD Technology Division shall be consulted any time a room is to be constructed that does not conform to the base configurations mentioned in this Section.
- 15.2. Typical School sizes generally have the following:
 - I. Elementary School 1 MDF and
 - 2 IDFs. II. Middle School 1 MDF and

4 IDFs.

- III. High School 1 MDF and 9 IDFs.
- 16. UPS Information

16.1. Table below (Figure 27 05 00-07) provides standard power requirements resulting in a typical

DALLAS ISD Elementary, Middle and High School UPS and powering configurations.

- 16.2. The following chart should be used as a general guideline or starting point for UPS design and sizing requirements.
- 16.3. Note that if there are more than 200 drops in any given closet or more than the number of rooms identified for any school types, there will be an impact on Central UPS sizing.

		Numbe		Provide UPS as Required		Provide Feeders, Panels, Breakers & Outlets	
School	Number	r	Number			as Required	
Туре	of Rooms	of Drops	of Clusters	Power Requirement (Watts)	UPS Size (KVA)	UPS-Backed Receptacles	Commercial Powered Receptacles
Elementary School	3	576	4	10,900 ¹ *	15	8 @ 208v 20A	8 @ 208v 20A 8 @ 120v 20A Quad
Middle School	5	960	6	2 16 800	20	12 @ 208v 20A	12 @ 208v 20A 12 @ 120v 20A Quad
High School	10	1920	11	29,900*3	30	22 @ 208v 20A	22 @ 208v 20A 22 @ 120v 20A Quad

UPS Sizing for Typical School Types (Base Configuration)

Notes: This model assumes that switches in each Power Cluster offer 96 ports w/ full PoE support (or 60 PoE+ ports)

- 1. This represents 80% of the power that a 15 KVA UPS can support -- service to 13.6kW. This configuration will support an additional 2.7kw load over the base or 1 additional power cluster and 1 non-POE switch (adding up to an additional 240 ports). (This model assumes that not all PoE ports will be in use simultaneously.)
- 2. This represents all of the power that a 20 KVA UPS can support -- service to 16 kW. This configuration will not support additional equipment. (This model assumes that not all PoE ports will be in use simultaneously.)
- 3. This represents all of the power that a 30 KVA UPS can support -- service to 24 kW. This configuration will not support additional equipment. (This model assumes that not all PoE ports will be in use simultaneously.)

Figure 27 05 00 - 07: UPS Information Chart

17. Classroo

- 17.1. General Requirements
 - I. Cooling Must accommodate heat
 - a. Typical Classroom
 - i. 5 or 7 computers: 5 for elementary schools and 7 for middle and high schools.
 - ii. 1 to 2 printers.
 - iii. 1 Digital Display or alternate display if required, e.g. LCD

August 16, 2024

projector or IWB.

Mark Twain School for the Talented and Gifted27 05 00-21COMMON WORK RESULTS FOROrg #220COMMUNICATIONSDallas ISD Construction ServicesCSP 207459

- II. Digital Display (Video)
 - a. New Schools and Additions:
 - i. Classrooms are to be configured for Teaching Wall for Digital Display with coordinated connectivity, e.g. HDMI connectivity.

- ii. Library/Media, entry lobby, feature areas, conference rooms, specialty rooms, large teaching areas, et al: The digital display requirements must be evaluated and confirmed for each project and condition.
- b. Existing and Renovated Classroom Spaces:
 - i. Existing spaces are to be remodeled, are to be configured to have Teaching Wall Digital Display with coordinated connectivity, e.g. HDMI connectivity. If existing conditions require, the alternate is to be reviewed with Technology for acceptance is the Interactive Short Throw Projectors standard projection-ready whiteboards and coordinated connectivity, e.g. HDMI connectivity.
- 17.2. Typical Classroom Cabling
 - I. New construction and existing renovation requirements are similar
 - a. Three (3) Category 6 dataports or newer in each typical classroom (Figure 27 05 00-

08 below). Locate dataports as follows:

i. Teaching Wall: One (1) dataport and two (2) HDMI connectors, (1) in the Multimedia Outlet and (1) in the center of the teaching wall (2) directly behind the Digital Display. See Fig. 27 05 00 -09

ii. Teacher's Desk (Station): Two (2) dataports; one (1) Phone (VoIP) and one

(1) Data

(computer).

- b. All Category 6 cables or newer, run to the nearest IDF and terminate on rack mounted modular patch panels.
- c. Each dataport faceplate shall be paired with a quad electrical outlet (four receptacles) to be located within 18". Electrical receptacles may be installed as two (2) duplex-electrical outlets or one (1) quad-electrical outlet. One duplex power behind the Digital Display location.
- d. Conference rooms, specialty rooms, and large teaching areas: Cabling is similar to classrooms except must confirm the user endpoint termination as it may be located under or in the conference room table or on the wall opposite the circulation side of the conference room table (away from the doorway). Requirements must be evaluated and confirmed for each project and condition.



August 16, 2024

17.3. Digital Display for Typical Classrooms (New Construction)

Mark Twain School for the Talented and Gifted27 05 00-24COMMON WORK RESULTS FOROrg #220COMMUNICATIONSDallas ISD Construction ServicesCSP 207459

I. <u>Note:</u> The Digital Display system design standards are the default for new, existing and remodeled classrooms. Alternate systems (see Figure 27 05 00-11) or variance of 5% or more in the diagrams below shall only be allowed if preapproval is obtained from Dallas ISD.(Contact: Network Services 972-925-5670).

II. The diagrams provide placement information for the Digital Display (Figures 27 05 00-08 and

27 05 00-09). The Multimedia Outlet Detail is shown in Figure 27 05 00-12.

- III. Cabling Contractor required to provide installation:
 - a. All data cabling, terminations, labeling, et al..
- IV. General Contractor required to provide installation:`
 - a. All conduits, boxes, mud rings, bushings, pathways, pull strings, et al..
 - V. Infrastructure Requirements:
 - a. Digital Display (behind display)
 - i. (1) Duplex-electrical outlet, centered behind digital display.
 - ii. (1) HDMI or coordinated required 6 data cable with wall plate mounted on mud ring adjacent to electrical outlet.
 - iii. Blocking: 48 x 24 x 20 ga. galvanized sheet metal secured to metal stud assembly..
 - b. Digital Display (below display)
 - i. (1) quad outlet, centered with digital

display. ii. (1) Multi-media outlet: see

diagram for types.

- c. Wall rough-in
 - i. See diagram for the following:
 - i. Power, data, conduits, boxes, bushings, mud ring, pull strings, et al.



Figure 27 05 00 - 09: Digital Display Infrastructure Detail - Elevation View

- 17.4. Typical Computer Lab:
 - I. A typical Computer Lab will be equipped with thirty-two (32) Category 6 dataports or newer for student computers, four (4) Category 6 dataports or newer for teacher station, and four (4) Category 6 dataports or newer for printer locations.
 - II. All Category 6 or newer cables run to the nearest IDF and terminate on dedicated rack mounted modular patch panels, one for each lab. Each lab will have its own dedicated patch panel leaving 8 ports for growth and in support of separate virtual LANs within the network switch configuration.
 - III. Dataports shall be paired, within 18", with two (2) electrical outlets. Electrical outlets may be installed as duplex-electrical outlets or quad-electrical outlets.
 - IV. Cooling system should accommodate heat load of :
 - a. Up to 33 computers

b. 4 printers

V. Digital Display: Confirm requirements with Dallas ISD ITS.

17.5. Testing Lab/Room:

Ι. Requirements similar to Computer Room, but confirm requirements with Dallas ISD ITS.

- 17.6. Typical Administrative Workstation Cabling
 - The typical administrative workstation requires two (2) Category 6 Ι. dataports and a quad electrical outlet. The data cables will terminate on patch panels mounted in racks or cabinets located in the nearest IDF or MDF.
 - Π. Offices require two Category 6 dataports, the data ports located to allow the phone (VoIP) and computer (data) to be placed on the desk and/or the credenza with the cabling passing through the desk return. In the administrative reception area, a secretary and receptionist will have their computer stations located on desks away from the reception counter.

Ш. Cooling system should accommodate a computer, printer and TV per office space.

IV. Wall and Ceiling-Mounted Projector, Conference Room and Auditorium Locations (Includes

VGA Cabling).

2. Infrastructure requirements:

a. At the projector location on the ceiling b. 1 – Duplex electrical outlet

c. 1 - Category 6 or newer (or higher) Data Cable terminated and left coiled above ceiling d. Cable bundle terminated with:

- 1 Set of (3) RCA Jacks (red, white & yellow) e.
- 1 HDMI 1.3 modular Connector f.
- The VGA-based multimedia outlet consists of (See Figure 27 05 00-12): g.
 - h. 1 Duplex dataport
 - i. 1 - Set of (3) RCA Jacks (red, white & yellow)
 - 1 HDMI 1.3 modular Connector i.


MULTIMEDIA OUTLET

Figure 27 05 00 - 12: Multimedia Outlet (HDMI, VGA, RCA)

TYPICAL FOR CLASSROOM TEACHING WALL DIGITAL DISPLAY, OTHER DIGITAL DISPLAYS, LARGE VENUE PROJECTORS, MULTIMEDIA SYSTEMS, ET AL.

17.7. Backbone Cable – Room-to-Room

I. Existing schools, where new IDFs are added, install a new backbone from the MDF to each

IDF consisting of a twenty-four (24) fiber.

II. Vertical/horizontal backbone cabling for new schools will consists of a twenty-four (24) fiber.

III. Provide Fiber Optic Patch panels at each end sized for the number of fibers to be installed.

Typical: Terminate all 24 fibers with Type "LC" connectors. Connect 12 to patch panels; leave

balance coiled in or behind bulkhead with protective covers in place as spares. Terminate each end of the twenty-five (25) pair Category 3 cable on Patch Panels (or wall-mounted

110-Type Blocks where required to match existing systems).

17.8. Backbone Cabling Between Buildings and to/from Portable Buildings

Mark Twain School for the Talented and Gifted27 05 00-28COMMON WORK RESULTS FOROrg #220COMMUNICATIONSDallas ISD Construction ServicesCSP 207459August 16, 2024

- I. Portable buildings required as part of the construction project: The portable buildings are to be cabled per the following specification. Note: Construction swing space will not require a cabled connection but will use a wireless connection and therefore are exempt from the following specification. There may be some cases where cabling is still required.
 - All portable buildings must be connected to the campus network. From MDF install a twenty-four (24) fiber 50/125 micron multimode optical cable to a weatherproof cabinet or splice box that is centrally located among the portable buildings. It is to be mounted overhead in the walkway cover. From this cabinet, install a six (6) fiber 50/125 micron multimode optical cable to each portable buildings). Multimode fiber cable shall be per Appendix 27-C, and installed and attached to structure in the walkway cover.
 - b. Portable building: Provide one (1) wall-mounted lockable cabinet. Terminate all fibers within the cabinet for connection to ownerprovided network switch. All Fiber Optic Cable strands should be terminated, tested and certified.
 - c. Install three (3) Category 6 data ports or newer within each classroom within the portable. All Category 6 or newer cables run to the wall-mounted cabinet and terminated on the patch panel.
 - d. Classrooms in portable buildings shall have the same general layout and shall meet the same connectivity and multimedia outlet/device standards as regular classrooms.
 - e. Contractor is responsible for installation of all conduits, weatherproof splicing enclosures or splice boxes, lightning protection, grounding and wall cabinets to complete the installation.
- 17.9. Wireless Access Points

I. All Wireless Access Points (WAP) shall be connected to the DALLAS ISD network.

Identification of these locations and the number of access points will need to be established as part of an initial site survey. Design shall be based on site maps for minimal radio signal interference at 50% radio signal power accommodating the Cisco 802.11n WAP product line as defined by Dallas ISD ITS. The full campus interior area shall be covered.

- II. Prior to installation, Dallas ISD staff or WAP Contractor shall perform a detailed radio propagation survey after the physical building structure is complete and major systems installed.
 - a. Any variations in location and WAP quantities shall be dealt with appropriately and updated on design drawings by Architect based on input from Dallas ISD staff.

b. These design documents shall be depicted with circles indicating the planned 50%

and 100% power coverage area for each radio.

c. The radio power (in watts) and its channel number should also be shown.

Differentiate by color (blue and green preferably) overlaid coverage areas when

necessary.

III. Following the final, approved design, for each access point, install one (1) Category 6 or newer cable from the MDF or closest IDF to a point above the ceiling or where no drop ceiling is available, to a point 1' below the ceiling, with the WAP to be mounted on the wall. In both cases the data port shall be terminated within a standard box that can be moved for adjustment.

a. Low voltage power for the access points will be provided through the data cable.

b. All cables and patch cords shall be labeled. Label existing patch panel to identify location.

c. Provide 15'0" of Cable Slack at WAP

IV. When installation of the WAP is required within a potentially damaging space such as a gymnasium, the WAP unit should be enclosed.

18. PATHWAYS AND RACEWAYS

- 18.1. Pathways and Raceways are the support system for the infrastructure. All horizontal and backbone cable shall be properly supported every 48" to 60"with no more than 9" of drape between supports. Infrastructure Support Systems include, but may not be limited to the following:
 - I. Properly supported Cable Trays.
 - II. Properly Supported Conduits, inside, outside, both above ground or

underground. III. Independent Cable Hangers spaced no more than 60"

apart.

- IV. Surface Raceway systems are to be metal raceways and boxes.
- 18.2. In existing schools the preferred method of support outside of the MDF and IDF is independently supported cable hangers. These hangers are to be suitable for installation of Category 6 or newer cables and supported bend radius applications.

18.3. In new spaces (new and additions) the preferred method is a combination of Cable Tray and J-

Hangers.

I. Cable trays shall be used for main horizontal cable pathways to and from

MDFs and IDFs. II. Cable Trays shall be installed in the main hallways.

III. Use independently supported J-hangers where cables exit the cable tray system and run to

the termination points.

- IV. All backbone cable shall also follow these cable tray pathways.
- V. Category 6 or newer and auxiliary system cables shall be combed and independently bundled.
- VI. Bundle ties shall be easily removed for the addition or removal of cables and shall be plenum rated.
- VII. The primary cable routes will be located over corridors for future maintenance

and access. VIII. Plenum-rated cabling, cable support hardware and cable ties

are required in plenum-rated and above-ceiling spaces.

- 18.4. In new spaces (new and additions) where the GC and subordinate Electrical Contractor are responsible for the wall boxes, conduit sleeves, and raceways, a 1" conduit with a pull string shall be included at each wall box. The conduit shall extend from the wall box to above the wall providing a clean pathway for data cables.
- 18.5. In remodeled spaces where a Cabling Contractor is responsible for the wall boxes, conduit sleeves, and raceways, this additional conduit is not necessary.
- 18.6. Firestopping
 - I. New and existing raceways, conduit sleeves, cable trays, and cables for power, data, and communications systems penetrating non-rated and fire-rated floors, walls, and other partitions of building construction shall be fire-stopped where they penetrate new or existing building construction.
 - II. Verify that cabling and other penetrating elements and supporting devices have been completely installed and temporary lines and cables have been removed.

Voice Communications

1. Voice over IP (VoIP) shall be the preferred solution for telephone functionality in all new facility construction.

Existing facilities will continue to use PBX systems currently installed. Design for additions must consider expansion of existing PBX system when required into any office spaces in the additions.

- 2. The telephone system in new facility and addition construction shall consist of a VoIP telephony system with local PSTN gateway for 911 calls and emergency backup, IP phone digital handsets and the switched Ethernet data network. There will be a small number of 1FL PSTN phone lines for security and alarm systems, elevator phone, fax machines and modems (for emergency network management) in new additions and new facilities.
- 3. New additions design may provide the opportunity to create a new MDF closet space. Moving existing PBX equipment and data/phone wiring infrastructure to the new MDF space may be required by Dallas ISD in this case. Architects need to coordinate with DALLAS ISD ITS representatives to plan for this possibility on a case- by-case basis.
- 4. The phone required in each elevator shall meet all city and state code requirements. A hands-free operated phone with a direct phone line will be provided to allow the access to Dallas ISD's central security office.
- 5. Locate outlets for public pay phones, complying with accessibility standards, as directed by Dallas ISD upon review.

Distributed Audio-Video Communications Systems

- 1. A sound system will be provided in the auditoriums, multi-purpose rooms and gymnasiums. These systems are in addition to the school-wide public address system. These local sound systems will be connected and integrated with the administrative control and media distribution systems. This integration allows for the distribution of audio and video from these assembly areas to rooms throughout the school.
- 2. Auditorium (high schools with theater and dance programs)
 - 2.1. Provide outlet boxes and conduit
 - I. From/to light and sound control

booth a. Sound control mixer

- b. Equalizers
- c. Processors
- d. Intercom

system e.

Monitor system f.

Patch board

- g. Other equipment as directed
- II. Choral microphones over apron and acting areas
- III. For shotgun microphones for front of house
- IV. For microphone jacks

a. On stage

apron b.

Orchestra pit

- V. Monitor speakers
 - a. On stage

apron b.

Orchestra pit

c. Proscenium wall backstage

right and left d. Backstage left,

right, and center walls

- 3. Dressing rooms (high schools with theater and dance programs)
 - 3.1. Provide outlet boxes and conduit
 - I. Monitor speakers to stage
 - II. Stage intercom system
 - B. Public address systems: The basis of design shall be a "Rauland-Borg" Communication System in a standing upright Cabinet. Any substitutions will need to be approved by the owner (Dallas ISD) prior to bidding, but must match or exceed the performance requirements of the basis of design system.

Distributed systems

- 1. Provide master clock capable of synchronization via radio frequency. A wireless master/satellite time system should be provided for the facility, in order to accomplish this coordination.
- 2. Locate wireless master transmitter within the MDF room. Depending on equipment capabilities, large facilities may need additional transmitter(s).
- 3. Locate associated GPS receiver on the roof or in a window without low-E glass.
- 4. Master clock system must interface with the public address or bell system, in order to provide tone generation

(ring bells).

5. Provide for a PC, monitor, and associated wiring for programming the system for class bell changes.

- 6. All clocks provided as part of this wireless master/satellite time system should be located at 8'-0" AFF to the center of the device, unless otherwise approved by Dallas ISD.
- 7. Clocks should be provided in the following building areas:
 - 7.1. Administration (reception area)

- 7.2. Auditorium
- 7.3. Cafeteria
- 7.4. Classrooms (includes all teaching spaces)
- 7.5. **Conference Rooms**
- 7.6. Corridors (100' maximum distance apart)
- 7.7. Gymnasium
- 7.8. Library/media Center
- 7.9. Break rooms and workrooms
- Clocks: The power is to be hard wired. Battery operated clocks are not preferred, their 8. use will require owner's approval.
- 9. Provide master clock system for all new schools and existing facility additions.
- 10. Addition projects, locate the new clock system within the new MDF room to serve clocks within the new addition area only.
- 11. Addition projects receiving a new public address system (due to functionality or expansion issues), provide the tone generator to integrate the new wireless master/satellite time system with the existing public address system.
- 12. Any remaining addition projects, at a later date, DALLAS ISD will provide similar clocks within the existing building, remove the existing master clock system and devices and integrate the new wireless master/satellite time system with the existing public address system. There will be no scope of work regarding a new wireless master/satellite time system within the renovation projects.

END OF SECTION 27

SECTION 27 15 01 PREMISE WIRING GUIDE

PART 1 -

GENERAL

1.1 INTRODUCTION

The following specification is based off of DISD's Premises Wiring System Specification for a District-wide global design. This document ensures the compliant implementation of DISD Educational Specifications which has precedence over the TDG and this Appendix. This specification is to be used by all contractors doing business directly or indirectly with DISD and all A/E firms designing infrastructure for the Voice, Data, Video, and Auxiliary Systems. All efforts have been made to insure accurate part numbers and procedures. Any discrepancies, inaccurate part numbers, or non-standard procedures shall be reported to the authority issuing this document. Immediate attention will be given to resolving discrepancies. Any deviations from this document must have written approval from DISD Technology Services prior to any work being completed.

Any questions related to this specification should be

forwarded to: Dallas Independent

School District Information and Technology Services (ITS) Network Services 3701 S. Lamar St Box 63 Dallas, TX 75215 972-925-5670

1.2 RESPONSIBILITY CHART

RESPO	NSIBILITY MAT	RIX				June 18, 2021
Dallas ISD Organiz	Dallas ISD Dept/Div/G roup	Building System	Description: Equipment & Devices	Equipment & Devices:	Pathwaya, Cable Traya, Conduit, Backboxes, et al:	Power:
See "Anno	otations" for addition	al information and clari	fication	Provided and installed by	Provided and installed by	Provided and installed by
M&F	Grounds	Marquee Sign	Marquee Sign	CS-General Contractor	CS-General Contractor	CS-General Contractor
M&F	EMS/Contro	BAS	JACE: Equipment, Cabling,	CS-General Contractor	CS-General Contractor	CS-General Contractor
M&F	Elevators	Elevators	Wireless Emergency Call-Out	CS-General Contractor	CS-General Contractor	CS-General Contractor
M&F	Elevators	Elevators	Sump High Float Local Alarm	CS-General Contractor	CS-General Contractor	CS-General Contractor
M&F	Alarms	Fire (Sprinkler)	Flow Detection	CS-General Contractor	CS-General Contractor	CS-General Contractor
M&F	Alarms	Fire Alarm	Fire Alarm Wireless Radio (AES) Call-out, Panels, Cabling, Devices	CS-General Contractor	CS-General Contractor	CS-General Contractor
π	Infrastructur e	E-Rate	Technology Infrastructure	IT-Infrastructure PM	CS-General Contractor	CS-General Contractor
π	Infrastructur e	Fiber Optic	Fiber Optic Cable from street to MDF LIPN	IT - Fiber Contractor	CS-General Contractor (including civil pads, vaults)	N/A
π	Infrastructur e	Network	Fiber Optic Cabling - Dark Fiber	IT - Fiber Contractor	CS-General Contractor (including civil pads, vaults)	N/A
π	Infrastructur e	Network	Fiber Optic Backbone Cabling: MDE to IDEs	IT - Cabling Contractor	CS-General Contractor	N/A
π	Infrastructur e	Infrastructure	Fiber Optic Patch Panels, Jumpers et al	IT - Cabling Contractor	N/A	N/A
IT Police	CSS	Access	MDF & IDF Room Security	CSS - Security Contractor	CS-General Contractor	N/A
Π	Infrastructur	Network	MDF/IDF: High Heat Alarm	CS-General Contractor	CS-General Contractor	CS-General Contractor
IT M&F	Infrastructur e Electrical	Network	MDF/IDF: Lightning Protection System and Event Alert	CS-General Contractor	CS-General Contractor	CS-General Contractor
п	Infrastructur	Network	Portables	CS-General Contractor	CS-General Contractor	N/A
π	Intrastructur	Network	UPS	II-Network Equipment	CS-General Contractor	CS-General Contractor
п	Intrastructur	Network	Wireless Access Points (WAPs)	IT-Network Equipment	CS-General Contractor	N/A
п	Infrastructur	Network	Cabling	IT - Cabling Contractor	CS-General Contractor	N/A
п	Intrastructur	Network	Patch Panels	IT - Cabling Contractor	N/A	N/A
π	Infrastructur	Network	Racks (Floor Mounted)	CS-General Contractor	N/A	CS-General Contractor
π	Infrastructur	Network	Racks (Wall Mounted)	CS-General Contractor	N/A	CS-General Contractor
п	Intrastructur	Network	Patch Cables	IT - Technology Contractor	N/A	N/A
π	Infrastructur e	Network	Biometric (Bioscreen) Clocks	Cabling by IT-Cabling Contractor. Device provided by CS-GC purchased from IT- Biometric Clock Vendor	CS-General Contractor	POE by IT-Cabling Contractor. Does not require line voltage power.
п	Infrastructur e	Network	POE Switch Network	IT-Network Equipment Contractor	N/A	N/A
M&F	Sound Stage	Voice Communicati ons	PA IP Integrated Electronic Communications Network	CS-General Contractor	CS-General Contractor	CS-General Contractor

M&F	Sound Stage	Voice Communicati	PA IP Integrated Electronic Communications Network	CS-General Contractor	CS-General Contractor	CS-General Contractor
M&F	Sound Stage	Network	Master Clock	CS-General Contractor	CS-General Contractor	CS-General Contractor
M&F	Sound Stage	Voice Communicati	VolP	CS-General Contractor	CS-General Contractor	CS-General Contractor
M&F	Sound Stage	Voice Communicati	Sound System	CS-General Contractor	CS-General Contractor	CS-General Contractor
M&F	Sound	Voice	POE Switches PA/Sound	CS-General Contractor	N/A	CS-General Contractor
M&F	Sound	Voice Communicati	Patch Cables PA/Sound	CS-General Contractor	N/A	N/A
M&F	Sound	Voice Communicati	Patch Panels Sound System	CS-General Contractor	N/A	N/A
п	Audio- Visual	Distributed Audio-Video Communicati	Interactive Displays	IT AV Vendor	CS-General Contractor	CS-General Contractor
IT V&PA	Audio- Visual Performing Arts	Distributed Audio-Video Communicati ons Systems	Auditoriums: Sound System	CS-General Contractor purchased from IT A/V Vendor	CS-General Contractor	CS-General Contractor
IT V&PA	Audio- Visual Performing Arts	Distributed Audio-Video Communicati ons Systems	Auditorium: Video Projector and Screen	CS-General Contractor purchased from IT A/V Vendor	CS-General Contractor	CS-General Contractor
π	Audio- Visual	Distributed Audio-Video Communicati ons Systems	Multi-Purpose Rooms: Sound System	CS-General Contractor	CS-General Contractor	CS-General Contractor
π	Audio- Visual	Audio-Visual	Cafetoriums: Sound System	CS-General Contractor	CS-General Contractor	CS-General Contractor
π	Audio- Visual	Audio-Visual	Cafetorium: Video Projector and Screen	CS-General Contractor	CS-General Contractor	CS-General Contractor
M&F	Sound Stage	Distributed Audio-Video Communicati ons Systems	Gymnasium: Sound System	CS-General Contractor	CS-General Contractor	CS-General Contractor
π	Infrastructur e	Food and Child	Cafeteria Point of Sale (POS)	IT - Technology Contractor	CS-General Contractor	CS-General Contractor
π	Infrastructur e	Food and Child	Cafeteria Digital Displays	Display: CS-General Contractor Cabling: IT-Technology	CS-General Contractor	CS-General Contractor
IT Police	CSS FM	Network	Patch Panels Security	CSS - Security Contractor	N/A	N/A
IT Police	CSS EM	Network	POE Switches Security Devices	CSS - Security Contractor	N/A	CS-General Contractor
M&F	Alarms	Intrusion	Intrusion Wireless Call-Out, Papels, Keypads, Cabling	CS-General Contractor	CS-General Contractor	CS-General Contractor
IT Police	CSS EM	Storm Shelter Operations	Control Room: Panels, monitoring and operational controls devices and signage	CS-General Contractor	CS-General Contractor	CS-General Contractor
IT Police M&F	CSS EM Electrical	UPS (Multiple)	Storm Shelter Power and Monitoring: Cenerator or Battery	CS-General Contractor	CS-General Contractor	CS-General Contractor

CSP 207459 August 16, 2024

IT Police	CSS FM	Secure Vestibule	See "Access Control", Div 28	CSS - Security Contractor	CS-General Contractor	CS-General Contractor
IT Police	CSS EM	Access Control	Card Access/CCTV Headend Licensing	CSS - Security Contractor	N/A	N/A
IT Police	CSS FM	Access Control	Control Panels	CSS - Security Contractor	N/A	CS-General Contractor
IT Police	CSS FM	Access Control	Card Readers	CSS - Security Contractor	CS-General Contractor	N/A
IT Police	CSS EM	Access Control	Door Contacts	CSS - Security Contractor	CS-General Contractor	N/A
IT Police	CSS FM	Access	Electrified Door Hardware	CS-General Contractor	CS-General Contractor	N/A
IT Police	CSS FM	Access	Electrified Door Hardware Power Supplies	CS-General Contractor	CS-General Contractor	CS-General Contractor
IT Police	CSS FM	Access Control	IP Intercoms: Masters	CSS - Security Contractor	CS-General Contractor	N/A
IT Police	CSS FM	Security: Electronic	Cameras: Exterior	CSS - Security Contractor	CS-General Contractor	N/A
IT Police	CSS EM	Security: Electronic Surveillance	Cameras: Interior	CSS - Security Contractor	CS-General Contractor	N/A
IT SPED	CSS	Safety & Security	SPED Monitoring System Cameras and Recording	CSS - Security Contractor	CS-General Contractor	CS-General Contractor
IT Police	CSS FM	Security: Electronic	Cabling: Switch to Device	CSS - Security Contractor	CS-General Contractor	CS-General Contractor
IT Police	CSS EM	Security: Electronic	Storage Servers	CSS - Security Contractor	N/A	CS-General Contractor

1.3 OVERVIEW

- A. Included into this section are all materials, labor, and services to provide a complete and functioning infrastructure for the data, telephone, and broadband video distribution systems. This includes, but is not necessarily limited to:
 - 1. Raceway, boxes, and cable tray.
 - 2. Data, Voice, Video and Distributed Television Coaxial cabling.
 - 3. Optical fiber cable and terminations.
 - 4. Telecommunications outlets.
 - 5. Multimedia Systems in:
 - a. Classrooms to be equipped with interactive whiteboards (IWB) and short-throw projectors.
 - b. Conference Rooms, Libraries, Multimedia Rooms to be equipped with ceiling- mounted LED Projectors and Projection Screens.
 - c. Large Teaching/Assembly Spaces such as Auditoria, Cafeteria and Gymnasia to be equipped with rear projection systems.
 - 6. Terminal blocks/cross-connect systems.
 - 7. Equipment racks and cabinets.
 - 8. Central UPS Systems.
 - 9. System testing.
 - 10. Documentation and submissions.

- B. Provide all equipment, miscellaneous materials, labor, and services, not specifically mentioned or shown which may be necessary to complete or perfect all parts of the installation which are in compliance with requirements stated or reasonably inferred to be required by the contract documents.
- C. Related Work

1. Refer to Division 0 & 1 for Any work in hazardous locations, "Hot Area", such as where

asbestos might be and determining its location.

2. Refer Division 26 - 120 Volt or above electrical wiring & outlets, conduit and wall boxes.

- 3. Servers, computers, IWB and other end user devices are typically supplied and installed by District. Verify with responsibility chart.
- D. Definitions and Acronyms
 - 1. Dataport Single Category 6 jack connected to a single cable segment.
 - 2. Duplex-Dataport (2) Single Category 6 dataports.
 - 3. Electrical Outlet Single 120Volt Power Outlet.
 - 4. Duplex Electrical outlet (2) Electrical Outlets.
 - 5. Quad-Electrical Outlet- (4) Electrical Outlets.
 - 6. Portable Permanent classroom space (not swing space).
 - 7. Swing Space Temporary portable building in support of construction.
 - 8. DISD Dallas Independent School District.
 - 9. ITS Information and Technology Services.
 - 10. AFF Above Finished Floor.
 - 11. EF Entrance Facility.
 - 12. ER Equipment Rooms (i.e. MDF, IDF).
 - 13. MDF Main Distribution Frame.
 - 14. IDF Intermediate Distribution Frame.
 - 15. TMGB Telecommunications Main Grounding Busbar.
 - 16. HVAC Heating, Ventilation, & Air Conditioning.
 - 17. UPS Uninterruptible Power Supply.
 - 18. ANSI American National Standards Institute.
 - 19. EIA Electronic Industries Alliance.
 - 20. TIA Telecommunication Industry Association.
 - 21. SCS Structured Cabling System.
 - 22. BICSI Building Industry Consulting Services International, Inc.

- 23. UTP Unshielded Twisted Pair.
- 24. FDC Fiber Distribution Center (Rack or Wall Mounted).
- 25. RMU Rack Mount Unit (1.75")
- 26. EMT Electrical Metallic Conduit.
- 27. IMC Intermediate Metallic Conduit.
- 28. GRC Galvanized Rigid Conduit.
- 29. UL Underwriters Laboratory.
- 30. AWG American Wire Gauge.
- 31. CMR Communications Riser Cable.
- 32. CMP Communications Plenum Cable.
- 33. MPR Multipurpose Riser Cable.
- 34. MPP Multipurpose Plenum Cable.
- 35. OFNP Optical Fiber Non-Metallic Plenum Rated.
- 36. OFNR Optical Fiber Non-Metallic Riser Rated.
- 37. OTDR- Optical Time Domain Reflectometer.
- 38. WAP Wireless Access Point.
- 39. IWB Interactive White Board.
- 40. FOC Fiber Optic Cable.
- 41. RCDD Registered Communications Distribution Designer

1.4 REFERENC

- A. Design, manufacture, test, and install telecommunications cabling networks per manufacturer's requirements and in accordance with latest revision of the NFPA-70 (National Electrical Code®), state codes, local codes, requirements of authorities having jurisdiction, and the following ANSI/TIA Standards for Installing Commercial Building Telecommunications Cabling standards including the most current revisions, addendums, and any technical service bulletins (TSB's) that may have been released:
 - 1. ANSI/TIA-568-C.1 Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements.
 - 2. ANSI/TIA-568-C.2 Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted Pair Cabling Components.
 - 3. ANSI/TIA-568-C.3 Optical Fiber Cabling Components Standard.
 - 4. ANSI/TIA-568-C.4 Standard for Coaxial Cabling.
 - 5. ANSI/TIA-569-A Commercial Building Standard for Telecommunications Pathways and

Spaces.

6. ANSI/TIA-606(A) -The Administration Standard for the Telecommunications

Infrastructure of Commercial Buildings.

7. ANSI/TIA-607(B) - Commercial Building Grounding and Bonding Requirements for

Telecommunications.

8. ANSI/TIA-526-7 - Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant.

9. ANSI/TIA-526-14A - Measurement of Optical Power Loss of Installed Multimode Fiber

Cable Plant.

10. ANSI/TIA-758(A) - Customer-Owned Outside Plant Telecommunications

Cabling Standard. B. Install cabling in accordance with the most recent edition of BICSI® publications:

- 1. BICSI Telecommunications Distribution Methods Manual.
- 2. BICSI Cabling Installation Manual.
- 3. BICSI LAN Design Manual.
- 4. BICSI Customer-Owned Outside Plant Design Manual.
- C. Federal, state, and local codes, rules, regulations, and ordinances governing the work, are as fully part of the specifications as if herein repeated or hereto attached. If the contractor should note items in the drawings or the specifications, construction of which would be code violations, promptly call them to the attention of the owner's representative in writing. Where the requirements of other sections of the specifications are more stringent than applicable codes, rules, regulations, and ordinances, the specifications shall apply.
- D. In all cases, the latest version of The National Electrical Code (NEC NFPA 70) shall be used as the standard to protect people and property from electrical hazards. The Code covers the installation of electrical conductors, equipment, and raceways; signaling and communications conductors, equipment, and raceways; and optical fiber cables and raceways for the following:
 - 1. Public and private premises, including buildings, structures, mobile homes, recreational vehicles, and floating buildings.
 - 2. Yards, lots, parking lots, carnivals, and industrial substations.
 - 3. Installations of conductors and equipment that connect to the supply of electricity.
- E. Install all cabling and termination devices as per the following Manufacturers' recommended installation practices. These practices are required to obtain the Superior Essex/Ortronics GT2 copper and MM10 optical fiber 25-yearApplication Assurance warranties:

- 1. Superior Essex and Legrand|Ortronics component and system specifications shall be followed.
- 2. Superior Essex Oasis and Legrand|Ortronics installation certification guidelines shall be followed.

1.5 PERMITS, FEES, AND CERTIFICATES OF APPROVAL

A. Refer to Division 0 & 1 for all requirements.

1.6 SUBMITTALS

- A. Submit to the engineer/designer shop drawings, product data (including cut sheets and catalog information), and samples required by the contract documents. Contractor shall submit shop drawings with routing, raceway size and type, product data, including floor plans, sections of all rooms showing all components and samples with such promptness and in such sequence as to cause no delay in the work or in the activities of separate contractors. Engineer/designer shall review submittals with District ITS staff or designee. District ITS staff or designee shall have final determination of all technology system-related design elements. The engineer/designer will indicate approval of shop drawings, product data, and samples submitted to the engineer by stamping such submittals "APPROVED" with a stamp. Submitted shop drawings shall be signed and RCDD-stamped by the contractor's RCDD certified engineer, showing the date and the contractor's firm name.
 - 1. All submitted drawings shall include in the title block:
 - a. Site identification (TEA #)
 - b. Campus name
 - c. Descriptive Sheet

Title d. Floor (when

applicable)

- e. Area location (when applicable)
- f. Building or Portable(s) number (when applicable)
- g. Room numbers
- h. Dimensions
- i. Revision identifier or Drawing

Submittal Phase j. Author or Certified

Engineers name

- k. Firm's name and contact information with phone number
- I. Date

m. File Name (for reference to electronic file submittal)

2. The Technology drawings set shall be submitted following the format described below:

	T-001	NOTES, SYMBOLS & INDEX OF DRAWINGS	
	T-101	SITE PLAN – TELECOM	
	T-201	OVERALL FLOOR PLAN - LEVEL 01 - TELECOM	
	⊺−202	OVERALL FLOOR PLAN - LEVEL 02 - TELECOM	
	T-211	FLOOR PLAN - LEVEL 01 - AREA 'A' - TELECOM	
	T-212	FLOOR PLAN - LEVEL 01 - AREA 'B' - TELECOM	
	T-221	FLOOR PLAN - LEVEL 02 - AREA 'A' - TELECOM	
	⊺−222	FLOOR PLAN - LEVEL 02 - AREA 'B' - TELECOM	
	T-301	TELECOM RISER DIAGRAMS	
	T-401	TELECOM EQUIPMENT ROOM DETAILS	
	T-501	TELECOM DETAILS	
Dallas Independent	TECH	INOLOGY DRAWINGS SET - INDEX OF SHEE	ETS
School District	SCALE: NTS	DATE: 10-01-2012	VERSION: 01

Figure 1.13 Technology Drawings Set -Index of Sheets

- 3. By submitting shop drawings, product data, and samples, the contractor represents that he or she has carefully reviewed and verified materials, quantities, field measurements, and field construction criteria related thereto. It also represents that the contractor has checked, coordinated, and verified that information contained within shop drawings, product data, and samples conform to the requirements of the work and of the contra ct documents. The engineer/designer remains responsible for the design concept expressed in the contract documents as defined herein.
- 4. The engineer's/designer's approval of shop drawings, product data, and samples submitted by the contractor shall not relieve the contractor of responsibility for deviations from requirements of the contract documents, unless the contractor has specifically informed the engineer/designer in writing of such deviation at time of submittal, and the engineer/designer has given written approval of the specific deviation. The contractor shall continue to be responsible for deviations from requirements of the contract

documents not specifically noted by the contractor in writing, and specifically approved by the engineer in writing.

- 5. The engineer's/designer's approval of shop drawings, product data, and samples shall not relieve the contractor of responsibility for errors or omissions in such shop drawings, product data, and samples.
- 6. The engineer's/designer's review and approval, or other appropriate action upon shop drawings, product data, and samples, is for the limited purpose of checking for conformance with information given and design concept expressed in the contract documents. The engineer's/designer's review of such submittals is not conducted for the purpose of determining accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the contractor as required by the contract documents. The review shall not constitute approval of safety precautions or of construction methods, techniques, sequences, or procedures. means, The engineer's/designer's approval of a specific item shall not indicate approval of an assembly of which the item is a component.
- B. Perform no portion of the work requiring submittal or review of shop drawings, product data, or samples, until the engineer/designer has approved the respective submittal. Such work shall be in accordance with approved submittals.
- C. Submit shop drawings, product data, and samples as a complete set within thirty (30) days of award of contract.
 - 1. For initial submission and for resubmission required for approval, submit four (4) copies of each item. The designer will only return two copies.
 - 2. Illegible submittals will not be checked and returned, un-approved, to

the Contractor. D. General: Submit the following:

- 1. Bill of materials for each system in MS Excel table format that includes the following minimum column headers:
 - a.

Quantity

b. Unit of

Measurement c.

Brand

```
d. Part
Number
```

e. Basic Description

2. Length and type of proposed copper and fiber optic cables in MS Excel table format for each set of cables to each IDF.

- 3. Project schedule including all major work components that materially affect any other work on the project in MS Project Gantt chart format.
- E. Shop drawings: Submit the following:
 - 1. Room construction diagrams including floor plans, sections and rack elevations of all rooms showing all components (e.g. fiber termination bulkheads, UTP patch panels, vertical and horizontal cable managers, data switches, UPSs, overhead ladder racking, entry conduits and sleeves, raceway routing, power outlets, fire and security panels, backboards, door position and swing, etc.) for review and approval by Dallas ISD IT Staff prior to procuring and installing any room-mounted equipment. Submittals to be provided in electronic drawing format. (PDFs, AutoCAD, Visio, etc. to be approved by owner).
 - 2. Backbone (riser) diagrams include location identity in electronic drawing format. (PDFs, AutoCAD, Visio, etc. to be approved by owner).
 - 3. System block diagram, indicating interconnection between system components and subsystems in drawing format with floor separation in electronic drawing format. (PDFs, AutoCAD, Visio, etc. to be approved by owner).
 - 4. Fabrication drawings for custom-built equipment in drawing format.
 - 5. General Contractor shall provide shop drawings for all low voltage infrastructure (conduit, back boxes, raceways, etc.)
- F. Product Data– Provide via hardcopy and scanned or OEM PDFs catalog cut sheets highlighting or circle the actual part number and information for the following:
 - 1. Wire, cable, and optical fiber.
 - 2. Outlets, jacks, faceplates, and connectors.
 - 3. All metallic and nonmetallic raceways, including surface raceways, outlet boxes, and fittings.
 - 4. Terminal blocks and patch
- panels. G. Project record and

drawings:

1. All electronic drawings shall be submitted in either MS Visio or AutoCAD format on flash drive.

2. All T series (Technology) drawing sheets/files shall be formatted for legible printing on

11"x17" paper or smaller including technology installation notes.

- 3. AutoCAD files shall be complete and fully functional at all layers with complete binding and editable functionality.
- 4. Final drawings and submittal package documents shall become the property and responsibility of Dallas ISD at project closure.

5. Each sheet of the submittal package shall be stamped or labeled with "As Built" and the

associated date.

- 6. Each sheet shall include a directional indictor to North.
- 7. Each sheet shall include a drawing scale. Filenames shall use the
 - following format: Example of file naming standard: **Site Drawing # Description Revision# Date** 245 T01 MDF Rack1 R02 123011 Example of filename:

245-T01-MDF-Rack1-R02-123011.dwg

8. An index of all drawings and files shall be included in the submittal package.

a. Index shall be submitted in MS Excel format with the following fields a minimum:

b. Site

identification c.

Campus name

- d. Descriptive Sheet Title
- e. Floor (when applicable)
- f. Area location (when applicable)
- g. Room

numbers h.

Sheet Number

- i. Revision
- j. File Name
- k. Submittal and approval date record
- 9. Record Drawing Set shall include Plan Drawings indicating locations and identification of work area outlets, nodes, all telecommunications rooms (MDFs and IDFs), and backbone (riser) cable runs. For existing locations where additional cabling and dataports are being added, all existing dataports shall be included with a unique symbol thereby providing complete documentation of the network infrastructure.
 - a. Equipment Room (MDF) and Telecommunications Rooms (IDFs) termination detail sheets.
 - b. Cross-connect schedules including entrance point, main cross-connects, intermediate cross-connects, and horizontal cross-connects.

- c. MDF and IDF zone area coverage drawings include building site area map highlighting sheet coverage.
- d. Site drawing with any underground cabling showing actual route, depth and end points. Include GPS coordinates and dimensions.
- e. Labeling and administration documentation. (Location Spreadsheets).
- f. Warranty documents (Warranty registration form will not be accepted as the required Warranty Certificate).
- g. Copper certification test result printouts and electronic

files on CD. h. Optical fiber test result printout and

electronic files on CD.

- i. Grounding test result printout and electronic files on CD.
- j. Original WAP Site Survey documentation.
- k. Final as built WAP design with campus coverage mapping.
- I. Digital Pictures of each MDF and IDF after completion of the project. Pictures shall be labeled with campus, location and date. Label shall be a part of the picture within the image. The filename of these files shall use the following format:

Example of file naming standard:

Site	Location	Description
	Date	
245	MDF Rack1	Patch Panel A
	123009	

Example of filename:

245-MDF-Rack1-PatchPanelA-123009.gif

m. Directory of all technology contractor companies that participated on the project

with project managers' names, email addresses and phone numbers.

- n. Equipment Deliverables Lists verified and signed by District staff member.
- o. Include in the technology submittal package for information only all related and supporting electrical power drawings from the campus design set.
- 10. Submit hardcopy project records and drawings bound in a three ring binder with a cover and spine label indicating the name of the school and year. Install printed dividers into this binder. This binder shall be submitted at conclusion of the project. The as-built information in the submittal package shall include:

- 11. Submitted electronic files shall be provided on flash drive. Three (3) copies of all flash drive shall be provided with the submittal. All submitted CDs shall be labeled on the back surface of the CD with the following:
 - a. Site Identification (TEA #)
 - b. Bid

Package # c.

Campus Name d.

Title of CD

e. Firm Name and Contact

Information f. Version

g. Disk number

x of y h. Date

1.7 QUALITY ASSURANCE

- A. Technology cable system contractors must be approved by DISD ITS Department at time of negotiations. Acceptance will be based exclusively on the following criteria. Documented proof of compliance and qualification is required from the contractor prior to negotiation approval.
 - 1. All contractors must be Ortronics CIP (Certified Installer Plus) or CIP/ESP (Enterprise

Solutions Partners) in good standing.

- 2. The contractor shall have been in business for a minimum of five (5) years and have completed at least five (5) systems of this type and size or they must be a DISD approved contractor.
- 3. Upon request, applying contractor is to furnish a list of references with specific information regarding type of project and involvement in providing of equipment and systems. A list of current, trained personnel (trained within the last 5 years) also may be requested.
- 4. The contractor shall employ a BICSI certified RCDD for a project manager and quality control inspectors that are BICSI (ITS Technician or ITS Installer 2, Copper and Fiber) or Legrand|Ortronics certified technicians.
- B. The following manufacturer's cabling systems are approved for installation under this

specification.

1. Ortronics System (Required to maintain compatibility with current installations and to maintain warranty)

- C. Equipment and materials of the type for which there are independent standard testing requirements, listings, and labels, shall be listed and labeled by the independent testing laboratory.
- D. Where equipment and materials have industry certification, labels, or standards (i.e., NEMA National Electrical Manufacturers Association), this equipment shall be labeled as certified or complying with standards.

E. Material and equipment shall be new, and conform to grade, quality, and standards specified.

Equipment and materials of the same type shall be a product of the same manufacturer throughout.

F. Subcontractors shall assume all rights and obligations toward the Main Contractor that the Main

Contractor assumes toward the owner and engineer/designer. Products:

1.8 Products

A. Products included in these specifications are meant to establish a level of quality, performance and consistency within Dallas ISD. To establish this consistent level of quality and performance, Dallas ISD has selected certain products by manufacturer and part number. To change would defeat the effort of consistency and would cost Dallas ISD. Dallas ISD stocks a level of replacement parts and to change would increase the cost of stocking additional parts. Where specific parts are mentioned Contractor is to supply that part. If the words "or equal" are mentioned then Contractor is to submit a product specification that substantiates that the product is of equal performance. If the words "or approved equal" are stated, Contractor is not to substitute without prior approval. If there are no manufacturers or part numbers mentioned, then that part is generic in nature and a Contractor-submitted product is to be approved as part of the product-selection process.

B. Cabling and optic fiber product requirements to be communicated to the Dallas ISD-IT-Infrastructure

contracted vendor directly by Dallas ISD-IT-Infrastructure and are included in the TDG for reference only.

1.9 WARRANTY

- A. A 25 year system warranty will apply to all premises wiring projects within DISD. The warranty registration documents must be submitted within 10 working days of project acceptance. All warranty certificates will be submitted directly from manufacturer to the District. Warranty registration form will not be accepted as the required warranty certificate. Final payment will not be made until system warranty is approved by manufacturer.
- B. Transfer any other manufacturer's warranties to the owner in addition to the General System Guarantee and the above mentioned system warranty. Submit these warranties on each item in list form with shop drawings. Detail specific

parts within equipment that are subject to separate conditional warranty. Warranty proprietary equipment and systems involved in this contract during the guarantee period.

- C. Effect replacement or substitutions of warranted equipment shall occur within 24 hours of first notification. Complete warranty repairs to equipment shall be performed within 72 hours. If repairs cannot be completed during this time period, or if ordering of parts is required, forward to the owner every 72 hours, documentation of progress of repairs. This repair capability is mandatory. Include costs anticipated to comply with this requirement in the bid.
- D. Refer to Division 0&1 for additional details and requirements.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Protect equipment during transit, storage, and handling to prevent damage, theft, soiling, and misalignment.
- B. Coordinate for secure storage of equipment and materials onsite.
- C. Do not store equipment where conditions fall outside manufacturer's recommendations for environment.
- D. Do not install damaged equipment. Remove from site and replace damaged equipment with new equipment.
- E. Refer to Division 0&1 for additional details and requirements.

1.11 COORDINATION

A. Coordination with all other trades is required. Cabling Contractor will submit a schedule for the installation to the GC as requested. Indicate delivery, installation, and testing for conformance to specific job completion dates. As a minimum, dates are to be provided for installation start date, completion of station cabling, completion of riser cabling, completion of testing and labeling, cutover, completion of the final punch list, start of demolition, demolition completion, final inspection, and acceptance. For middle school and high school projects, this schedule shall be broken down in to building, areas and wings of each building. Provide schedule documentation in hardcopy and electronic format.

B. Cabling Contractor must attend all General Contractor project related meetings (as requested by

GC) and adhere to schedule and must communicate to the General Contractor all required pathways/raceways as required for cabling. General contractor shall produce shop drawings

indicating required raceways for new devices as coordinated with cabling contractor.

C. Timing of the cable system completion and documentation is critical to the final commissioning of the network systems and campus occupancy. Therefore, acceptance of the final inspection of these systems and the submittal of final documentation shall be a requirement of Substantial Completion. Notification for

final inspections will be require at least 72 hours before a proposed appointment for Final Inspection.

D. Final project documentation and warranty information shall include, but may not be limited to the following:

1. Record Documents / Drawings with legible outlet address and cable paths in an AutoCAD format.

- 2. Outlet location spreadsheets (MS Excel Spreadsheet).
- 3. Warranty Paperwork (Original documents and/or documents scanned into PDFs).
- 4. Copy of all test results (MS Excel Spreadsheet).
- 5. Copy of the Final Inspection and Acceptance Signoff Sheet (Original documents and/or documents scanned into PDFs).
- 6. Photos of each MDF and IDF.
- E. Refer to Division 0&1 for additional details and requirements.

1.12 USE OF THE SITE

A. Refer Division 0 & 1

1.13 CONTINUITY OF SERVICES

A. Refer Division 0 & 1

PART 2 -PRODUCTS

PRODUCTS

Products included in this section are meant to establish a level of quality, performance and consistency within the District. To establish this consistent level of quality and performance, the district has selected certain products by manufacturer and part number. To change would defeat the effort of consistency and would cost the District. The District stocks a level of replacement parts and to change would increase the cost of stocking additional parts. Where specific parts are mentioned contractor is to supply that part. If the words "or equal" are mentioned then contractor is to submit a product specification that substantiates that the product is of equal performance. If the words "or approved equal" are stated, contractor is not to substitute without prior approval. If there are no manufacturers or part numbers mentioned, then that part is generic in nature and a contractor-submitted product must be approved as part of the product-selection process.

2.1 MANUFACTURERS

- A. Provide products of manufacturers named in this document. No exceptions may be made without written approval from the District ITS Department. Any requested substitutions should be documented at time of project bid/proposal. Request made after that time are subject to negotiation of cost to the District.
- B. Substitution products that are procured and/or installed without prior written approval from the District ITS Department may be rejected out-of-hand. Removal and disposal of rejected items will be at the expense of the contractor.
- C. Where no manufacturer is specified, provide products of manufacturers in compliance with specified requirements.

2.2 FABRICATION

A. Fabricate custom-made equipment with careful consideration given to aesthetic, technical, and functional aspects of equipment and its installation.

2.3 SUITABILITY

A. Provide products that are suitable for the intended use, including, but not limited to considerations regarding environmental, regulatory, and electrical suitability.

2.4 INDOOR VOICE/DATA BACKBONE CABLE

A. Voice: Solid copper, 24 AWG, 100 Ω balanced twisted-pair (UTP), Category 3 backbone cable, in sizes as indicated on the drawings, with mechanical and transmission performance specifications that meet or exceed ANSI/TIA-568-C.2. Note: Listed Type CMP, and/or MPP (as required in latest NEC code) for inside cable.

Mark Twain School for the Talented and Gifted 27 15 01-PREMISE WIRING GUIDE18CSP 207459Org #220August 16, 2024Dallas ISD Construction ServicesAugust 16, 2024

Approved Manufacturer: Superior Essex Product Line Part Number: 10032111 25-pair Plenum-rated

B. Data: Multimode 50/125 μm diameter premise distribution loose tube plenum-rated armored

OM3 optical fiber, with mechanical and transmission performance specifications that meet or

exceed ANSI/TIA-568-C.3 Standards. All fiber optic cables installed within buildings are to be plenum rated cables with plenum armored jacket.

For installations exceeding 300 meters, other cable options such as using OM4 Multimode or OS1

Singlemode cable may be considered. Consult with DISD IT Staff before ordering, procuring or

installing cables.

Approved Manufacturer: Superior Essex ArmorTek Series GIGAlite-10 Part Numbers: PDPK006-EB3010/25 6-strand OM3 PDPK024-EB3010/25 24strand OM3

2.5 DATA STATION CABLE

A. Solid copper, 24 AWG, 100 Ω balanced twisted-pair (UTP) Category 5e/6 cable with four individually twisted-pairs, which meet or exceed the mechanical and transmission performance specifications in ANSI/TIA-568-C.2 up to 100 MHz for Category 5e and up to 250MHz for Category

6 cable. See cable color scheme chart below for the used to signify Category 5e/6 cable. Note: Listed Type CMP, and/or MPP (as required in latest NEC code) for inside cable.

Approved Manufacturer: Superior Essex

Cat6 Cable:	
Product Description:	DataGain Category 6+ UTP, Plenum, Cable-Yellow
Part Numbers:	66-240-6B
Product Description:	DataGain Category 6+ UTP, Plenum, Cable-Blue
Part Numbers:	66-240-2B
Product Description:	DataGain Category 6+ UTP, Plenum, Cable-Green
Part Numbers:	66-240-5B

Cat5e Cable:

Product Description: Part Numbers: Product Description: Part Numbers: Product Description: Part Numbers: Marathon LAN, Category 5e UTP, Plenum, Cable-White **51-241-48** Marathon LAN, Category 5e UTP, Plenum, Cable-Blue **51-241-28** Marathon LAN, Category 5e UTP, Plenum, Cable-Green **51-241-58**

DATA INFRASTRUCTURE CABLING: CABLE COLOR SCHEME CHART

Jack to Patch Panel	Color	Category Rating
Computers or other	Yellow	6

Computers or other	White	5e
Security Cameras	Yellow	6
Security Cameras	White	5e
Wireless AP's – Non-	Blue	5e / 6
Wireless AP's - Erate	Green	5e / 6

2.6 OUTDOOR VOICE/DATA BACKBONE FIBER OPTIC CABLE

A. Data: Multimode 50/125 µm diameter indoor/outdoor loose tube plenum-rated OM3 optical fiber, with mechanical and transmission performance specifications that meet or exceed ANSI/TIA-568- C.3 Standards. All fiber optic cables installed within buildings are to be plenum rated cables with plenum armored jacket. Use armored indoor/outdoor plenum-rated cabling for installation within an underground duct.

For installations exceeding 300 meters, other cable options such as using OM4 Multimode or OS1

Singlemode cable may be considered. Consult with DISD IT Staff before ordering, procuring or installing cables.

Approved Manufacturer: Superior Essex ArmorTek Series GIGAlite-10, GIGAlite-10XB Part Numbers: LTPK006-EB3010/25 6strand OM3

LTPKOXO24-EB3010/25 24-strand OM3

B. Multimode 50/125 μm diameter outdoor OM3 optical fiber, with number of usable fibers as shown on drawings, which meet or exceed the mechanical and transmission performance specifications listed in ANSI/TIA-568-C.3 and ANSI/TIA-758(A) Standards.

In some cases, non-armored fiber optic cabling may be used. Check with DISD IT Staff for specific information.

For installations exceeding 300 meters, other cable options such as using OM4 Multimode or OS1

Singlemode cable may be considered. Consult with DISD IT Staff before ordering, procuring or installing cables.

Approved Manufacturer: Superior Essex Adventum Series Gigalite-10, GIGAlite-10XB Part Numbers: LTP006-EB3010/25 6strand OM3

LTP0X024-EB3010/25 24-strand OM3

2.7 TEACHING WALL MULTI MEDIA WORKSTATION

A. A typical teaching wall multimedia outlet locations will consist of a multimedia outlet box, located beneath the lower corner of the teaching wall opposite entry to classroom. When a ceiling mounted projector is used (non-classroom areas only), there is no need for a box on the ceiling and conduits are not desired

Mark Twain School for the Talented and Gifted 27 15 01-PREMISE WIRING GUIDE22CSP 207459Org #220August 16, 2024Dallas ISD Construction ServicesAugust 16, 2024

 between the projector location and the required multimedia outlet box. Each cable type used in multimedia installations shall be plenum-rated.

 B.
 Multimedia outlet – Single HDMI 1.3 Modular Connector

 Approved Manufacturer:
 Ortronics Product Line

 Part Numbers:
 (1) HDMI 1.3 Modular Connector OR-60900372

 (1) Double Gang Series II Face Plate OR-40300159 (1) Clarity Category 6 Module

 OR-S21600
 (4) Blank Module OR-40300164

C. Cable bundle (non-GC scope) at ceiling location near ceiling mounted projector (non-classroom areas only) – one (1) Duplex-Electrical Outlet and one (1) HDMI 1.3 Modular Connector

Approved Manufacturer: Legrand|Ortronics Product Line Part Numbers: OR-EP-048-01 Media Outlet Kit



2.8 VOICE/DATA OUTLETS

- A. Single-gang mounting plate containing the following devices:
- B. Dataports two (2) or four (4) dataport outlets 8-pin modular, Category 5e/6, un-keyed jacks, pinned to the T568B standards. Install blank inserts for any unused opening. Run discrete Category 5e/6 cables from the outlets to the nearest IDF.

Approved Manufacturer:	Ortronics Series II Product Line
Part Numbers:	(1) OR-40300158 Series II Faceplate
(1)	OR-S22600 Series II, 2 Cat6 modules
(2)	OR-40300164 Series II, Blanking Module

Mark Twain School for the Talented and Gifted27 15 01-PREMISE WIRING GUIDE25CSP 207459Org #220August 16, 2024



Figure 2.2 Voice and Data Outlet

2.9 TERMINATION BLOCKS

A. Provide termination punch blocks for termination of voice station cables and for backbone termination only. Supply 110 style punch block frames (100 Pair, 300 Pair, or 900 pair).

 Approved Manufacturer:
 Ortronics 110 Cross Connect System

 Part Numbers:
 OR-30203519 300Pr block kit

 with C4 clips OR-30200095 300Pr
 block kit with C5 clips OR

 30200026 900Pr block kit with C4
 clips OR-30200024 900Pr block kit

 with C5 clips
 OR-30200024 900Pr block kit

 OR-806003194 300Pr Single channel vertical mgt. for 300Pr

 OR-806003196 900Pr Single channel vertical mgt. for 900Pr

B. Provide horizontal and vertical wiring troughs between MDF frame sections. Approved

Manufacturer: Ortronics 110 Cross Connect System.

2.10 VOICE AND DATA PATCH PANELS

Mark Twain School for the Talented and Gifted 27 15 01-PREMISE WIRING GUIDE26CSP 207459Org #220August 16, 2024Dallas ISD Construction ServicesAugust 16, 2024

A. Use 19" rack mountable, Angled-face 24-or 48port patch panels with 8-pin modular inserts with insulation displacement connectors (IDC) meeting Category 5e/6 performance standards, and pinned to the TIA568B pin arrangement standard. Use only 48-port panels in new racks. Only use 24-port panels to balance with 48 port switches in existing MDF/IDFs.

> Approved Manufacturer: Ortronics Product Line Part Number: OR-PHA66U48

OR-PHA66U24

2.11 COPPER PATCH CORDS

- A. In some scenarios, Category 5e/6 patch cords are to be provided and installed by Equipment Racking (Rack & Stack) Contractor and not the cabling contractor. In most situations (especially in new construction), the Cabling Contractor, working under the GC will be responsible for procuring and installing copper patch cords. Contractor is also responsible for testing and certifying end-to- end channel integrity – including UTP patch cords connected at patch panels and workstations.
- B. Patch cords of various lengths will be installed at the MDF, IDFs, wall mounted cabinets, and workstations. Due to warranty issues, the patch cords will be manufactured by the device manufacturer that is carrying the warranty: In this case "Ortronics". Match the patch cords to the Category rating of the cabling being installed. At the workstation end supply 40% of the patching cables as 7' and 60% as 15'cables. At the cross-connect end, supply varied lengths from 3' to 9'. In the small cabinets in the portable buildings and computer labs supply 12" to 24"patch cords. In any case provide cables of an adequate length with no more slack than is necessary to provide a neat and orderly installation.

Approved Manufacturer: Legrand|Ortronics

Cat6 Patch Cords:

Yellow Clarity Cat6 cords xx= length OR-MC6xx – 04
Pink Clarity Cat6 cords xx= length OR-MC6xx – 0Pink
Blue Clarity Cat6 cords xx= length OR-MC6xx – 06
Green Clarity Cat6 cords xx= length OR-MC6xx – 05

Cat5e Patch Cords:

Product Description: Part Numbers:	White Clarity Cat5e cords xx= length OR-MC5exx – 09
 Product Description: Part Numbers:	Pink Clarity Cat5e cords xx= length OR-MC5exx – 0Pink
Product Description: Part Numbers:	Blue Clarity Cat6 cords xx= length OR-MC5exx – 06
Product Description: Part Numbers:	Green Clarity Cat5e cords xx= length OR-MC5exx – 05
	•

COPPER PATCH CORDS:

PATCH CORD COLOR SCHEME CHART

Patch Panel to Network	Color	Category Rating
Computers or other	Yellow	6
Computers or other	White	5e
Security Cameras	Pink	5e / 6
Wireless AP's – Non-Erate	Blue	5e / 6
Wireless AP's - Erate	Green	5e / 6

2.12 WALL MOUNTED OPTICAL FIBER PATCH PANELS

A. Use wall-mounted optical fiber termination panels with 24-strand capacity, hinged door, cable strain relief, slack storage, and LC duplex adapter panels with and provisions for two splice trays. Include adequate amount of duplex LC adapter panels for termination of all installed fiber strands plus 10% for growth.

Approved Manufacturer: Ortronics Product Line Part Number: OR-615SMFC-24P/S Fiber box OR-OFP-LCD12MB- 6 port MM Adapter Panel OR-OFP-LCD12AC - 6 port SM Adapter Panel OR-62600003 Fusion splice tray, 12 fibers

2.13 RACK MOUNTED OPTICAL FIBER TERMINATION PANEL

A. At the MDF use one (1) or more 72-port rack-mounted optical fiber termination panels with cable strain relief, grounding lugs, slack storage and the appropriate number of LC duplex connector panels. Multiple distribution boxes may be needed, depending on the number of fiber backbones needed to serve the site. Populate with the appropriate number of adapter panels for Duplex LC, multimode or single. Use only duplex LC adapter panels in new installations. (Installations in existing facilities may require SC adapter panels.)

Approved Manufacturer: Ortronics Product Line Part Number: OR-FC04U-P

B. At the IDF use a 19"rack mountable cabinet with the appropriate number of fiber termination panels, cable strain relief, grounding lugs, slack storage and duplex LC adapter panels. Populate with the appropriate adapter panels for Duplex LC multimode or single-mode backbone cabling. Use only duplex LC adapter panels for new backbones.

> Acceptable Manufacturer: Ortronics Product Line Part Number: OR-FC01U-P OR-

FC02U-P

C. Install the appropriate number and type of adapter panels at each patch panel. Use only duplex LC

Mark Twain School for the Talented and Gifted 27 15 01-PREMISE WIRING GUIDE29CSP 207459Org #220August 16, 2024Dallas ISD Construction ServicesAugust 16, 2024
adapter panels.

Approved Manufacturer: Ortronics Product Line Part Number: OR-OFP-LCD12MB OR-OFP-LCD12AC Legacy Part Numbers: Type "SC" Products (for use matching already-installed FOC) OR-OFP-SCD06MB OR-OFP-SCD06AC OR-OFP-SCD08MB

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OR-OFP-
SCD08AC OR-
OFP-
SCD12MB OR-
OFP-
SCD12AC
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2.14 FIBER OPTIC TERMINATION CASE

A. If needed, use termination case sized for single-mode and multimode fibers, nonmetallic with clear plastic cover, 12-fiber capacity and compatible with termination case and termination methods. Install in the appropriate termination case. Use only above ground and within a weather-tight enclosure.

Approved Manufacturer: Coyote Preformed Line Products

Coyote Series Wall- or Structure-Mount LCC, PUP, RUNT or Single Terminal Closure with shelves as required (depending on strand counts. branches and conditions).

2.15 OPTICAL FIBER CONNECTORS

A. Use field installable LC connectors, which meet or exceed the performance specifications in

ANSI/TIA-568-C.3.

Approved Manufacturer: Ortronics Product Line Part Number: OR-205KAN9GB-SM – Single-mode LC – 25-pack OR-205KAN9GB-MM – Multimode LC – 25-pack

2.16 OPTICAL FIBER JUMPERS

In some scenarios, Optical Fiber Jumpers are to be provided and installed by Equipment Racking (Rack & Stack) Contractor and not the cabling contractor. In most situations (especially in new construction), the Cabling Contractor, working under the GC will be responsible for procuring and installing Optical Fiber Jumpers. Contractor is also responsible for testing and certifying end-to-end channel integrity – including FOC patch cords connected at patch panels in the various IT rooms.

A. Duplex 50/125-μm OM3/4 (and/or single-mode) optical fiber jumper cable, 1 - 3 m long with 3.0 mm Duplex LC optical fiber connectors on each end. Type A-A and A-B, as required.

> Approved Manufacturer: Ortronics Product Line Part Numbers: OR-P1RF6LPAZAZxxxM LC/LC A-A Multimode x=length

OR-P1DF6LPAZA00xxxM LC/LC A-B Multimode x=length OR-P1RC6IPUZUZ00xxxM LC/LC A-A Single-mode x=length OR-

Mark Twain School for the Talented and Gifted 27 15 01-PREMISE WIRING GUIDE31CSP 207459Org #220August 16, 2024Dallas ISD Construction ServicesAugust 16, 2024

B. Duplex 50/125-μm OM3/4 (and/or single-mode) optical fiber jumper cable, 1 - 3 m long with SC optical fiber connectors on one end and GBIC-compatible connector on the other end. (For GBIC with LC connectors).

NOTE: <u>These jumper types may be required for installation with already-existing cable plants.</u>

Approved Manufacturer: Ortronics Product Line Part Numbers: OR-61150D50xxxM79C LC to SC Multimode x=length OR-626DC3IL-RSxxxM SC to LC Single-mode x = length

2.17 OPEN FRAME EQUIPMENT RACK

A. Use open frame, 19" equipment rack, 7' overall height with flange base, mounting rails drilled front and back and tapped to EIA-310-D Standards. Provide horizontal and dual channel front and back vertical wire management.

Approved Manufacturer: Hoffman EDR19FM45UCM2

or equal by: CPI Dama c Middle Atlantic Legrand|Ortroni cs: Part Numbers: OR-19-84-T2SDB Black OR-19-84-T2SD Aluminum

Color: Black for new construction or match existing.

B. In some cases, where heavy networking or battery backup equipment is to be supported, Contractor may use open frame equipment racks with extra wide rails to provide additional support and stability. These are to be 19" wide, 7' overall height with flange base and mounting rails drilled front and back and tapped to EIA-310-D Standards.

These units are to be placed only as required with locations and use to be reviewed and approved by DISD IT Staff.

Approved Manufacturer: Legrand|Ortronics Part Numbers: OR-MM6706 – 7' H, 45U, 6" Rail Depth OR-MM6710 – 7' H, 45U, 10.5" Rail Depth

C. In newly constructed Data Centers or WAN Hub/Network Switching Facilities, where significant numbers of Networking, Routing and Switching Chassis are used that have side-discharge cooling fans and where temperature control may be an issue; consideration should be given to using an open racking, air-vectoring system with appropriate vertical cable-management designed for this purpose.

System should be deployed only as needed and in consultation with Dallas ISD IT Staff.

Approved Manufacturer: Legrand|Ortronics Part Numbers: OR-MM10716 – 7' H, 45U, 16.25" honeycomb rail depth OR-MM10AB716xx – Airflow Baffles, 7'H, xx = vertical mgr. cage width OR-MM10VMD712 – 7'Hx12.13"Wx13"D Front vertical mgr. cage w/cover OR-MM10VMD716 – 7'Hx16.36xWx13"D Front vertical mgr. cage w/cover

2.18 FREE STANDING EQUIPMENT CABINETS

A. Equipment Cabinet -19" 4 post Equipment Cabinet shall have the following minimum

requirement

S:

Description:

Approved Manufacturer:

Hoffma n CPI Damac Middle Atlantic Legrand|Ortroni cs 4 Post 77" (42 rack spaces) of panel space Welded frame construction Locking front and rear doors Adjustable front and back equipment mounting rails Rails drilled and tapped to EIA-310-D Standards 10 position electrical outlet strip Removable side panels Top mounted, thermostatically controlled exhaust fan Steel vented Rear split doors Integral vertical and horizontal wire management Color: Black for new construction or match existing

B. In some facilities – especially those involving remodeled spaces – where the IT room location is not as secure as desired (i.e. housed in a storage room or janitor's closet), network equipment should be housed in secure cabinets that also provide room for internal cable management. In these cases, a Network Equipment Cabinet that provides adequate width for cable intensive applications should be provided. These allow large cable bundles to be managed at the sides and do not impede airflow. The cabinet shall include the following minimum requirements:

Approved Manufacturer: Legrand|Ortronics Part Number: GXC453136-00005

Description: 31.5"W X 45U X 36"D Frame

1. Adjustable mounting rails - 45U, Tapped #12-24 hole pattern – with RU Labels Black

- 2. Full Mesh locking, 16AWG, Front of Rack door
- 3. Split, Solid, 14 AWG Rear of Rack Doors
- 4. Left and Right Locking Side Panels, 2-Piece
- 5. Top Panel, Vented (2 Fan Cut-out), w/ 2 cable ports
- 6. Vertical Manager Fingers for Front Vertical Rails
- 7. Fan, 6" DIA., 12-Volt, 235 CFM, 24" Cord, NEMA 1-15P Plug, Black

2.19 WALL MOUNTED CABINETS

A. Provide wall mounted cabinets in every portable building or otherwise specified locations approved by District ITS Department. When wall mounted cabinets are installed in an area where students may be present, they shall be installed high enough to be out of reach of students, and of the totally enclosed and lockable type. Cabinets are to be sized for the application.

B. Wall Mount Cabinet shall have Smoked Plexiglas Front Door with 18awg steel frame with 24" cabinet depth. Two (2) adjustable mounting rails with #12-24 tapped holes adjust every 1.0" front to rear. Front rail factory mounted 3.5" from frame face.

> Approved Manufacturers: Ortronics Part Number: OR-DCW122424P-B 12RU OR-DCW192424P-B 19RU OR-DCW262424P-B 26RU

2.20 POWER STRIPS

A. Provide Power Strips in every full size cabinet. Power Strips should have two (2) convenience outlets on the front and eight (8) on the back. There shall be an integral circuit interrupter, surge suppression, and a shielded on/off switch. The switch shall be manufactured with a guard so as to prevent accidental powering off. Provide a 15' connecting cord.

> Approved Manufacturer Hoffman Part Number: DPIN1910155

2.21 WIRE MANAGEMENT

A. When not included with the rack, provide Horizontal and Vertical wire management in every open rack and cabinet for management of patch cables and horizontal cabling. Horizontal units shall be provided in a quantity of two (2) per cabinet.

Approved Manufacturer: Hoffman Legrand|Ortroni cs Part Numbers: Hoffman: DCHS2 Horizontal DV6D7 Vertical Legrand|Ortroni cs: OR-MM6HM62RU Horizontal manager OR-DVMS706 Dual Vertical manager for 2 post EIA rack

B. When using angle-faced patching panels for the Cat6 horizontal UTP cable system, horizontal cable managers are required only for support of FOC patching cables in the fiber field portion of the rack. Horizontal support of UTP patching cables is not required in that these are relatively stiff and can be run from their respective modular outlets on patch panels directly to the vertical wire managers along the sides of the rack where slack loops are draped/stored and the other ends of the cables are run directly to switch ports located in the same rack.

Under this scenario, extra wide, full-depth vertical cable managers with combing fingers on both sides should be used to route, comb and store patch cables. Vertical managers between racks should be wider than those mounted on the ends of the rack rows so as to manage patching cables from both sides.

Approved Manufacturer: Legrand|Ortronics Part Numbers: OR-MM6VMD706 – Full-Depth 6.5" Wide x 8" Deep OR-MM6VMD710 – Full Depth 10.5" Wide x 13" Deep OR-MM10VMD712 – Full Depth 12.13" Wide x 13" Deep OR-MM10VMD716 – Full Depth 16.13" Wide x 13" Deep

Mark Twain School for the Talented and Gifted 27 15 01-PREMISE WIRING GUIDE37CSP 207459Org #220August 16, 2024Dallas ISD Construction ServicesAugust 16, 2024

2.22 INFRASTRUCTURE SUPPORT SYSTEM

All Cable shall be properly supported. The infrastructure support system shall be comprised of three (3)

types of support.

A. Cable Runway Systems (Ladder Racking) to be used within the MDF and IDF.

Approved Manufacturer: Hoffman or equal by: CPI DMA C Hoffman Wiremold Legrand|Ortron ics

Supply the appropriate accessories, support brackets, and connecting kits for the specific application. Use appropriate bonding parts or couplers that are listed for the purpose.

B. Cable Basket Tray Systems to be used for the main cable paths in the hallways. Only to be used in new spaces.

Approved Manufacturer: Cablofil Part Number: CF54/300 CF54/15 0

Design the cable tray system to the specific school/location and size so as not to exceed a 50% fill ratio. Use all manufacturer-recommended parts for assembly and for electrical bonding. Use center hung hanger brackets, trapeze hangers, and/or wall mounted brackets. Support every 5' along the length of the tray. Use appropriate firestopping transitions through fire rated walls.

C. Cable hangers are to be spaced no more than 60" apart. These are to be used on new schools when the cables leave the cable tray and on existing schools where cable tray does not exist. Use only hangers sized and approved for data cable installation. They must have rounded edges and do not exceed the recommend fill. Bridle Rings are not acceptable. Use J-hanger or Bridle Strap assembles. Cables installed between hangers are to have no more than a 9" drape at the midpoint.

Acceptable Manufacturer: Hilti, Erico Caddy, or B-Line

2.23 RACEWAYS/CONDUITS

Mark Twain School for the Talented and Gifted 27 15 01-PREMISE WIRING GUIDE38CSP 207459Org #220August 16, 2024Dallas ISD Construction ServicesAugust 16, 2024

There are basically six (6) types of raceway that may be installed. Install the raceways in accordance with the National Electrical Code and the ANSI/TIA 569 Standards. Pay particular attention to fill, bend radius, and number of 90 degree elbows between access points and junction boxes.

Use the following where applicable:

- 1. Schedule 40/80 PVC (Underground)
- 2. IMC steel conduit (Outside above ground)
- 3. EMT (Inside)
- 4. Dual Channel Metal Raceway (Classrooms):
- 5. Acceptable Manufacturer: Wiremold/Legrand|Ortronics
- 6. Tele-Power Poles:
- 7. Acceptable Manufacturer: Wiremold/Legrand|Ortronics
- 8. Part Number: 30TP-412V352
- 9. In Computer labs, when required, use Wiremold pre-wired, two channel model and all appropriate fittings.

2.24 FIRESTOPPING

- A. Approved firestopping systems are to be installed in all locations where cabling system penetrate rated walls. These firestopping systems should be permanently installed, but should be able to be easily reentered in the event new or additional cables need to be added at a future date. All systems should be approved in advance by the Project Engineer.
- B. Acceptable manufacturers for firestopping are provided below.

1. Hilti CP 653 2"/4" Speed Sleeve, CP 658T 2"/4" Firestop Plug, 675T Firestop Board, CP 620 Fire Foam, CP 618 Firestop

Putty Stick

2. Wiremold Flamestopper Thru-Wall/Floor Fitting Systems for New & Retrofit Applications

3. STI EZ-Path System

2.25 SURFACE RACEWAYS

- A. Wall surface-applied enclosed metal raceways (i.e. Wiremold/Legrand|Ortronics) are to be considered for electrical and low-voltage cabling but its application will be limited due to cost. These systems should only be provided within existing building installations, where wall penetration is not possible. Electrical/cable raceways cast into the concrete floor system and raised flooring systems will not be used due to the cost. All raceways shall be installed so as to be as discrete as possible with little or no disturbance to classroom functionality or aesthetics.
- B. Classrooms

Wiremold/Legrand|OrtronicsV2400D raceway shall be installed in classrooms where access to wall cavity is not possible to each outlet location. The V2400D dual channel raceway will accommodate the installation of quad isolated ground electrical outlets utilizing the V2444D-2A "over the raceway" 2-gang device box, and a V2444D "over the raceway" 2 gang device box for the installation of two (2) Category 5e/6 outlets with an Ortronics Series II Faceplate and Category 5e/6 inserts. Installer is responsible for all fittings to install required number of outlets in each classroom when installing this raceway.

Approved Manufacturer: Wiremold/Legrand|Ortronics Part Number: V2400BD-FW Base V2400C-FW Cover V2444D-FW Device Box

C. Computer Labs

Mark Twain School for the Talented and Gifted 27 15 01-PREMISE WIRING GUIDE40CSP 207459Org #220August 16, 2024Dallas ISD Construction ServicesAugust 16, 2024

When required, computer lab raceway shall be Wiremold Series AL4300 prewired metal dual channel raceway with the LPB3S2 bezels supporting the proper attachment of jacks. Raceway shall accommodate twenty (20) technology work area outlets and ten (10) quad isolated ground electrical outlets. Raceway system is to be installed so that an outlet can be accessed from any wall in the computer lab. Installer is responsible for all fittings to install required number of outlets in each classroom when installing this raceway.

Approved Manufacturer: Wiremold/Legrand|Ortronics Part Number: AL4320 (raceway) LPB3S2 (low profile bezels)

2.26 LISTED BUILDING ENTRANCE PROTECTORS

A. Protect all copper cables run between buildings with approved over-current protection. Use the protector module with IDC type input and output terminals, 100-pair capacity and female mounting base, equipped with 230 volt gas protector modules. Provide sufficient protector modules to completely populate all building entrance terminals.

(Note: Both ends of cables should be equipped with entrance

protection systems) Approved Manufacturer: Circa

2.27 SPLICE HOUSING

- A. Encapsulated or re-enterable splice housing, sized as required with bonding straps, accessories, end caps and encapsulate as required.
- B. Splice modules (such as 710 series or MS2) for use within splice housing.
- C. The splice closures for the portable buildings shall be of the cabinet type that will house enough splice bays for the particular installation. Splice tray shall accommodate at least twelve (12) mechanical or fusion splices.

2.28 UNINTERRUPTIBLE POWER SYSTEMS

- A. For new schools a single Central UPS system (minimum 10KVA or sized to service MDF and all IDFs) shall be installed in the MDF. All associated IDFs will be supported via electrical tie services from the MDF. Electrical cable sized appropriately shall be installed from the MDF to each associated IDF room and terminated as the main electrical feed for the IDF. (Refer to Technical Design Guidelines Division 27 Figure 27 05 00 07)
- B. No UPS systems are desired at Portable Building, due to maintenance issues.
- C. In existing schools, various UPS systems will be installed at new IDF, wall mounted cabinets, and computer labs.
- D. The UPS system(s) have to be sized large enough to the handle the load for each application. Due to the weight of the batteries, UPS system(s) provided shall be adequate for the anticipated load in all rooms with a "keepalive" time of 1 hour.

UPS and Battery stacks shall be sized to accommodate approximately 75 percent of the full load in amperes. Supply SMART UPS Software.

Approved Manufacturer: American Power Conversion

2.29 PROJECTOR TO MULTIMEDIA

OUTLET CABLES NOTE: Non-GC

<u>Scope</u>

For each ceiling-mounted projector location install the following plenum-

rated cables: A. One (1) Hi-Res Component Video Mini-Coax

between the SVGA connectors

Approved Manufacturer: Belden

B. One (1) Category 6 installed between RCA connectors

Approved Manufacturer: Superior Essex

C. One (1) HDMI 1.3 compliant cable between the HDMI modular connectors. A pre-manufactured cable is preferred in this application.

Approved Manufacturer: Belden

2.30 WIRELESS ACCESS POINTS

A. Surface Mounted Device Box for single Category 5e/6 insert installed adjacent to Wireless Access point

Approved Manufacturer: Wiremold

- B. Category 5e/6 Insert and Faceplate to be installed in Surface-mounted box
 Approved Manufacturer: Ortronics Product Line
- C. Protective Cover for high potential for damage areas Approved Manufacturer: Hoffman DU606030P.

2.31 PORTABLE BUILDING

CONNECTIVITY NOTE: Excludes

Construction Swing Space A.

Outdoor Enclosure and

Cable

Approved Manufacturer and Part Number:

Coyote Century ESTC-144S Outdoor Cabinet Century OST-103F 12-Strand Fusion Splice Tray Cable: 24-strand Triple Jacket Double Armor OSP MM 50µm Fiber

B. Indoor Cabinet and Cable within Portable Buildings

Approved Manufacturer and Part Number:

Ortronics OR-401045284 – Series II patch panels for copper multimedia Ortronics OR-S22600 – Jacks OR-625MMC-12PD1RB – Fiber cabinet, 6-SC multimode duplex (for 12 fibers) OR-625MMC-24PD1RB – Fiber cabinet, 12-SC multimode duplex (for 24 fibers) Ortronics OR-60900343 – SC adapter panel Ortronics OR-62100040 – 6 strand housing Ortronics OR-62100048 – 6 strand MM adapter Ortronics OR-626PF9FR-FZ001M – simplex pigtail MM 50u 1m (2 required) OR-P1DF2LRFZFZxxxM – SC Duplex, x=length Century C10100 – Fusion Splice Holder Superior Essex 1C006AG01 – 6 strand triple jacket double armor OSP MM 50u fiber Legrand|Ortronics Product Line – LTP006EB3010/25 6 strands OM3

2.32 BIOSCREEN CLOCK

Approved Manufacturer and Part Numbers:

Timeware Primetime Bioscreen BS-1040 JLB-Series LCD Panel/Touchscreen Timeware Bioscreen Mounting Bracket

1. Category 6 Data Cable provided with IEEE 803.3af Power Over Ethernet (PoE)

2. Conduit and single-gang backbox

A. Flush-mount with conduit/backbox/cabling inside wall, where practical. Surface mount on solid

and CMU walls using 2"x6" or 2"x8" stand-off block (See details sheets

Figure 2.3A-D). B. BIOscreen to be mounted in compliance with ADA requirements.

C. Contact

Construction Questions: Network Service ITS Bond Project Manager 972-925-5670





Mark Twain School for the Talented and Gifted27 15 01-PREMISE WIRING GUIDE45CSP 207459Org #220August 16, 2024Dallas ISD Construction Services



Mounting Detail



Figure 2.3C Bio Screen Mounting Detail – Surface Mount



Figure 2.3D Bio Screen Mounting Detail – Blocking

Mark Twain School for the Talented and Gifted27 15 01-PREMISE WIRING GUIDE48CSP 207459Org #220August 16, 2024Dallas ISD Construction Services

PART 3 -

EXECUTION

EXECUTION

Installation Contractors are to provide industry best practices and follow all references and guidelines mentioned in this specification package. Any deviation from this section must be approved by DISD ITS Department prior to installation of products. Installation shall not progress without a complete and approved design package either provided by the assigned project Architect or an Independent Cable System design consultant.

3.1 PRE-INSTALLATION SITE SURVEY

- A. A mandatory site survey shall be performed prior to any work being done. A representative of the District and a representative of the Installation Contractor shall meet at the designated school to perform an in-depth Site Survey based on provided design documentation. This Site Survey will be used to:
 - Determine exact locations of all work area outlets, backbones, portable buildings, MDF and IDF requirements. Raceways/Pathways shall be run overhead. General contractor shall provide conduit with pull string to above accessible ceiling for each telecom, security, access control, etc. device.
 Determine if any electrical and UVAC shannes will be required for a
 - 2. Determine if any electrical and HVAC changes will be required for a fully operational system.
 - 3. Examine areas and conditions under which the system is to be installed.
 - 4. Review areas of potential interference and resolve conflicts before proceeding with the work.
 - 5. Coordinate with the General Contractor and/or the School's Principal to plan the crucial scheduled completion dates of the cable plant, equipment room and telecommunications rooms.
- B. Contractor is not to proceed with any work until the District or General Contractor issues a purchase order or contract for the project.

3.2 HANDLING AND PROTECTION OF EQUIPMENT AND MATERIALS

A. Contractor is responsible for safekeeping of their own and the School's property, such as equipment and materials to be used on the job site. The owner assumes no responsibility for protection of above-named property against fire, theft, and environmental conditions.

Mark Twain School for the Talented and Gifted 27 15 01-PREMISE WIRING GUIDE49CSP 207459Org #220August 16, 2024Dallas ISD Construction ServicesAugust 16, 2024

3.3 PROTECTION OF OWNER'S

FACILITIES

A. Effectively protect the owner's facilities, equipment, and materials from dust, dirt, and damage during construction.

B. Work only in designated areas. Keep installation personnel out of undesignated work areas.

C. Absolutely No Smoking or Use of Tobacco Products is allowed on School property.

- D. Take breaks only in designated areas. Pick up all trash and dispose of it after each break.
- E. Pick up all trash, replace ceiling tiles and return furniture and office equipment to original locations before leaving a room. All equipment in all areas should be tested and left in working order.

F. If necessary, furniture and floors shall be cleaned and/or dusted prior to exiting any work area.

- G. Contractor's workers are not to use furniture in lieu of ladders or appropriate scaffolding to reach overhead workspaces. Ladders and scaffolds are to be manned in accordance with District policy and OSHA regulations.
- H. Do not work in areas where hazardous materials are known to exist without proper preparation and permission. Check with the school district for locations of asbestos and other hazardous materials before starting work at any existing school site.
- I. The Installation Contractor's job foreman shall do daily inspections of the areas where work is going on to assure safe working conditions and that every work area is left clean and as it was before start of work.

3.4 INSTALLATION

- A. Receive, check, unload, handle, store, and adequately protect equipment and materials to be installed as part of the standard operating procedures. Store tools and materials in areas as directed by the owner's representative. Include delivery, unloading, setting in place, fastening to walls, floors, ceilings, or other structures where required, interconnecting wiring of system components, equipment alignment and adjustment, and other related work whether or not expressly defined herein.
- B. Install materials and equipment in accordance with applicable standards, codes, requirements, and recommendations of national, state, and local authorities having jurisdiction, and National Electrical Code® (NEC) and with manufacturer's printed instructions.
- C. Adhere to manufacturer's published specifications for pulling tension, minimum bend radius, and sidewall pressure when installing cables. Where manufacturer does not provide bending radii information, minimum-bending radius shall be 15 times cable diameter. Arrange and mount equipment and materials in a manner acceptable to the engineer and the owner.
- D. Penetrations through floors shall utilize intermediate metallic conduit (IMC) or galvanized rigid conduit (GRC) sleeves and shall be fire-stopped after installation and testing, utilizing a firestopping assembly approved for that application. Installations through fire-rated walls shall utilize properly sized Electrical Metallic Tubing (EMT) sleeves with bushings installed on both sides and shall be properly fire-stopped after installation and testing, utilizing a firestopping assembly approved for that application. A minimum of two (2) 4" sleeves shall be installed for access to IDFs and three (3) for MDF. Use a minimum of 1" sleeves for access to classrooms. Properly fire seal after the installation of horizontal cables.
- E. Install station cabling to the nearest telecommunications room (IDF) per design documents, unless otherwise noted. Workstation cables shall not exceed 285' from the outlet to the patch panel in the IDF.

F. Installation shall conform to the following basic guidelines:

- 1. Use only approved wire, cable, and wiring devices.
- 2. Provide neat and uncluttered wire terminations.
- 3. All Cable shall be installed in a neat and workmanlike manner. Comb and neatly bundle all cables entering the MDF and IDFs. Properly support the cables within these rooms and store the service loops in a neat and orderly manner. Use Velcro ties for re-entry of the

bundle and do not over tighten. Above ceilings in plenum spaces us ties that are plenum rated.

4. All cables will be permanently labeled 1" from the termination of each end of each cable.

Labeling shall be done with field printers. Other than for field installation organization,

handwriting on cables and/or labels is not permitted.

- 5. All Cables, Patch Panels and Wall Plates will be permanently labeled with an alpha numerical scheme approved by the District ITS Department per Section 3.6 below.
- G. Cables shall be properly supported at a maximum of 5' intervals with no more than 9" of drape between support points. The cable suspension system shall be independently supported from the structure and not attached to the ceiling support wires or other conduit systems. Limit the number of cables supported by a single j-hook or other device to 50. In existing schools when possible install the cable and independent cable support system above A/C ducts and HVAC mixing boxes.

H. Install adequate support structures for a 10' service slack loop on each cable in each MDF and IDF.

Service loops shall not be stored in round coils.

- I. Support riser cables every three (3) floors and at the top of the run with cable grips. Limit number of four-pair data riser cables per grip to 50.
- J. Install cables in one continuous run per ANSI/TIA-568-C.0. Splices in the horizontal cable system and of any workstation cables shall not be allowed. Splices of backbone cable shall only be allowed as permitted at predetermined locations with proper means and methods.
- K. Provide over-voltage protection on both ends of cabling exposed to lightning or accidental contact with power conductors. Properly ground protectors according to the National Electrical Code (NFPA 70) and the ANSI/TIA 568 and 569 Standards.
- L. Properly bond all equipment racks to a grounding buss that is connected to the building grounding system with a minimum of #6 AWG copper wire. Grounding cables are to be uninsulated and marked with green adhesive tape or insulated with green insulation. Grounding/Bonding system shall meet ANSI/TIA 607 Standards.
- M. All cables shall be concealed in ceilings and hollow walls where possible. Where ceiling and walls are not accessible, use properly sized surface-mounted conduit or metallic raceways with boxes that permit proper bending radiuses. (Consider using term radii)
- N. Portable Buildings: Each existing school portable building will require a data connection to the campus network. Typically there will be clusters of eight (8) portable buildings with two classrooms per building. Connect them to the campus in the following manner.

- 1. Near the cluster of portable buildings install a centrally-located outdoor cabinet mounted in the walkway cover. Cables from the MDF and the portable buildings shall come up into this enclosure.
- 2. Install a wall mounted cabinet in each portable building. Within this cabinet will be a 12- port patch panel for the two classrooms, a fiber termination box, wire management devices and a small electronic LAN switch. Install this cabinet near existing power if possible.
- 3. This "small" switch should be "manageable" via the existing SNMPbased network management/monitoring system.

4. From a point nearest the internal wall mounted cabinet in each portable building, run a

1" conduit to the external fiber cabinet in the walkway cover. At the portable building stub the conduit up and into the wall mounted cabinet within each portable building. Weatherproof these penetrations as needed.

- 5. Install electrical grade schedule 40 PVC conduit underground. Install IMC conduit where the conduit come out of the ground and outside of the building above grade. Use sweep IMC 90 degree elbows and bends where the conduits are turned up or where turns are needed.
- 6. Trench and backfill or horizontally bore to a minimum depth of 2' below grade. Make all attempts to locate any existing utilities, water sprinkler piping, telephone, and electrical lines before trenching and boring. Only as a last resort will saw cutting and patching of driveways and walkways be permitted.

7. Run specified fiber cable from the MDF to the external fiber cabinet in the walkway cover.

Leave a 10' service loop on each end.

- 8. Run a minimum of a 6-fiber cable from the external fiber cabinet in the walkway cover to the wall mounted cabinet in each portable building.
- 9. If a proper grounding point is not supplied at the portable building, install an 8' grounding rod and run a number 6 AWG Solid armored ground cable from the ground rod to the wall mounted cabinet. Use UL listed termination devices for the ground rod and the cabinet.
- 10. All copper-based cables running to/from portable buildings shall be equipped with lightning protection blocks on both ends.

3.5 GROUNDING

- A. Grounding shall conform to ANSI/TIA 607(A) Commercial Building Grounding and Bonding Requirements for Telecommunications, National Electrical Code®, ANSI/NECA/BICSI-568 and manufacturer's grounding requirements as minimum.
- B. Bond and ground equipment racks, housings, messenger cables, and raceways.
- C. Connect all MDF and IDF cabinets, racks, and frames to single-point ground which is connected to building ground system via #6 AWG green insulated copper grounding conductor.
- D. For each MDF and IDF, insure grounding system and building ground is tested to be in compliance with ANSI/TIA-607(A).

3.6 LABELING

Labeling shall conform to ANSI/TIA-606(A) standards. In addition, provide the following:

A. Label each outlet with machine-printed, permanent, self-adhesive label with minimum 3/16" high

characters.

B. Label each cable with machine-printed, permanent self-adhesive label with minimum, 1/8" high

characters, in the following locations.

- 1. Inside receptacle box at the work area.
- 2. Behind the communication room patch panel or punch block.
- C. Use machine-printed labels on face of data patch panels. Provide facility assignment records in a protective cover at each telecommunications room location that is specific to the facilities terminated therein.

D. Use color-coded labels for each termination field that conforms to

ANSI/TIA-606(A). E. Mount termination blocks on color-coded

backboards.

- F. Permanent labels shall be machine-printed. Hand-lettered permanent labels shall not be acceptable. Hand lettering may be used on cable jackets or temporary labels during the construction process.
- G. Label cables, outlets, patch panels, and punch blocks as follows:

Each end of the cable shall be labeled with a To/From identifier. One or both ends will identify the

MDF/IDF end of the cable while the other end will typically identify the room and port location.

1. To/From as IDFxxyzz/Rxxxxyy where 2. MDF/IDF # - Patch Sequence letter – Port # Format: IDFxxyzz (xx = MDF/IDF #, y = Patch Panel Sequence 3. letter A-Z, zz = Port #) Examples: IDF03A35 for IDF # 03, patch 4. panel A, port 35 5. MDF01D13 for MDF # 01. patch panel D, port 13 6. Room # - Port letter Format: Rxxxyy (xxxx = Room #, yy = Port letter 7. within room)

(the 4th port)

R1035AB for Room # 1035, port AB (the 28th port (A=26 + B=2))

Each outlet, patch panel port and punch block shall be labeled at the end points as defined above.

3.7 TESTING

A. Testing shall conform to the latest version of the ANSI/TIA-568-C.1 Standards/ANSI/TIA-1152

Testing Standards for Balanced Twisted Pair Copper Cabling and/or the warranty requirements of

Ortronics and Superior Essex. Testing shall be accomplished using level III or higher field testers loaded with the most up to date firmware. Fluke 4300 series testers are the preferred tester. If using any other approved tester, provide end user run time software to store, read, and print test results. Within the submittal package specified above, provide three (3) CD's and hardcopies with all of the Copper test results for each school. Identify each cable by label address.

B. Test each pair and shield of each cable for opens, shorts, grounds, attenuation and pair reversal.

Correct grounded and reversed pairs. Examine open and shorted pairs to determine if problem is

caused by improper termination. If termination is proper, tag bad pairs at both ends and note on termination sheets.

1. Perform testing of copper cables with tester meeting ANSI/TIA-568-C.1 requirements.

2. If copper backbone cable contains more than one (1) percent bad pairs, remove and replace entire cable.

- C. Initially test optical cable with a light source and power meter utilizing procedures as stated in ANSI/TIA-526-14A: OFSTP-14A Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant and ANSI/TIA-526-7 Measurement of Optical Power Loss of Installed Single-mode Fiber Cable Plant. Measured results shall be plus/minus 1 dB of submitted loss budget calculations. If loss figures are outside of this range, test cable with optical time domain reflectometer to determine cause of variation. Correct improper splices and replace damaged cables at no charge to the Owner.
 - 1. Cables shall be tested at 850 and 1300 nm for multimode optical fiber cables. Cables shall be tested at 1310 and 1550 nm for single-mode optical fibers.
 - 2. Testing procedures shall utilize "Method B" One jumper reference.
 - 3. Bi-directional testing of optical fibers is required.
- D. Attenuation test shall result in acceptable level as defined by manufacturer.

E. Insure grounding system and building ground is installed and tested to be in compliance with

ANSI/TIA-607(B).

F. Where any portion of the system does not meet the specifications or applicable standards, correct deviation and repeat applicable testing at no additional cost to the owner.

3.8 FIELD QUALITY CONTROL

- A. The Cabling Contractor will employ a project manager and inspectors to control the quality of each project. The Project Manager shall be a RCDD® (Registered Communications Distribution Designer) with current registration. He/she shall be responsible for quality control during installation, equipment set-up, and testing for all projects. The Project Manager shall employ Quality Control Inspectors in enough quantity to adequately inspect each project on a regular basis. These personnel shall also perform all final inspections of the projects. The Project Manager's responsibility is to assure concurrence and enforcement of the specifications and standards. The Inspectors shall be BICSI and/or Ortronics certified Technicians.
- B. Each Installation Contractor shall employ a superintendent or project manager as the single point of contact for their projects. During the course of the installations he/she is to provide coordination of work for each project, insure enforcement of this specification and standards, and provide technical information when requested. It is preferred that this person be an RCDD® (Registered Communications Distribution Designer) with current registration. He/she shall be responsible for quality control of the assigned projects during installation, equipment set-up, and testing.

C. All installation personnel shall be Ortronics Certified Technicians or Equivalent.

Mark Twain School for the Talented and Gifted 27 15 01-PREMISE WIRING GUIDE58CSP 207459Org #220August 16, 2024Dallas ISD Construction ServicesAugust 16, 2024

D. Installation personnel shall meet manufacturers' training and education requirements for

implementation of the extended warranty program.

E. Subcontracting by the Installation Contractor shall not be permitted without express written permission from DISD ITS Department. If permission is granted for any subcontractors, then that subcontractor shall be bound by this document and shall furnish proof of bonding and insurance requirements.

END OF SECTION

SECTION 27 5123

IP INTEGRATED ELECTRONIC COMMUNICATIONS NETWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The drawings and general provisions of the Contract Documents apply to this Section.

1.2 SUMMARY

- For IP-based equipment (ex: clocks, and digital signage equipment, etc.) requiring network drops, drop counts and locations to be identified by the Architect for inclusion in the scope of the installation. Dallas ISD-M&O to be notified immediately if additional network drops are required. Refer to Responsibility Matrix in Division 01 for procurement, installation and configuration of this type of equipment.
- B. Provide a complete turnkey Emergency Communications Interface integrated with the existing Dallas ISD District-Wide Emergency Communication System.
- C. This section includes a fully operational IP platform for district-wide internal and school communications system incorporating school safety notifications and general communications including but not limited to the following:
 - 1. The platform shall provide complete internal communications and employing state of the art IP Technology including the minimum functions listed.
 - a. Two-way internal intercommunications between staff locations and classrooms
 - b. Scheduled bell events
 - c. Emergency announcement that will override any pre-programmed zones assuring that all Emergency/Lockdown etc., are heard at each and every speaker location.
 - d. Capability of prerecording emergency announcements that can simply be activated by a simple Soft Key or via a dedicated push button.
 - e. Atomic Time Synchronization with Class Change Tones utilizing multiple, programmable schedules for each zone.
 - f. District wide, Emergency, group, all school and zone live voice paging
 - g. District wide, emergency, group, all school and zone paging for pre-recorded audio tones, music and voice.
 - h. Web-based user interface.
 - 2. The system shall support a minimum of 1000 level priorities which shall be user definable, allowing each end point to place a minimum of 5 different priority calls at the same time.
 - 3. Any authorized administrator shall be able to call from outside the school into any classroom, zone or entire school directly via the School District supplied SIP enabled Telephone Network. This shall allow remote monitoring, call-in annunciation and two-way conversation from outside the facility as well as paging into the system. (Compliance with NEMA Standard SB-40 for emergency communications in K-12 Schools)
 - 4. Authorized system users shall be able to create a minimum of twenty (20) automated sequences with emergency instructions, tones, and emails and relay activations and replay them.

275123-1 IP INTEGRATED ELECTRONIC COMMUNICATIONS NETWORK CSP 207459 August 16, 2024

- 5. Automated message strings shall be manually initiated from a single-button access on the console, on a SIP connected telephone, a panic button, from the web interface or via interface with third party systems.
- 6. Paging and two-way intercom features shall be accessible from any system console or SIP connected telephone for each campus.
- 7. The platform shall synchronize its system time to the network timeserver or a web-based time server.
- 8. Each single campus installation shall be locally survivable for intercom, paging, bells, and emergencies such as lockdown, even when the district connection is unavailable.
- 9. This specification establishes a minimum level of quality, features, and performance for individual components as well as the integrated system.

1.3 DEFINITION OF TERMS

A. Installer(s): Shall refer to the person, persons, or company who or which actually contracts to perform the work specified herein.

1.4 SUBMITTALS

- A. Product data for each component.
- B. Shop Drawings: Prior to proceeding with the work: Provide detailed equipment assemblies and indicate dimensions, weights, required clearances, method of field assembly, components, and location of each field connection, and a complete schedule of all equipment and materials with associated manufacturers cuts sheets which are to be used.
 - 1. Wiring Diagrams: Detail wiring for power, signal, and control systems and differentiate between manufacturer-installed and field-installed wiring. Identify terminals to facilitate installation, operation, and maintenance. Include a single-line diagram showing cabling interconnection of components and levels throughout system and impedances.
 - 2. Artwork drawings and lists indicating proposed nameplate nomenclature and arrangements for control panels and plug panels prior to fabrication reflecting equipment used.
 - 3. Each drawing shall have a descriptive title and all sub-parts of each drawing shall be labeled. All drawings shall have the name and locations of the project, Systems Contractor's name in the title block.
 - 4. Details and descriptions of any other aspect of the system, which must differ from the contract documents due to field conditions or equipment, furnished.
- C. FCC Approval: The system shall be approved for direct interconnection to the telephone utility under Part 68 of FCC rules and regulations. Systems, which are not FCC approved or utilize an intermediary device for connection, will not be considered. Provide the FCC registration number of the system being proposed as part of the submittal process.
- D. Product Certificates: Signed by manufacturers of equipment certifying that products furnished comply with specified requirements.
- E. Installer Certificates: Signed by manufacturer certifying that installers comply with requirements.
- F. Manufacturer Certificates: Signed by manufacturers certifying that they comply with requirements.
- G. Field Test Reports: Indicate and interpret test results for compliance with performance requirements. Include record of final matching transformer-tap settings, and signal ground-resistance measurement certified by Installer.

275123-2 IP INTEGRATED ELECTRONIC COMMUNICATIONS NETWORK CSP 207459 August 16, 2024

- H. Maintenance Data: For equipment to be included in maintenance manuals specified in Division 1.
 - a. Record of Owners equipment-programming option decisions.
 - b. All instructions necessary for proper operation and manufacturer's instructions.
 - c. "Proof of Performance" information.
 - d. Manufacturer's maintenance information.
 - e. Copies of non-proprietary computer programs and system set up disks documenting all programmable features of the installed system.
- I. Record Drawings: Prior to final acceptance, provide three (3) complete sets of drawings indicating all cable numbers and construction details in accordance with the actual system installation. Revise all shop drawings to represent actual installation conditions. These Record Drawings will be used during "Final Acceptance Testing".
- J. System Training: Submit the following information describing the training programs and system trainers as outlined in paragraph 1.6 of this specification and in accordance with Division 1 specifications.
 - a. Include with the submittal a preliminary staff development training program in outline form for review and approval by the owner's representative.
 - b. Include with the submittal a current copy of the trainer's certification from the manufacturer that certifies and identifies the trainer(s) who are eligible to provide training and support for the project.
 - c. Include with the submittal a current copy of trainer's need's assessment form which will be reviewed with the owner's designated representative for the system's preliminary system programming and configuration.
 - d. Include with the submittal copies of all documentation used to identify for the owner those participants attending and completing the training programs.
- K. A copy of the manufacturer's standard statement of warranty proving all equipment provided for the school communications network is covered with the required five-year warranty shall be included with the project submittal. This statement of warranty shall be provided on the manufacturer's stationary.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is an authorized representative of equipment manufacturer for both installation and maintenance of equipment required for this Section. Provide the following with in thirty (30) days after notification to proceed:
 - 1. Provide a list of installations that the Installer has specifically installed for verification by the Owner. Random installations from other vendors and/or Installers shall not be accepted. The Installer, not its employees, must meet these qualifications.
 - 2. The Installer shall be bondable.
 - 3. The Installer shall demonstrate to the satisfaction of the Owner or his representative that he has:
 - a. Adequate plant and equipment to pursue the work properly and expeditiously.
 - b. Adequate staff and technical experience to implement the work.
 - c. Suitable financial status to meet the obligations of the work.
 - d. Technically capable and factory trained service personnel at a local service facility to provide routine and emergency service for all products used in this project.
- B. Any Contractor, who intends to bid on this work and does not meet the requirements of the "Quality Assurance" paragraph(s), shall employ the services of a "Installer" who does meet the requirements and who shall provide the equipment, make all connections and continuously supervise the installation. A

subcontractor so employed as the "Installer" must be acceptable to the Architect/ Engineer. The "Installer" shall be identified within thirty (30) days of notification to proceed for acceptance by the Architect/Engineer

- C. Because the life expectancy of this type of communications structure normally exceeds 10 years, the owner expects continuity from the service provider. If the installing/servicing company has not been an authorized provider of the manufacturers product for at least 20 years, the following is required:
 - 1. A list of (2) systems manufacturers of which they currently are authorized service providers where the relationship exceeds 10 years
 - 2. A letter from the manufacturer outlining the details of changes in service providers over the last 20 years and what actions they will take to ensure continuity of service to the customer.
- D. Each major component of equipment shall have the manufacturers name, address and model number on a plate securely affixed in a conspicuous place. NEMA code ratings, UL Label, or other data that is die-stamped into the surface of the equipment shall be easily visible.
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.
- F. Comply with NFPA 70
- G. Comply with NEMA Standard SB-40 for Emergency Communications in K-12 schools. .
- H. Comply with UL 60950.

1.6 IN-SERVICE TRAINING

- A. The contractor shall provide and implement a complete and comprehensive staff training program for all administrators, facility staff members, and teachers. This mandatory training program will provide school staff a complete understanding of how to utilize and properly operate all functions
- B. The training program shall be implemented by a staff member/trainer employed by the contractor. The trainer must be factory certified to provide training on their product.
- C. All staff development training is to be coordinated through the owner's designated representative. As training sessions are completed, the trainer will provide the school's administrative staff and school district's staff a document listing all of the staff and faculty members who attended, received, and completed the training program.

1.7 WARRANTY

- A. Provide a <u>manufacturer's five-year warranty</u> of the school communications network equipment against defects in material and workmanship. This warranty will cover all electronic equipment, as well as analog clocks, speakers, and call-in switches. If any defects are found within the warranty period, the defective equipment shall be replaced at no cost (equipment only); a one year warranty shall be provided for labor.
- B. A copy of the manufacturer's standard statement of warranty proving all equipment provided for the school communications network is covered with the required five-year warranty shall be included with the project submittal. This statement of warranty shall be provided on the manufacturer's stationary. The standard five-year warranty is an important element in establishing a standard in quality. Manufacturers who circumvent the five-year warranty by offering special "extended warranties" that are not part of their normal published warranty will not be accepted.

- C. Contractor shall respond, excluding weekends and holidays, within 24 hours to any warranty service calls. If equipment cannot be repaired within 24 hours of service visit, the contractor shall provide "loaner" equipment to the facility at no charge.
- D. Make available a service contract offering continuing factory authorized service of the system after the initial warranty period.

1.8 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide the following system:
 1. Telecenter manufactured by Rauland-Borg Corp

PART 2 - PRODUCTS

2.1 SYSTEM REQUIREMENTS

- A. The platform shall utilize state of the art IP Technology for Call-in Notification, School Safety Paging and Evacuation tones, Atomic Time Synchronization, Class Change Tones utilizing multiple, programmable schedules for each zone, Two-way hands-free Internal Intercommunications and Paging, and Program Distribution. The system shall be easy to learn and operate. All standard programming shall be web based and user friendly to allow the system administrator the ability to easily program system features.
- B. Provide complete and satisfactorily operating district/school communications and district/school safety as described herein, using materials and equipment of types, sizes, ratings, and performances as indicated. Use materials and equipment that comply with referenced standards and manufacturers' standard design and construction, in accordance with published product information. Coordinate the features of all materials and equipment so they form an integrated system, with components and interconnections matched for optimum performance of specified functions.
- C. The platform shall be a single electronic system consisting of a minimum of 10 intercom channels for each campus, (classroom) IP speaker modules and calls switches, IP Zone Modules connecting corridor speakers, inside and outside horns, IP Administrative Consoles, SIP enabled PBX integration and district wide integration for paging, emergency notifications, calendar scheduling and configuration.
- D. Each Classroom shall be provided with an IP Speaker module interface and up to 5 different call-in switches, each with their own annunciation path and priority.
- E. Call-ins may automatically annunciate (display of priority and location) to administrative consoles, SIP enabled phones, and outside phones.
- F. Call-ins shall be programmed to automatically change priority and annunciation route based on age of call-in and original priority.
- G. Call-ins may have priority (and annunciation route) changed by user action from a console or SIP enabled phone.
- H. Call-in annunciation route shall include playing pre-recorded audio over speakers, sending a pre-configured email, and activating relays.
- I. The platform shall lend itself to expansion by simple addition of hardware modules.

- J. The platform shall directly connect to the WAN/LAN without the need for a separate server at each school location. Configuration, including bell schedules, calendars, and emergency sequences can remotely be created, changed, stored and downloaded to the system by an authorized user from a browser-based interface.
- K. The platform shall provide the ability to initiate school safety paging announcements, evacuation tones and take cover tones from any telephone or connected web-browser within the facility or outside the facility to any other location within the facility or district.
- L. The platform shall provide the ability to selectively communicate or monitor individual classrooms in emergency situations from any telephone within the facility or outside the facility to any other location within the facility; all communication within the classroom shall be hands free and will not require any interaction by the classroom user.
- M. The platform shall provide classroom users the ability to confirm that they have safely secured their classrooms during lockdown with a single button press.
- N. IP-addressable and POE powered speaker modules for individual rooms shall be system programmable and may be assigned any two, three, four, five or six digit number as well as name and description. Any extension may be reassigned at any time.
- O. IP-enabled two-way voice communication shall be available from any provided telephone or administrative console through any speaker in a campus. This shall allow hands-free communication to any classroom or any individual loudspeaker unit. A programmable pre-announce tone shall sound immediately before the intercom path is opened and a supervisory tone shall continue to sound at regular intervals when speaker monitoring is active, complying fully with all privacy legislation. Pre announce tone and supervisory tones shall be disabled during designated emergencies automatically.
- P. The platform shall allow users to configure multiple schedules per school, with a minimum of 500 unique events per schedule, and automatic Daylight Savings time correction. A minimum of 5 schedules may be active on any given day for each campus. User shall be able to select from 25 standard included tones as well as unlimited user created and uploaded audio files for class change signaling and messaging. In addition scheduled events shall include relay actions, email notifications, paging exclusions as system configuration changes. The platform shall allow control of the bell schedules via the district WAN/LAN without the need for a separate server at each school location. Bell schedules can remotely be created, changed, stored and assigned to calendar days for the local school by an authorized user from a browser-based interface.
- Q. Provide UPS backup for PA/Sound system.

2.2 EQUIPMENT AND MATERIAL

- A. Server Software
 - 1. Provides district wide paging, bell event scheduling, emergency notification and configuration for entire district.
 - 2. Ability to configure system and initiate system features, per school and district wide via web based interface.
 - 3. The software has the ability to sync system time to the Atomic Clock Signal or to the school's or districts network time server
 - 4. The software will provide a web-browser to deliver district wide emergency paging, pre-recorded messages and tones from any authorized computer in the facility or the district. The software must be capable of automatically notifying district personnel via the WAN of an alarm condition.

275123-6 IP INTEGRATED ELECTRONIC COMMUNICATIONS NETWORK CSP 207459 August 16, 2024
- 5. The software can automatically broadcast page emergency instructions via associated system hardware throughout an entire district when an alarm (e.g. lockdown, lockout, security, fire) is initiated via the web-based interface. The emergency instructions are preprogrammed and require no user intervention. The system provides redundant alarm annunciation over intercom/paging speakers and is not meant to replace primary fire alarm or security systems.
- 6. The software can be installed in cloud, virtual or physical server environments.
- 7. The web-based user interface supports secure HTTP browsing.
- 8. The server software supports encryption to ensure secure access.
- 9. The software shall support any combination of VoIP Telecenter Campus Controllers and Telecenter Page Modules for a minimum of 1000 facilities.
- 10. The software shall support a minimum of 50,000 IP Speaker modules, district wide.
- B. VoIP Single Campus Controller Rauland-Borg Telecenter Series with the following features and capabilities:
 - 1. Provides call routing for paging and intercom for a single facility
 - 2. System shall connect to the district provided Telephone Network via a SIP connection.
 - 3. Support a flexible numbering plan allowing two, three, four, five, or six digit extensions.
 - 4. SIP interface to a district provided Telephone Network shall be capable of allowing connected phones to display classroom call-ins, answer internal intercom call-ins, make pages and change priorities of call-ins in progress...
 - 5. Direct Dialing, two-way amplified voice intercom between any provided telephone or admin console and speaker without the use of a press-to-talk or talk-listen switch.
 - 6. Ability to place two levels of call-in from any call in switch
 - 7. The ability to answer intercom call-ins registered at administrative consoles and pre-selected telephones.
 - 8. The ability to automatically escalate incoming call-ins to an alternate telephone or group of telephones if they remain unanswered for a predetermined amount of time.
 - 9. The ability to manually upgrade an intercom call-in to an alternate telephone or group of telephones.
 - 10. The ability for classrooms to "check-in" via push button when they have successfully secured their location during emergency.
 - 11. Administrative console shall display locations that have not checked in to confirm their secured location and provide hands-free audio monitoring and communication to unsecured locations.
 - 12. The controller shall not need direct connection to any classroom via home run or distributed wiring. It shall communicate solely through the IP network.
 - 13. Single button access from any telephone on the system to distribute emergency announcements within the facility to all or select locations equipped with speakers. Emergency announcements originating from any assigned administrative telephone shall have priority over all regular system functions.
 - 14. Ability for administrative consoles and connected phones to selectively monitor audio at any two way speaker during an emergency.
 - 15. Stores a minimum of 48 hours' worth of Bell Event Schedules, all emergency notification sequences as well as facility wide configuration.
 - 16. System has the ability to sync system time to the Atomic Clock Signal or to the school's or districts network time server.
 - 17. System's SIP Interface shall provide:
 - a. Audio paging access from any telephone to any single intercom speaker, zone (group) of intercom/paging speakers, or all speakers/paging horns throughout the entire facility.
 - b. Ability to answer a call-in directed to that SIP extension.
 - c. Ability to upgrade a call-in directed to that SIP extension

IP INTEGRATED ELECTRONIC COMMUNICATIONS NETWORK CSP 207459 August 16, 2024

- d. Single button access from any telephone on the system to initiate alarm signals within the facility to all or select locations equipped with speakers. A minimum of 25 separate distinct alarm signals shall be provided. Alarm signals originating from any assigned administrative telephone shall have priority over all regular system functions.
- e. Ability to initiate a school-wide emergency including lockdown and evacuate sequences.
- 18. The system will have the ability to utilize a web-browser and a microphone connected to the PC to deliver district wide live emergency paging, pre-recorded messages and tones from any authorized computer in the facility or the district. The system must be capable of automatically notifying district personnel via the WAN of an alarm condition.
- 19. The system can automatically broadcast page emergency instructions throughout an entire campus when an alarm (e.g. lockdown, lockout, security, fire) is tripped or manually activated. The emergency instructions are preprogrammed and require no user intervention. The system provides redundant alarm annunciation over intercom/paging speakers and is not meant to replace primary fire alarm or security systems.
- C. IP addressable Modules:
 - 1. System shall provide multiple IP addressable modules for intercom, paging and relay activation.
 - a. All modules are POE 802.3af compliant
 - b. All Modules support DHCP.
 - c. All Modules connect to network with a single RJ45 connector
 - 2. IP Addressable Speaker Module shall interface to school's data network, a speaker, and multiple call switches.
 - a. A minimum of 5 levels of call-in can be placed from an IP Speaker Module. The call-ins route to a designated administrative consoles and select SIP connected telephones and can only be cleared from the system once answered. If a call-in is not answered within a preprogrammed time the call-in may reroute to other telephones and consoles, and announce over selected or all speakers and.
 - b. An option for Privacy call-in switches is supported. When the Privacy switch is activated it prevents administrative or classroom telephones from monitoring the specific classroom/location intercom speaker.
 - c. The ability to belong to one or more of a minimum of 100 independent zones for zone paging, program/music distribution zones and class change tone reception; this assignment is a programmable function, change able by time of day. Each IP Speaker Modules location shall be programmed in software to belong to any combination of software zones. IP Speaker Modules shall be designed to mount near ceiling and wall speakers and in the plenum space.
 - 3. IP-addressable Zone Paging Module
 - a. Zone paging module shall connect multiple speakers for district all page, all page, zone paging, bells, audio events and, emergency notification.
 - b. Zone Paging Modules shall be rack and wall mountable.
 - c. Zone Paging modules shall be able to belong to one or more of 100 independent zones for live paging, bells, pre-recorded audio and emergency notification
 - 4. IP Addressable Aux I/O Module
 - a. Aux I/O Module shall have two input contacts and two output contacts.
 - b. Input and output contacts are individually addressable.
 - c. Aux I/O Module shall be wall and rack mountable.
 - d. User can program relays to be activated manually, through an event/bell schedule and during emergency notification.

275123-8 IP INTEGRATED ELECTRONIC COMMUNICATIONS NETWORK CSP 207459 August 16, 2024

- D. IP Addressable Administrative Console
 - 1. A full color screen with 64 soft keys, 3 line select, volume control, push to talk, speakerphone mode and left/right and up/down scrolling.
 - 2. Audio paging access from any Console to any single intercom speaker, zone (group) of intercom/paging speakers, or all speakers/paging horns throughout the entire school.
 - 3. Programmable soft key access from any console on the system to initiate alarm signals within the school to all or select locations equipped with speakers. A minimum of 25 separate distinct alarm signals shall be provided. Alarm signals originating from any assigned administrative telephone shall have priority over all regular system functions.
 - 4. Programmable soft key access from any console to automatically broadcast page emergency instructions throughout an entire school when an alarm (e.g. lockdown, lockout, security, fire) is tripped or manually activated. The emergency instructions are preprogrammed and require no user intervention. The system provides redundant alarm annunciation over intercom/paging speakers and is not meant to replace primary fire alarm or security systems.
 - 5. Ability to perform intercom to any single IP Addressable Speaker Module.
 - 6. Ability to display 3 call-ins at a time on the screen, with unlimited number of call-ins annunciating and the ability to scroll to view all call-ins.
 - 7. Ability to upgrade a call-in via soft key.
 - 8. Programmable soft key access from any console for activating relays, campus wide.
 - 9. Ability to maintain, along with controller and other IP Modules system functions, including intercom, bells and paging for the local campus in the event of district wide connection loss.
- E. Audio Paging/Program Amplifiers
 - 1. Power amplifier(s) shall be provided to provide a minimum of 2 watts of power to all paging speakers, and 15 watts of power to all paging horns.
 - 2. The maximum load on the paging/program amplifiers shall be 80% of the rated maximum output of the amplifiers.
- F. Normal/Emergency Call Switch Rauland Dual Level Call In Switch
 - 1. Normal/Emergency Call Switches indicated on the drawings shall provide the following functions and features:
 - One (1) "Normal" call switch that shall activate a distinctive "NORM" level call from single button activation. The button shall be clearly marked "NORM" and will route the call-in to any one or more Administrative Telephones and/or Marquee Displays for quick and easy response from an Administrative Telephone.
 - b. One (1) "Emergency" call switch that shall activate a distinctive "EMERGENCY" level call from single button activation. The button shall be red in color and shall be clearly marked "EMERGENCY" and will route the call-in to any one or more Administrative Telephones and/or Displays for quick and easy response from an Administrative Telephone.
 - c. Call Switch will be mounted next to white board left or right by the teacher's desk.
 - d. Furnish Rauland ACC 1300 Wall Mount Attenuator in administrative areas and office as shown on project plans
 - 2. Voice/Data Backbone Cable:

Mark Twain School for the Talented and Gifted275123-9IP INTEGRATED ELECTRONICOrg #220COMMUNICATIONS NETWORKDallas ISD Construction ServicesCSP 207459August 16, 2024

- a. Voice: Solid copper, 24 AWG, 100 Ω balanced twisted-pair (UTP), Category 3 backbone cable, in sizes as indicated on the drawings, with mechanical and transmission performance specifications that meet or exceed ANSI/TIA-568C.2.Note: Listed Type CMP, and/or MPP (as required in latest NEC code) for inside cable.
 - 1) Acceptable Manufacturer: Superior Essex Product Line or Dallas ISD approved equal.
 - 2) Part Number: 10032111 25-pair Plenum-rated.
- G. Indoor Loudspeakers Tile Replacement

1.

- Rauland BAFKIT Flush Ceiling Loudspeaker
- a. No Visible Hardware After Installation
- b. Acoustically-Correct Baffle Design Blends with Ceiling Tiles
- c. Mar-Proof Baked White Epoxy Finish
- d. Can Be Installed Before Ceiling Tile Installation
- e. Speaker Tap Selector Control Mounted on Backbox
- f. Speaker Type: 8 inch (20.3 cm) Permanent Magnet
- g. Power Rating: 8 Watts RMS
- h. Sensitivity: 93 dB @ 1 meter with 1 Watt input
- i. Frequency Response: 65 to 17,000 Hertz
- j. Magnet: 5 oz. (141.7 g) PM
- k. Voice Coil Impedance: 8 ohms
- I. Voice Coil Diameter: 0.75 inches (1.9 cm)
- m. Transformer: 25V; taps at ¼, ½, 1, 2 and 4 Watts
- n. Baffle: White, 22-gauge cold-rolled steel
- o. Baffle Size: Width: 23-3/4" (60.3 cm)
- p. Length: 11-3/4" (29.8 cm)
- q. Depth: 3-3/8" (8.6 cm)
- r. Weight: 4 lbs. 14 oz. (2.2 kg)
- H. Indoor Ceiling Loudspeakers Hard Ceiling
 - 1. Rauland ACC1400 (USO188) 8" 5oz speaker assembly with round white baffle, ACC1101 speaker backbox, ACC1104 T-Bar Support
 - a. 8" Cone.
 - b. Frequency Response: 65 to 17,000 Hz.
 - c. Power Rated: 8 Watts.
 - d. Magnet: 5 Ounce.
 - e. Axial Sensitivity: 93 dB at 4 feet with 1 watt input.
 - f. 25 watt variable tap transformer.
 - g. Surface mounted speaker housings in areas so designated.
 - h. Bi directional.
 - i. Wall or ceiling mount.
 - j. Accommodates 8" speakers.
 - k. Provide ceiling tile bridge and backbox
- I. Exterior Loudspeakers
 - 1. Rauland 3607 Flush mounted horn, ACC1411 vandal proof baffle, ACC1105 flush backbox
 - a. The Horn Loudspeaker shall be a Rauland Model 3607 or approved equal, virtually impervious to weather or vandalism. It shall be of the double reentrant type with a power rating of 15

Mark Twain School for the Talented and Gifted Org #220 Dallas ISD Construction Services 275123-10 IP INTEGRATED ELECTRONIC COMMUNICATIONS NETWORK CSP 207459 August 16, 2024 watts at full range. Frequency range shall be 480 to 14,000 Hz; dispersion angle shall be 180°; sound pressure level shall be 106dB at 1 watt at 1 meter.

- 2.1 The loudspeaker shall have impedance selection of 5000/2500/1300/666/333/89/45 ohms. Power taps shall be1.0/2.0/3.8/7.5/15 watts for 70 volt line and .90/1.9/7.0/14 watts for 25 volt line.
- 2.2 The unit shall be weatherproof, constructed of treated heavy-gauge aluminum, with all exposed parts plated and sealed driver, line transformer and selector switch shall be mounted within the housing.
- 2.3 Wiring terminals shall be fully enclosed. A cork rubber gasket between speaker flange and mounting surface shall be provided. Finish shall be gray baked enamel.
- 2.4 Furnish a Rauland ACC1412 surface back-box for surface or retrofit applications.
- 2.5 MAIN OFFICE CONTROL EQUIPMENT
 - 1. Rauland Program Control Console
 - a. Located in main office for remote program activation.
 - b. Middle Atlantic Slim 2 Series 19" Sloped Desktop Racks
 - c. EIA compliant Slim Desktop Turret Rack shall be Middle Atlantic Products model # 2-6M. Desktop Turret Rack shall offer 6 rack spaces.
 - d. Rack shall be constructed of 5/8" furniture grade MDF board with a black wood grain laminate finish. Rubber feet shall be included with rack.
 - e. Pre-installed front and rear rack rail shall be 10-32 threaded and constructed of 11-gauge steel. Bottom trim panel shall be 16-gauge steel with a durable black powder coat finish.
 - f. Rack shall be warrantied to be free from defects in material or workmanship under normal use and conditions for a period of 7 years.
 - g. Rauland BPx Blank Panels, Charcoal gray, to complete console panel spaces
 - 2. Denon-DN 300Z CD/Media Player. Substitutions are not allowed.
 - 3. Rauland TCC2055 Program Line Input Module and TCC2099 Universal Rack Mounting Kit
 - a. Encodes Analog Audio Signals to Digital, IP-Based Data
 - b. Accepts Stereo or Mono Line Level Audio
 - c. Equipped with 3.5 mm Socket for Enhanced Compatibility
 - d. Connection Status Indicator LED
 - e. Mounts in Rack or Desktop
 - f. Digital Encryption of Control Signals for Excellent Security
 - g. Compliant with IEEE 802.3af Power Over Ethernet (PoE) Standard
 - h. UL listed for enhanced code compliance"
 - B. Equipment Racks (if required)
 - 1. All equipment racks shall provide 44 spaces (77") minimum for mounted system equipment.
 - 2. All equipment racks shall be multi-rack format ("gangable") style, bolted together, and open cavity.
 - 3. All equipment racks will be provided with lockable rear doors.
 - 4. Equipment rack(s) shall be located in climate-controlled areas/rooms as shown on drawings.

- 5. All head-end, distribution, and source equipment, including data and power, shall be located in racks configured as approved by the Engineer.
- 6. Rack mounted equipment shall be accessible from front and rear.
- 7. All unused rack spaces will be covered with appropriate blank/vent panels
- C. Wireless Clock System
 - 1. Provide complete and satisfactorily operating NTP Synchronized Wireless Clock System with analog and/or digital secondary clocks as described herein, using materials and equipment of types, sizes, ratings, and performances as indicated. Provide master clock capable of synchronization via radio frequency. Provide a wireless master/satellite time system for the facility, in order to accomplish this coordination.
 - 2. (NTP) Network Time Protocol is a network standard protocol that assures accurate synchronization to the millisecond of computer clock times in a network of computers. Based on <u>UTC</u>, NTP synchronizes client workstation clocks to the U.S. Naval Observatory Master Clocks in Washington, DC and Colorado Springs, CO. running as a continuous background client program on a computer, NTP sends periodic time requests to servers, obtaining server time stamps and using them to adjust computer clocks.
 - 3. The system shall be easy to learn and operate. All standard system programming shall be user friendly to allow the system administrator the ability to easily program system features.
 - 4. Use materials and equipment that comply with referenced standards and manufacturers' standard design and construction, in accordance with published product information.
 - 5. Coordinate the features of all materials and equipment so they form an integrated system, with components and interconnections matched for optimum performance of specified functions.
 - 6. The NTP Synchronized Wireless System consists of a master transmitter located on the inside of the building, and a NTP receiver connected to a time server. An unlimited number of wireless analog and digital clocks are synchronized to the NTP time. System shall synchronize all clocks to each other. System shall utilize NTP technology to provide atomic time to components.
 - 7. System shall not require hard wiring for its components except for AC Power. Battery operated clocks are not allowed.
 - 8. Hallway clocks to be digital with red LED display.
 - 9. Classroom clock are allowed to be digital or analog.
 - 10. Analog Clocks shall synchronize to +/- 1 second of the transmitter displayed time.
 - 11. Clocks shall automatically adjust for Daylight Saving per settings on the transmitter
 - 12. The system shall have an internal clock that is continually updated by the NTP receiver. If a NTP failure were to occur, the clocks would continue to be synchronized to the internal clock and would not deviate from each other. Once NTP time is restored, all clocks would once again be synchronized to the NTP time.
 - 13. The system must have a fail-safe design so that if a power interruption were to occur, the clocks will continue to operate. If a synch signal is not received by the analog clocks for 48 hours, the second hand will double pulse to indicate this condition. Upon restoration of power, the transmitter will once again communicate with the clocks and normal operation will resume.
 - 14. System shall be 100% programmable from the front operational panel with lights that indicate power status and NTP reception. Panel programming will also include Time Zone, Frequency, 12 or 24 hour operation and DST on/off.
 - 15. The wireless backbone must support expansion of the system to include wireless alphanumeric displays for emergency crisis communications for district-wide communications.

- 16. The system may be modified to use GPS instead of NTP as the time source without the need to replace the transmitter. A GPS receiver would need to be added with access to the outside of the building.
- 17. The system shall lend itself to expansion by simple addition of wireless secondary clocks and their required power source.
- 18. Locate wireless master transmitter within the MDF room. Depending on equipment capabilities, large facilities need for additional transmitter(s).
- 19. Locate associated GPS receiver on the roof or in a window without low-E glass.
- 20. Master clock system to interface with the public address or bell system, in order to provide tone generation (ring bells).
- 21. Provide for a PC, monitor, and associated wiring for programming the system for class bell changes.
- 22. All clocks provided as part of this wireless master/satellite time system are to be located at 8'-0" AFF to the enter of the device, unless otherwise approved by Dallas ISD.
- 23. Clocks to be provided in the following building areas:
 - a. Administration (reception area).
 - b. Auditorium.
 - c. Cafeteria.
 - d. Classrooms (includes all teaching spaces).
 - e. Conference rooms.
 - f. Corridors (100 foot maximum distance apart).
 - g. Gymnasium.
 - h. Library/media center.
 - i. Break rooms and workrooms.
- 24. Addition projects receiving a new public address system (due to functionality or expansion issues), provide the tone generator to integrate the new wireless master/satellite time system with the existing public address system.
- 25. Any remaining addition projects, at a later date, Dallas ISD to provide similar clocks within the existing building, remove the existing master clock system and devices and integrate the new wireless master/satellite time system with the existing public address system. There is to be no scope of work regarding a new wireless master/satellite time system within the renovation projects.

EQUIPMENT AND MATERIALS

- a. WIRELESS TRANSMITTER
 - 1) FCC Part 90 Approved, 467.2125-467.4375 MHz frequency range
 - 2) Radio Technology (Narrowband FM, 12.5 KHz bandwidth)
 - 3) 10 selectively available channels
 - 4) 5 watt transmitter
 - 5) Daylight Savings Time pre-programmed
 - 6) Time Zone Pre-set
 - 7) Non-Volatile Memory
 - 8) LCD Display for time, date, year, power, time zone and signal reception
 - 9) Operating Range (32 degrees F to 158 degrees F)

Mark Twain School for the Talented and Gifted Org #220 Dallas ISD Construction Services 275123-13 IP INTEGRATED ELECTRONIC COMMUNICATIONS NETWORK CSP 207459 August 16, 2024

- 10) Rack or Shelf Mount
- 11) Power Supply Input: 120-volt AC, Output: 12-volt DC, 3 Amps
- 12) 7" Rear Mounted Antenna
- 13) Dimensions: 12"L x 6"W x 1.75"H Weight: 2 lbs.
- 14) NTP Receiver
- 15) Optional External Antenna for use in large campus applications. Up to 2 miles radius

b. SECONDARY 13" ANALOG CLOCK

- 1) 13" Analog Clock (Battery Powered using 2"D" Cell batteries).
- 2) Maintenance Free.
- 3) Five year manufacturer's warranty.
- 4) Microprocessor based with built-in wireless receiver
- 5) Heavy Duty Construction
- 6) Durable ABS Casing
- 7) Clock numbering graphics shall be Standard Arabic Format (12HR-60 Minute)
- 8) Face of clock is white
- 9) Hour and Minute hands shall be black, second hand is red
- 10) The clock lens shall use a shatterproof polycarbonate material with no visible molding marks. Glass and/or visible molding marks are unacceptable.
- 11) The clock shall have a low–profile, semi–flush design
- 12) Wire Guard Model in areas where protection is required as indicated on drawings or by owner.

c. SECONDARY DUAL FACE 13" ANALOG CLOCK

- 1) 13" Analog Clock (Battery Powered using 2"D" Cell batteries per face)
- 2) Wall or Ceiling Mount shall be determined by drawings or owner
- 3) Maintenance Free.
- 4) Five year manufacturer's warranty
- 5) Microprocessor based with built-in wireless receiver
- 6) Heavy Duty Construction
- 7) Durable ABS Casing
- 8) Clock numbering graphics shall be Standard Arabic Format (12HR-60 Minute)
- 9) Face of clock is white
- 10) Hour and Minute hands shall be black, second hand is red
- 11) The clock lens shall use a shatterproof polycarbonate material with no visible molding marks. Glass and/or visible molding marks are unacceptable.
 - a)
- d. SECONDARY 16" ANALOG CLOCK
 - 1) 16" Analog Clock (Battery Powered using 2"D" Cell batteries).
 - 2) Maintenance Free.
 - 3) Five year manufacturer's warranty.
 - 4) Microprocessor based with built-in wireless receiver
 - 5) Heavy Duty Construction
 - 6) Durable ABS Casing
 - 7) Clock numbering graphics shall be Standard Arabic Format (12HR-60 Minute)
 - 8) Face of clock is white
 - 9) Hour and Minute hands shall be black, second hand is red

275123-14 IP INTEGRATED ELECTRONIC COMMUNICATIONS NETWORK CSP 207459 August 16, 2024

- 10) The clock lens shall use a shatterproof polycarbonate material with no visible molding marks. Glass and/or visible molding marks are unacceptable.
- 11) Wire Guard in areas where protection is required as indicated on drawings or by owner.
- 12) The clock shall have a low–profile, semi–flush design
- e. SECONDARY 2.5" DIGITAL CLOCK
 - 1) 2.5" Digital Clock (AC Powered 24V or 120V)
 - 2) 4 Digit (Hours/Minutes)
 - 3) Built-in Countdown/Count-up Timer
 - 4) Maintenance Free
 - 5) Five year manufacturer's warranty
 - 6) Microprocessor based with built-in wireless receiver
 - 7) Heavy Duty Construction
 - 8) 12/24 Hour Display Format
 - 9) Clear Anti-Glare LED Display
 - 10) Adjustable Brightness
 - 11) AM/PM Indicator
 - 12) Wire Guard in areas where protection is required as indicated on drawings or by owner
 - 13) Bright Red or White LED Digit
- f. SECONDARY 4" DIGITAL CLOCK
 - 1) 4" Digital Clock (AC Powered 24V or 120V)
 - 2) 4 Digit (Hours/Minutes)
 - 3) Built-in Countdown/Count-up Timer
 - 4) Maintenance Free
 - 5) Five year manufacturer's warranty
 - 6) Microprocessor based with built-in wireless receiver
 - 7) Heavy Duty Construction
 - 8) 12/24 Hour Display Format
 - 9) Clear Anti-Glare LED Display
 - 10) Adjustable Brightness
 - 11) AM/PM Indicator
 - 12) Wire Guard Model in areas where protection is required as indicated on drawings or by owner.
 - 13) Bright Red or White LED Digit

g. SECONDARY 2.5" DUAL SIDED DIGITAL CLOCK

- 1) 2.5" Digital Clock (AC Powered 24V or 120V)
- 2) 4 Digit (Hours/Minutes)
- 3) Built-in Countdown/Count-up Timer
- 4) Maintenance Free
- 5) Five year manufacturer's warranty
- 6) Microprocessor based with built-in wireless receiver
- 7) Heavy Duty Construction
- 8) 12/24 Hour Display Format
- 9) Clear Anti-Glare LED Display
- 10) Adjustable Brightness
- 11) AM/PM Indicator

Mark Twain School for the Talented and Gifted Org #220 Dallas ISD Construction Services 275123-15 IP INTEGRATED ELECTRONIC COMMUNICATIONS NETWORK CSP 207459 August 16, 2024 12) Bright Red or White LED Digit

h. SECONDARY 4" DUAL SIDED DIGITAL CLOCK

- 1) 4" Digital Clock (AC Powered 24V or 120V)
- 2) 4 Digit (Hours/Minutes)
- 3) Built-in Countdown/Count-up Timer
- 4) Maintenance Free
- 5) Five year manufacturer's warranty
- 6) Microprocessor based with built-in wireless receiver
- 7) Heavy Duty Construction
- 8) 12/24 Hour Display Format
- 9) Clear Anti-Glare LED Display
- 10) Adjustable Brightness
- 11) AM/PM Indicator
- 12) Bright Red or White LED Digit

PART 3 - EXECUTION

27 15 01 Premise Wire for more detail information as needed to complete turnkey project.

PART 4 - DATA STATION CABLE A. Solid copper, 24 AWG, 100 Ω balanced twisted-pair (UTP) Category 5e/6 cable with four individually twisted-pairs, which meet or exceed the mechanical and transmission performance specifications in ANSI/TIA-568-C.2 up to 100 MHz for Category 5e: Product Description: Data Gain Category 6+ UTP, Plenum, Cable-Yellow Part Numbers: 66-240-6B

4.1 DATA OUTLETS

A. Approved Manufacturer: Ortronics Series II Product Line Part Numbers: (1) OR-40300158 Series II Faceplate (1) OR-522600 Series II, 2 Cat6 modules (2) OR-40300164 Series II, Blanking Module

4.2 PATCH PANELS

- A. Approved Manufacturer: Ortronics Product Line Part Number: OR-PHA66U48 OR-PHA66U2EXAMINATION
- B. Examine conditions, with the Installer present, for compliance with requirements and other conditions affecting the performance of the School Communications and School Safety Network.
- C. Do not proceed until unsatisfactory conditions have been corrected.

4.3 INSTALLATION

- A. General: Install system in accordance with NFPA 70 and other applicable codes. Install equipment in accordance with manufacturer's written instructions.
- B. Furnish and install all material, devices, components and equipment for a complete operational system.

- C. Impedance and Level Matching: Carefully match input and output impedance's and signal levels at signal interfaces. Provide matching networks where required.
- D. Control Circuit Wiring: Install control circuits in accordance with NFPA 70 and as indicated. Provide number of conductors as recommended by system manufacturer to provide control functions indicated or specified.
- E. All housings are to be located as indicated.
- F. The contractor shall provide necessary transient protection on the AC power feed, all copper station lines leaving or entering the building, and all central office trunks. All protection shall be as recommended by the equipment supplier and referenced to earth ground.
- G. Wiring within Enclosures: Provide adequate length of conductors. Bundle, lace, and train the conductors to terminal points with no excess. Provide and use lacing bars.
- H. Provide physical isolation from speaker-microphone, telephone, line-level wiring, and power wiring. Run in separate raceways, or where exposed or in same enclosure, provide 12 inch minimum separation between conductors to speaker-microphones, telephone wiring and adjacent parallel power. Provide physical separation as recommended by equipment manufacturer for other system conductors.
- I. Identification of Conductors and Cables: Use color coding of conductors and apply wire and cable marking tape to designate wires and cables so all media are identified in coordination with system wiring diagrams.
- J. Weatherproofing: Provide weatherproof enclosures for items to be mounted outdoors or exposed to weather.

4.4 GROUNDING

- A. Provide equipment grounding connections for Integrated Electronic Communications Network systems as indicated. Tighten connections to comply with tightening torques specified in UL Standard 486A to assure permanent and effective grounds.
- B. Ground equipment, conductor, and cable shields to eliminate shock hazard and to minimize to the greatest extent possible, ground loops, common mode returns, noise pickup, cross talk, and other impairments. Provide 5-ohm ground at main equipment location. Measure, record, and report ground resistance.
- C. Provide all necessary transient protection on the AC power feed and on all copper station lines leaving or entering the building. Note in system drawings, the type and location of these protection devices as well as all wiring information.

4.5 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Provide services of a duly factory authorized service representative for this project location to supervise the field assembly and connection of components and the pre-testing, testing, and adjustment of the system.
- B. Inspection: Make observations to verify that units and controls are properly labeled and interconnecting wires and terminals are identified. Provide a list of final tap settings of paging speaker line matching transformers.
- C. Testing: Rectify deficiencies indicated by tests and completely re-test work affected by such deficiencies at Contractor's expense. Verify by the system test that the total system meets the Specifications and complies with applicable standards.

4.6 FINAL ACCEPTANCE TESTING

- A. The Final Acceptance Testing shall be provided to the Owner or the Owners designated representative only. Final acceptance testing to any other trade or service provider for the project will not comply with the requirements of this section.
- B. The contractor will provide a Final Acceptance Test record document signed by both the contractor and the Owner or designated Owner's Representative establishing the "In Warranty" date. The warranty period will not commence until the Final Acceptance Test is completed.
- C. Be prepared to verify the performance of any portion of the installation by demonstration, listening and viewing test, and instrumented measurements. Make additional adjustments within the scope of work and which are deemed necessary by the Owner because of the acceptance test.

4.7 COMMISSIONING

- A. The contractor shall train the Owner's maintenance personnel in the procedures and schedules involved in operating, troubleshooting, servicing, and preventative maintenance of the system. This training will be in accordance with the training as outlined in Section 1.6, paragraphs 3, 5 & 6 of these specifications. In addition to the Training Materials provided, the contractor will also furnish Operators Manuals and Users Guides at the time of this training.
- B. Schedule training with Owner through the owners representative, with at least seven days advance notice.

4.8 OCCUPANCY ADJUSTMENTS

A. The contractor shall provide Occupancy Adjustments in accordance with Section 1.6, paragraph 9 of these specifications. A response scenario amenable to both the owner and the contractor will be established and followed for the first year of service.

4.9 CLEANING AND PROTECTION

A. Prior to final acceptance, the contractor shall vacuum and clean all system components and protect them from damage and deterioration. All blank spaces in equipment cabinets will be covered with blank panels. Top and side panels, and all cabinet doors will be installed. All general areas within and around all equipment rack/cabinets in the facility will be swept, vacuumed, and cleaned up. No cabinets will be left unlocked and all cabinet keys will be turned over to the owner or designated owner's representative.

END OF SECTION

28 05 00

COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY

- 1. For new construction provide conduits sleeved through the foundation grade beam to allow for the future extension of the fire, security, surveillance video systems. For renovations verify requirements with the District (to avoid unnecessarily disturbing existing foundations.)
- 2. For renovation projects

2.1. Confirm existing conditions with existing CAD floor plans, before designing alarm systems.

2.2. Patch and paint walls and ceilings where any devices are removed.

3. Dallas ISD Board of Trustees approved Electronic Safety and Security vendor to design, provide, and install Access Controls and Video Surveillance Equipment under the General Contractor. Other vendors must be approved in advance by the Dallas ISD Police Department.

Electronic Access Control and Intrusion Detection

- 1. Security Systems are provided at all Elementary, Middle, and High Schools.
- Architect to confirm system monitoring program requirements with Dallas ISD-IT-CSS, Central Dispatch, and M&O.
 - M&O
- 3. Intrusion detection systems are monitored by an AES-Multinet receiver at Dallas ISD's central monitoring system. Intrusion Detection systems are to report to central monitoring system via an AES 7007 Burglary Subscribers IntelliNet 2.0 or Dallas ISD approved equal. If central monitoring system is not available, signal is to be sent to Southwest Dispatch or as directed by Dallas ISD designated representative. Provide twelve months of monitoring service required as part of the install.
- 4. Acceptable Systems:
 - a. Up to 96 zones: NAPCO Gemini GEM-P9600
 - (https://www.napcosecurity.com/products/gemp9600/).
 - b. High schools requiring 96-255 zones: NAPCO Gemini X-255
 - (https://www.napcosecurity.com/products/gemx255/)
- 5. New Construction: Intrusion detection systems to be provided at all facilities including elementary, middle, and high schools

high schools.

6. Additions: Connect new devices to existing system. In the event that there is not adequate capacity, the existing

panel is to be increased in capacity or replaced.

7. If replacement of the existing system is required, existing intrusion detection devices and cabling are

also to be replaced.

- 8. Provide a motion detector facing each exterior door.
- 9. Provide narrow beam, long-range, ceiling-mounted detectors in corridors on each floor, mounted halfway down the corridor, back-to-back, facing opposite directions. Verify range with manufacturer's specifications.

Mark Twain School for the Talented and Gifted 28 05 00-1 Org #220 Dallas ISD Construction Services COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY CSP 207459 August 16, 2024

- 10. Provide 360-degree motion detectors in first floor perimeter classrooms with windows or door access, gymnasiums, and classrooms on other floors if there is roof access through doors or windows.
- 11. Provide motion detectors in all high-security areas, such as computer labs, libraries/media centers, and administration areas, and in all spaces with exterior doors.
- 12. Provide motion detectors in stairwells.

13. Provide beam detection devices on roofs with HVAC equipment.

Mount exterior beam detectors taking aesthetic concerns into account.

Detection devices, or conduits, may not penetrate roof membrane or flashing.

14. Communication System: AES 7007 Burglary Subscribers IntelliNet 2.0 or Dallas ISD approved equal.

- 15. Do not use door contacts.
- 16. Do not use window contacts or glass-break detectors.
- 17. The wiring for each of the motion detectors must be a home run back to the security panel for the facility or to the expansion module.
- 18. Expansion modules may be located in offices or closets throughout the building for ease of installation. All expansion modules must be tied into the main security panel. Provide external power supply with each expansion module. Locate module and power supply inside enclosure and install near electrical outlet.
- 19. Provide security system keypads at locations designated by Dallas ISD Police. Typical Locations include, but not be limited to; the front main entrance door, in the administration area, and back door, in the receiving area.13. For secondary schools, also provide key pads for special use areas such as gymnasiums, ROTC rooms, band halls, etc.
- 20. For addition projects, connect the new devices to the existing system. In the event that there is not adequate capacity, then the existing panel must be increased in capacity or replaced. If replacement of the existing system is required by codes, then existing security devices and wiring etc. should also be replaced.
- 21. For renovation projects:

Ι.

- 15.1. With electronic safety and security in the scope:
 - I. Existing security devices and wiring should be removed and new security devices and wiring installed.
 - II. Do not re-use existing components or wiring.
- 15.2. Without electronic safety and security in the scope:
 - Reinstall all devices and test system at the conclusion of the project.

Mark Twain School for the Talented and Gifted 28 05 00-2 Org #220 Dallas ISD Construction Services COMMON WORK RESULTS FOR ELECTRONIC CSP 207459 August 16, 2024

Video Intercom and Access Control System

- 1. Provide an AXIS Network Video Door Station and a GXV320 Video IP Phone at the main entry door and other logical frequently used entrances. Locations to be coordinated with Dallas ISD-IT-CSS, and Police-EM and Dallas ISD-IT-CSS contracted security vendor(s).
- 2. Master station to be located at the main office and additional locations as directed by Dallas ISD Police.
- 3. Provide Dual Reader Interface Sub Controllers and Electronic Strikes at all entrances and secured areas inside the facility (MDF, IDF, and Electrical Rooms). Include any entrance that received an AXIS Network Video Door Station. Review each school with Dallas ISD Police to confirm the number of devices and their locations.
- 4. Provide 4 Element Composite Plenum Yellow Access Cabling.
- 5. Provide Access Control Panel with all required Relays, Power Supplies, and Batteries.

Electronic Surveillance

- 1. Provide interior and exterior surveillance cameras in key locations as directed by the District. Review each school with Dallas ISD Police, IT, CSS to determine areas of vulnerability where cameras would be best placed.
- 2. Interior Fixed Cameras
- 3. Exterior Fixed Cameras
- 4. Provide plenum rated CAT 6 data cable to all interior and exterior camera locations.
- 5. Provide all brackets, pendants and enclosures required for interior and exterior cameras.
- 6. Provide ACC Licenses for all camera channels
- 7. Provide Server & Equipment including an HD NVR with 10 TB of storage. Include APC Smart-UPS, 802.3af compliant power injector and mounting brackets.

Electronic Detection and Alarm

- 1. Notifier NFS2-3030 w/ AES callout is the preferred system. A waiver from Dallas ISD Construction Services is required for the use of other systems.
- 2. Fire alarm systems shall be addressable.

3. Fire alarm panels are to have internal dialers capable of remote uploading and downloading features.

- 4. Door holders shall be electromagnetic and connected to the building fire alarm system. Electromechanical devices are not acceptable.
- 5. Fire Alarm system shall have surge protection at each location the Signaling Line Circuit leaves the main building or returns to the building from portables.
- 6. Fire Alarm system shall have Voice Annunciation.
- 7. Ceiling-mounted audio/visual devices are preferred.
- 8. Pull station protectors with integral horn are required for all manual pull stations.
- 9. Where an existing campus receives a new fire alarm system or renovation work will trigger alterations to the fire alarm system (and require a fire alarm inspection), include a fire alarm system for existing portables within 100 feet of the existing building.
- 10. Note in construction documents that Contractor is responsible for coordinating with District to provide any dedicated phone line that are required.

Electronic Monitoring and Control

1. Dallas ISD's Fire Alarm systems are monitored by an existing AES-Multinet Receiver at Dallas ISD's Central

Monitoring System.

2. Fire Alarm Systems shall report to Central Monitoring System via an AES 7788F/7744F Series Fire Subscriber and AES 7794 AES-IntelliPro Fire.

3. Require Installer to Coordinate with Dallas ISD Maintenance to add devices to Existing Central Monitoring

System.

END OF SECTION

SECTION 28 20 00 ELECTRONIC SURVEILLANCE

PART 1 – GENERAL

- 11 DESCRIPTION
 - 1. Provide and install a complete Video Surveillance System, which is identified as the Video Assessment and Surveillance System hereinafter referred to as the VASS System as specified in this section.
 - 2. This Section includes video surveillance system consisting of cameras, data transmission wiring, and a control station with its associated equipment.
 - 3. Video surveillance system Video assessment & surveillance system shall be integrated with monitoring and control system specified in Division 28.
- 1.2 **RELATED WORK**
 - Refer also to Section 28 0500 COMMON WORK RESULTS FOR ELECTRONIC 1 SAFETY AND SECURITY for notes that apply to this system.

PART 2 – PRODUCTS

- 2.1. Interior Fixed Cameras
 - A. Hall Cameras
 - Ultra-discreet fixed dome type for drop in ceiling mount. Ι.
 - Multiple individually configurable H.264 and Motion JPEG streams, 11.
 - III. Max HDTV 720P or 1 MP resolution at 30 FPS.
 - IV. Video Motion Detection.
 - V. Power over Internet
 - B. Door Cameras
 - Light-sensitive, Day-Night fixed dome type with Lightfinder. Ι.
 - Tamper resistant indoor casing. Varifocal 2.5-6 mm P-Iris lens, 11.
 - III. Remote focus and zoom.
 - IV. Max HDTV 720P or 1 MP resolution

at 30 FPS. V. WDR dynamic contrast.

VI. Video Motion

Detection. VII. Active

tampering alarm

- VIII. SD/SDHC memory card slot for optional local storage.
- IX. Power over Ethernet
- C. 360' Cameras
 - 360 / 180 degree 5 Mega Pixel network camera Ι.
- 22 **Exterior Fixed Cameras**
 - A. Outdoor Dome
 - 3.0 Megapixal WDR Ι.
 - Day/Night Outdoor Dome Ш.
 - III. 9-22mm f/1.6 P-iris lens
 - B. Exterior Camera

Mark Twain School for the Talented and Gifted 28 20 00-1 ELECTRONIC SURVEILLANCE ORG #220 **Dallas ISD Construction Services**

CSP 207459 August 16, 2024 I. Light-sensitive, Day-Night fixed dome type with

Lightfinder. II. Vandal - resistant outdoor casing.

III. Varifocal 3.3-12 mm P-

Iris lens, IV. Remote focus

and zoom.

V. Max HDTV 720P or 1 MP resolution

- at 30 FPS. VI. WDR dynamic contrast.
- VII. Video Motion Detection.
- VIII. Two-Way Audio and audio detection
- IX. Active tampering alarm
- X. SD/SDHC memory card slot for optional local storage.
- XI. Power over Ethernet
- 2.3 Manufacturers
 - A. Pelco
 - B. GE Security
 - C. Bosch Security Systems
 - D. D-Link
 - E. Panasonic
 - F. Samsung
 - G. or Approved Equal

PART 3 - EXECUTION

- 3.1. GENERAL
 - A. Installation: The Contractor shall install all system components including Owner furnished equipment, and appurtenances in accordance with the manufacturer's instructions, ANSI C2 and as shown, and shall furnish all necessary connectors, terminators, interconnections, services, and adjustments required for a complete and operable data transmission system.
 - B. Identification and Labeling: The Contractor shall supply permanent identification labels for each cable at each end that will appear on the as-built drawings. The labeling format shall be identified and a complete record shall be provided to the Owner with the final documentation. Each cable shall be identified by type or signal being carried and termination points. The labels shall be printed on letter size label sheets that are self laminated vinyl that can be printed from a computer data base or spread sheet. The labels shall be E-Z code WES12112 or equivalent.
 - 1. The Contractor shall provide all personnel, equipment, instrumentation, and supplies necessary to perform all testing.
 - C. Transient Voltage Surge Suppressors (TVSS): The Contractor shall mount TVSS within 3 m (118 in) of equipment to be protected inside terminal cabinets or suitable NEMA 1 enclosures. Terminate off-premise conductors on input side of device. Connect the output side of the device to the equipment to be protected. Connect ground lug to a low impedance earth ground (less than 10 ohms) via Number 12 AWG insulated, stranded copper conductor.
 - D. Contractor's Field Test: The Contractor shall verify the complete operation of the data transmission system during the Contractor's Field Testing. Field test shall include a bit

Mark Twain School for the Talented and Gifted	28 20 00-2	ELECTRONIC SURVEILLANCE
ORG #220 Dallas ISD Construction Services		CSP 207459
		August 16, 2024

error rate test. The Contractor shall perform the test by sending a minimum of 1,000,000 bits of data on each DTM circuit and measuring the bit error rate. The bit error rate shall not be greater than one (1) bit out of each 100,000 bits sent for each dial-up DTM circuit, and one (1) bit out of 1,000,000 bits sent for each leased or private DTM circuit. The Contractor shall submit a report containing results of the field test.

- E. Acceptance Test and Endurance Test: The wire line data transmission system shall be tested as a part of the completed IDS and EECS during the Acceptance test and Endurance Test as specified.
- F. Identification and Labeling: The Contractor shall supply identification tags or labels for each cable. Cable shall be labeled at both end points and at intermediate hand holes, manholes, and junction boxes. The labeling format shall be identified and a complete record shall be provided to the Owner with the final documentation. Each cable shall be identified with type of signal being carried and termination points.

END OF SECTION

SECTION 28 31 00 FIRE DETECTION AND ALARM

PART 1 - GENERAL

1.1 RELATED WORK

- A. Section 260529 Hangers and Supports for Electrical Systems
- B. Section 260534 Conduits
- C. Section 260537-Boxes

1.2 REFERENCES

- A. The Work under this Section is subject to requirements of the Contract Documents including the General Conditions, Supplementary Conditions, and sections under Division 01 General Requirements.
- B. All work and materials shall conform to all applicable Federal, State and local codes and regulations governing the installation. If there is a conflict between the referenced standards, federal, state or local codes, and this specification, it is the bidder's responsibility to immediately bring the conflict to the attention of the Engineer for resolution. National standards shall prevail unless local codes are more stringent. The bidder shall not attempt to resolve conflicts directly with the local authorities unless specifically authorized by the Engineer.
- C. System components proposed in this specification shall be UL listed to operate together as a system. The supplier shall provide evidence, with his submittal, of listings of all proposed equipment and combinations of equipment. The supplier shall be responsible for filing of all documents, paying all fees (including, but not limited to plan checking and permit) and securing all permits, inspections and approvals. Upon receipt of approved drawings from the authority having jurisdiction, the supplier shall immediately forward two sets of drawings to the Owner. These drawings shall either be stamped approved or a copy of the letter stating approval shall be included.

1.3 SUMMARY

- A. This performance specification provides the minimum requirements for the replacement of the Fire Alarm and Detection System. The system shall include, but not limited to all equipment, materials, labor, documentation and services necessary to furnish and install a complete, operational system to include but not limited to the following functions:
 - 1. Smoke and fire detection.
 - 2. Sprinkler suppression systems monitoring.
 - 3. Audio/Visual notification
 - 4. Voice annunciation

Mark Twain School for the Talented and Gifted 28 31 00-1 Org #220 Dallas ISD Construction Services

- B. The electrical contractor shall obtain cost of fire alarm system from the Owner's preferred fire alarm contractor. Notifier NFS2-3030 is the preferred system with AES 7788F/7744F series fire subscriber and AES 7794 AES-IntelliPro Fire or Dallas ISD approved equal.
- C. All fire alarm wiring in exposed areas shall be installed in ³/₄" red EMT conduit. Fire alarm wiring in concealed locations shall be permitted to be plenum rated cable supported by j- hooks.
- D. Unless noted otherwise on the construction documents, all notification devices shall be ceiling mounted. Notification devices shall be white with red lettering.
- E. The system shall be in full compliance with national and local codes. The system shall conform to applicable sections of NFPA 72, NFPA 70 article 760, NFPA 101, IBC, and IFC.
- F. The system shall include all required hardware, raceways, interconnecting wiring, and software to accomplish the requirements of this specification, the contract drawings, and as directed by the Architect/Engineer, whether or not specifically itemized herein.

G. The system, as specified, shall be supplied, installed, tested, and approved by the local

Authority Having Jurisdiction (AHJ).

1.4 DEFINITIONS AND ABBREVIATIONS

A. ADA: Americans with Disabilities Act

B. AFF: Above Finished Floor.

C. AHJ: Authority Having Jurisdiction.

D. Approved: Unless otherwise stated, materials, equipment or submittals approved by the

Authority or AHJ.

E. Circuit: Wire path from a group of devices or appliances to a control panel or

transponder. F. CPU: The central computer of a multiplex fire alarm or voice

command control system.

G. FACP: Fire Alarm Control Panel.

H. HVAC: Heating Ventilating and Air

Conditioning. I.IDC: Initiating Device Circuit.

Mark Twain School for the Talented and Gifted 28 31 00-2 Org #220 Dallas ISD Construction Services

J. LED: Light Emitting Diode.

K. LCD: Liquid Crystal

Display.

L. NFPA: National Fire Protection

Association. M. NAC: Notification Appliance

Circuit.

N. PTR: Printer.

- O. SLC: Signaling Line Circuit.
- P. Style 1: As defined by NFPA 72, Class

B. Q. Style 4: As defined by NFPA 72,

Class B. R. Style 6: As defined by NFPA

72, Class A. S. Style 7: As defined by

NFPA 72, Class A. T. Style B: As defined

in NFPA 72, Class B.

- U. Style D: As defined in NFPA 72, Class A.
- V. Style Y: As defined in NFPA 72, Class B.
- W. UL or ULI: Underwriters Laboratories, Inc.
- X. UL Listed: Materials or equipment listed and included in the most recent edition of the UL Fire Protection Equipment Directory.
- Y. Zone: Combination of one or more circuits or devices in a defined building area, i.e. 3 speaker circuits on a floor combined to form a single zone.

1.5 SYSTEM DESCRIPTION

- A. Contractor shall furnish all labor, services and materials necessary to furnish and install a complete, functional fire alarm system (System) throughout the renovated areas. The System shall comply in respects with all pertinent codes, rules, regulations and laws of the Authority, and local jurisdiction. The System shall comply in all respects with the requirements of the specifications, manufacturer's recommendations and Underwriters Laboratories Inc. (UL) listings.
- B. It is further intended that upon completion of this work, the Owner be provided with:

- 1. Complete information and drawings describing and depicting the entire system(s) as installed, including all information necessary for maintaining, troubleshooting, and/or expanding the system(s) at a future date.
- 2. Complete documentation of system testing.
- 3. Certification that the entire system has been inspected, tested, and is installed entirely in accordance with the applicable codes, standards, manufacturer's recommendations and ULI listings, and is in proper working order.
- C. Provide and install new fire detection and alarm system components consisting of:
 - 1. Manual pull stations shall be located as shown on the drawings.
 - 2. Area smoke detection shall be provided as shown on drawings.
 - 3. Duct smoke detection shall be provided as shown on the drawings.
 - 4. Fire alarm power extenders shall be provided as shown on the drawings and/or required for system operation.
 - 5. Provide synchronized temporal audible appliances located on the ceilings throughout the building, as shown on the drawings.
 - 6. Provide synchronized visual appliances located on the ceilings throughout the building, as shown on the drawings.
 - 7. Fire alarm systems are to be addressable.
 - 8. Fire alarm system to have integral mass notification.
 - 9. Connections for electromagnetic door holders. Magnetic door holders are to be powered by 24 volt DC only.
 - 9. Locked document cabinets for all remote power supply and amp cabinets.
 - 10. Surge protection at each location the signaling line circuit leaves the main building or returns to the buildings from portables.
 - 11. Fire alarm systems are monitored by an AES-Multinet receiver at Dallas ISD's central monitoring system. Fire alarm systems are to report to central monitoring system via an AES 7788F/7744F series fire subscriber and AES 7794 AES-IntelliPro Fire or Dallas ISD approved equal. If central monitoring system is not available, signal is to be sent to Southwest Dispatch or as directed by Dallas ISD designated representative. Provide twelve months of monitoring service required as part of the install.

1.6 SEQUENCE OF OPERATIONS

1. The alarm activation of any area smoke detector, heat detector, manual pull station, sprinkler waterflow, the following functions shall automatically occur:

2. The internal audible device shall sound at the control panel and remote annunciator(s).

- 3. The LCD display shall indicate all applicable information associated with the alarm condition including; zone, device type, device location and time/date.
- 4. All system activity/events shall be documented in system history and on the system printer.
- 5. Any remote or local annunciator LCD/LED's associated with the alarm zone shall be illuminated.

Mark Twain School for the Talented and Gifted 28 31 00-4 Org #220 Dallas ISD Construction Services

- 6. Activate notification audible appliances throughout the building.
- 7. Activate visual strobes notification appliances throughout the building. The visual strobe shall continue to flash until the system has been reset. The visual strobe shall not stop operating when the "Alarm Silence" is pressed.
- 8. Transmit signal to the central station with point identification.
- 9. All automatic events programmed to the alarm point shall be executed and the associated outputs activated.
- B. Upon activation of a trouble condition or signal from any device on the system, the following functions shall automatically occur:

1. The internal audible device shall sound at the control panel and remote annunciator(s).

- 2. The LCD display shall indicate all applicable information associated with the trouble condition including; zone, device type, device location and time/date.
- 3. All system activity/events shall be documented on system history file.
- 4. Any remote or local annunciator LCD/LED's associated with the trouble zone shall be illuminated.
- 5. Transmit signal to the central station with point identification.
- C. Upon activation of any device connected to a monitor circuit, the following functions shall automatically occur:
 - 1. The internal audible device shall sound at the control panel and remote annunciator.
 - 2. The LCD display shall indicate all applicable information associated with the status condition including; zone, device type, device location and time/date.
 - 3. All system activity/events shall be documented on the system history file.
 - 4. Any remote or local annunciator LCD/LED's associated with the status zone shall be illuminated.

1.7 SUBMITTALS

- A. The contractor shall purchase no equipment for the system specified herein until the owner has approved the project submittals in their entirety and has returned them to the contractor. It is the responsibility of the contractor to meet the entire intent and functional performance detailed in these specifications. Approved submittals shall only allow the contractor to proceed with the installation and shall not be construed to mean that the contractor has satisfied the requirements of these specifications. The contractor shall submit six (6) complete sets of documentation within 30 calendar days after award of purchase order.
- B. Each submittal shall include a cover letter providing a list of each variation that the submittal may have from the requirements of the contract documents. In addition the contractor shall provide specific notation on each shop drawing, sample, catalog cut, data sheet, installation manual, etc. submitted for review and approval, of each such variation.

- C. All drawings and diagrams shall include the Contractor's title block, complete with drawing title, contractor's name, address, date including revisions, and preparer's and reviewers initials.
- D. Data sheets with the printed logo or trademark of the manufacturer for all equipment.
 Indicated in the documentation will be the type, size, rating, style, and catalog number for all items proposed to meet the system performance detailed in this specification. The proposed equipment shall be subject to the approval of the Architect/Engineer.
- E. A complete set of shop drawings shall be supplied. The shop drawings shall be reproduced electronically in digital format. This package shall include but not be limited to:

1. Control panel wiring and interconnection schematics.

2. Complete point to point wiring diagrams.

3. Riser

diagrams.

- 4. Complete 1/8" = 1'-0 scaled floor plan drawings locating all system devices as well as raceway size and routing, junction boxes, and conductor size, quantity, and color in each raceway.
- 5. Detailed system operational description. Any Specification differences and deviations shall be clearly noted and marked.

6. Complete system bill of

material.

7. All drawings shall be reviewed and signed off by an individual having a minimum of a NICET certification in fire protection engineering technology, subfield of fire alarm systems.

8. A copy of the installing technician's NICET certification. Installer's Certification.

- 9. The engineered systems distributor must be licensed in the state of project location and have been incorporated in the business in that state for a minimum of 5 years. Submit a copy of the contractors training certification issued by the manufacturer of the Life Safety System.
- 10. Complete calculations shall be provided which show the electrical load on the following system components:
 - a. Each standby power supply (batteries). Battery size shall be a minimum of

125% of the calculated

requirement. b. Each notification appliance circuit.

c. Each auxiliary control circuit that draws power from any system power supply. d. Provide voltage drop calculations for each power supply. The voltage drop

calculations shall include 20% spare capacity for future expansion.

- 11. Two (2) copies of the following documents shall be delivered to the building owner's representative at the time of system acceptance. The close out submittals shall include:
 - a. Project specific operating manuals covering the installed Life Safety System.
 - b. As-Built scaled drawings consisting of: a 1/8" = 1'-0 scale scaled plan of the building showing the placement of each individual item of the Life Safety System equipment as well as raceway size and routing, junction boxes, and conductor size, quantity, and color in each raceway. All drawings must reflect point to point wiring, device address and programmed characteristics as verified in the presence of the engineer and/or the end user unless device addressing is electronically generated, and automatically graphically documented by the system.
 - c. All drawings shall be provided in standard .DXF format. A bond plot of each sheet shall also be provided.
 - d. The application program listing for the system as installed at the time of acceptance by the building owner and/or local AHJ (disk, hard copy printout, and all required passwords).
 - e. Provide the name, address and telephone of the authorized factory representative.
 - f. A filled out Record of Completion similar to NFPA 72, 2007 edition figure 10-6.2.31.

1.8 QUALIFICATION OF CONTRACTORS

- A. Before commencing work, submit data showing that the manufacturer has successfully installed fire alarm systems of the same scope, type, and design as specified.
- B. The contractor shall employ on staff a minimum of one NICET Level II technician or a professional engineer, registered in the state of the installation. Submit copy of license.
- C. The contractor shall have in-house engineering and project management capability consistent with the requirements of this project. Qualified and approved representatives of the system manufacturer shall perform the detailed engineering design of central and remote control equipment. Qualified and approved representatives of the system manufacturer shall produce all panel and equipment drawings and submittals, operating manuals. The contractor is responsible for retaining qualified and approved representative(s) of those system manufacturers specified for detailed system design and documentation, coordination of system installation requirements, and final system testing and commissioning in accordance with these specifications.

Mark Twain School for the Talented and Gifted 28 31 00-7 Org #220 Dallas ISD Construction Services

D. The Contractor shall be qualified by UL for certifying the fire alarm system. Upon completion of the installation, the Contractor shall certify that the final system meets UL ongoing maintenance.

1.9 MANUFACTURER'S REPRESENTATIVE:

A. Provide the services of a factory trained and certified representative or technician, experienced in the installation and operation of the type of system provided. The representative shall be licensed in the state, if required by law. The technician shall supervise the installation, make programming modification, perform preliminary testing, perform final testing, and provide certification of the system. The technician shall provide the required instruction to the Owner's personnel in the system operation and maintenance.

1.10 DELIVERY, STORAGE AND HANDLING

A. The Contractor shall be responsible for all receiving, handling, and storage of his materials at the job site. Use of loading docks, service driveways, and freight elevators shall be coordinated with the Owner.

B. The Contractor shall remove rubbish and debris resulting from his work on a daily basis.

Rubbish not removed by the Contractor will be removed by the Owner and backcharged to the Contractor. Removal of debris and rubbish from the premises shall be coordinated with the Owner.

C. Salvaged items: All existing fire alarm control panels and remote power supplies to be removed with care and returned to Dallas ISD designated representative, who will provide to Dallas ISD-M&O

1.11 PROJECT CONDITIONS

- A. It shall be the Contractor's responsibility to inspect the job site and become familiar with the conditions under which the work will be performed. Inspection of the building may be made by appointment with the Owner. Contractors are requested to inspect the building prior to the pre-bid meeting.
- B. All work may be conducted during normal working hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, by properly coordinating the work with the Owner. Noise restrictions do apply. Core drilling and testing of evacuation signals is disruptive to occupants. Coordinate with the owner's representative 48 hours prior to the start of such work. Contractor is to include, in his base bid, all overtime necessary to complete his work.
- C. The Contractor shall be responsible for prior coordination of all work and demolition with the Owner.

1.12 WARRANTY AND MAINTENANCE

- A. The contractor shall warranty all materials, installation and workmanship for one (1) year from date of acceptance, unless otherwise specified. A copy of the manufacturer's warranty shall be provided with close-out documentation and included with the operation and installation manuals.
- B. The System Supplier shall maintain a service organization with adequate spare parts stock within 75 miles of the installation. Any defects that render the system inoperative shall be repaired within 24 hours of the owner notifying the contractor.
- C. The Contractor shall supply the following spare parts:
 - 1. Manual fire alarm stations Ten (10) percent of the installed quantity of each type, but no less than two (2).
 - 2. Audible and visible devices Ten (10) percent of the installed quantity of each type, but no less than two (2) devices.
 - 3. Keys A minimum of three (3) sets of keys shall be provided and appropriately identified.
 - 4. One SLC loop car, one CPU and one ACM-24AT control module and one remote power supply.

1.13 TRAINING

- A. The System Supplier shall schedule and present a minimum of 2 hours of documented formalized instruction for the building owner, detailing the proper operation of the installed System.
- B. The instruction shall be presented in an organized and professional manner by a person factory trained in the operation and maintenance of the equipment and who is also thoroughly familiar with the installation.
- C. The instruction shall cover the schedule of maintenance required by NFPA 72 and any additional maintenance recommended by the system manufacturer.
- D. Instruction shall be made available to the Local Municipal Fire Department if requested by the Local Authority Having Jurisdiction.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Acceptable fire alarm system manufacturers include:
 - 1. Notifier NFS2-3030 w/ AES callout
- B. All equipment and components shall be the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approval agency for use as part of a protected premises protective signaling (fire alarm) system. The authorized representative of the manufacturer of the major equipment, such as control panels, shall be responsible for the satisfactory installation of the complete system.

Mark Twain School for the Talented and Gifted 28 31 00-9 Org #220 Dallas ISD Construction Services

C. The contractor shall provide, from the acceptable manufacturer's current product lines, equipment and components, which comply, with the requirements of these specifications. Equipment or components, which do not provide the performance and features, required by these specifications are not acceptable, regardless of manufacturer.

2.2 FIRE-ALARM CONTROL UNIT

- A. General Requirements for Fire-Alarm Control Unit:
 - 1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, with internal dialers complying with UL 864 and listed and labeled by an NRTL.
 - a. System software and programs shall be held in flash electrically erasable programmable read-only memory (EEPROM), retaining the information through failure of primary and secondary power supplies.
 - b. Include a real-time clock for time annotation of events on the event recorder and printer.
 - 2. Addressable initiation devices that communicate device identity and status.
 - a. Smoke sensors shall additionally communicate sensitivity setting.
 - b. Temperature sensors shall additionally test for and communicate the sensitivity range of the device.
 - 3. Addressable control circuits for operation of mechanical equipment.
- B. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.
 - 1. Annunciator and Display: Liquid-crystal type, 3 line(s) of 40 characters, minimum.
 - 2. Keypad: Arranged to permit entry and execution of programming, display, and control commands.
- C. Circuits:
 - 1. Initiating Device, Notification Appliance, and Signaling Line Circuits: NFPA 72, Class A.
 - a. Initiating Device Circuits: Style D.
 - b. Notification Appliance Circuits: Style Z.
 - c. Signaling Line Circuits: Style 2.
 - d. Install no more than 40 addressable devices on each signaling line circuit.
- D. Voice/Alarm Signaling Service: Central emergency communication system with redundant microphones, preamplifiers, amplifiers, and tone generators provided in a separate cabinet.
 - 1. Indicated number of alarm channels for automatic, simultaneous transmission of different announcements to different zones or for manual transmission of announcements by use of the central-control microphone. Amplifiers shall comply with UL 1711 and be listed by an NRTL.
 - a. Allow the application of and evacuation signal to indicated number of zones and, at same time, allow voice paging to the other zones selectively or in any combination.
 - b. Programmable tone and message sequence selection.

Mark Twain School for the Talented and Gifted 28 31 00-10 Org #220 Dallas ISD Construction Services

- c. Standard digitally recorded messages for "Evacuation" and "All Clear."
- d. Generate tones to be sequenced with audio messages of type recommended by NFPA 72 and that are compatible with tone patterns of notification appliance circuits of fire-alarm control unit.
- 2. Status Annunciator: Indicate the status of various voice/alarm speaker zones.
- 3. Preamplifiers, amplifiers, and tone generators shall automatically transfer to backup units, on primary equipment failure.
- E. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, supervisory and digital alarm communicator transmitters shall be powered by 24-V dc source.
 - 1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the powersupply module rating.
 - 2. Provide a surge protection device on all power supplies to fire alarm system.
- F. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.
 - 1. Batteries: Sealed lead calcium or sealed, valve-regulated, recombinant lead acid

2.3.0 SYSTEM SMOKE DETECTORS

- A. General Requirements for System Smoke Detectors:
 - 1. Comply with UL 268; operating at 24-V dc, nominal.
 - 2. Detectors shall be four-wire type.
 - 3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
 - 4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
 - 5. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
 - 6. Integral Visual-Indicating Light: LED type indicating detector has operated and poweron status.
- B. Photoelectric Smoke Detectors:
 - 1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
 - 2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
 - a. Primary status.
 - b. Device type.
 - c. Present average value.
 - d. Present sensitivity selected.
 - e. Sensor range (normal, dirty, etc.).
- C. Duct Smoke Detectors: Photoelectric type complying with UL 268A.

Mark Twain School for the Talented and Gifted 28 31 00-11 Org #220 Dallas ISD Construction Services

- 1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
- 2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
 - a. Primary status.
 - b. Device type.
 - c. Present average value.
 - d. Present sensitivity selected.
 - e. Sensor range (normal, dirty, etc.).
- 3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector.
- 4. Each sensor shall have multiple levels of detection sensitivity.
- 5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.
- 6. Relay Fan Shutdown: Rated to interrupt fan motor-control circuit.
- 7. Duct detectors may not be powered by HVAC unit they are serving and must be powered by fire alarm system.

2.4 MANUAL PULL STATION

- Provide analog/addressable double action, single stage fire alarm stations at the locations shown on the drawings. The fire alarm station shall be of polycarbonate construction and incorporate an internal toggle switch. A locked test feature shall be provided. The station shall be finished in red with silver "PULL IN CASE OF FIRE" lettering. The manual station shall be suitable for mounting on North American 2 ½ (64mm) deep 1-gang boxes and 1 ½ (38mm) deep 4 square boxes with 1-gang covers. Manual stations with glass rods are not acceptable.
- 2. Provide protective cover with integral horn in gymnasiums.

2.5 NOTIFICATION APPLIANCES

- A. All appliances which are supplied for the requirements of this specification shall be UL Listed for Fire Protective Service, and shall be capable of providing the "equivalent facilitation" which is allowed under the Americans with Disabilities Act Accessabilities Guidelines (ADA(AG)), and shall be UL 1971 Listed.
- B. All appliances shall be of the same manufacturer as the existing fire alarm control panel to insure absolute compatibility between the appliances and the control panels, and to insure that the application of the appliances are done in accordance with the existing manufacturer's instructions.
- C. Any appliances that do not meet the above requirements, and are submitted for use must show written proof of their compatibility for the purpose intended. Such proof shall be in the form of documentation from all manufacturers that clearly states that their equipment (as submitted) is 100% compatible with each other for the purpose intended. All strobes shall be provided with lens markings oriented for wall mounting.

Mark Twain School for the Talented and Gifted 28 31 00-12 Org #220 Dallas ISD Construction Services

D. All notification appliances shall be ceiling mounted unless noted otherwise on the drawings.

Wall mounted devices shall be white and ceiling mounted devices shall be white.

E. Provide horns at the locations shown on the drawings. The horn shall provide an 84 dBA

sound output at 10 ft. when measured in reverberation room per UL-464. The horn shall have a selectable steady or synchronized temporal output. In and out screw terminals shall be provided for wiring. The horn shall mount in a North American 1-gang box.

F. Provide horn/strobes at the locations shown on the drawings. The horn/strobe shall provide an audible output of 84 dBA at 10 ft. when measured in reverberation room per UL-464. Strobes shall provide synchronized flash outputs. The strobe output shall be determined as required by its specific location and application from a family of 15cd, 30cd, 60cd, 75cd &

110cd devices. The horn shall have a selectable steady or synchronized temporal output. In and out screw terminals shall be provided for wiring. Low profile horn/strobes shall mount in a North American 1-gang box.

G. Provide strobes at the locations shown on the drawings. In and out screw terminals shall be provided for wiring. Strobes shall provide synchronized flash outputs. Strobe output shall be determined as required by its specific location and application from a family of 15cd, 30cd, 60cd, 75cd, or 110cd devices.

2.6 DIGITAL ALARM COMMUNICATOR TRANSMITTER

- A. Digital alarm communicator transmitter shall be acceptable to the remote central station and shall comply with UL 632 and be listed and labeled by an NRTL.
- B. Functional Performance: Unit shall receive an alarm, supervisory, or trouble signal from fire-alarm control unit and automatically capture two telephone line(s) and dial a preset number for a remote central station. When contact is made with central station(s), signals shall be transmitted. If service on either line is interrupted for longer than 45 seconds, transmitter shall initiate a local trouble signal and transmit the signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. Transmitter shall automatically report telephone service restoration to the central station. If service is lost on both telephone lines, transmitter shall initiate the local trouble signal.
- C. Local functions and display at the digital alarm communicator transmitter shall include the following:
 - 1. Verification that both telephone lines are available.
 - 2. Programming device.
 - 3. LED display.
 - 4. Manual test report function and manual transmission clear indication.

Mark Twain School for the Talented and Gifted 28 31 00-13 Org #220 Dallas ISD Construction Services

- 5. Communications failure with the central station or fire-alarm control unit.
- D. Digital data transmission shall include the following:
 - 1. Address and Zone of the alarm-initiating device.
 - 2. Address and Zone of the supervisory signal.
 - 3. Address and Zone of the trouble-initiating device.
 - 4. Loss of ac supply or loss of power.
 - 5. Low battery.
 - 6. Abnormal test signal.
 - 7. Communication bus failure.
- E. Secondary Power: Integral rechargeable battery and automatic charger. Self-Test: Conducted automatically every 24 hours with report transmitted to central station

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All equipment shall be attached to walls and ceiling/floor assemblies and shall be mounted firmly in place. Detectors shall not be supported solely by suspended ceilings. Fasteners and supports shall be sized to support the required load.
- B. All buildings on a campus must be connected to the main FACP.
- C. Contractor is responsible for coordinating with District to provide any dedicated phone line that is required.
- D. Fire alarm system shall have surge protection at each location the signaling line circuit leaves the main building or returns to the building from portables.
- E. Fire alarm systems are monitored by an AES-Multinet receiver at Dallas ISD's central monitoring system. Fire alarm systems are to report to central monitoring system via an AES 7788F/7744F series fire subscriber and AES 7794 AES-IntelliPro Fire or Dallas ISD approved equal. If central monitoring system is not available, signal is to be sent to Southwest Dispatch or as directed by Dallas ISD designated representative. Provide twelve months of monitoring service required as part of the install.
- F. Contractor is responsible for coordinating with Dallas ISD-IT-CSS and IT-Infrastructure to provide any dedicated phone lines that are required. Typically only required in remote locations that cannot use the AES system.
- G. Licensed fire alarm installer to coordinate any proposed system expansion with Dallas ISD-M&O prior to submittal and installation.
- H. Licensed fire alarm contractor to provide system submittal with all zone information. Contractor to coordinate system monitoring program requirements with Dallas ISD-IT-CSS and Central Dispatch.
- I. Install locking document box at the fire alarm control panel (FACP). Place completed as-built drawings, upon completion, in locked document box.
- J. Installation identifying sticker to be placed inside the fire alarm control panel (FACP).
- K. Attic stock of like manufacture to be provided to Dallas ISD designated representative, who will provide to Dallas ISD-M&O upon completion of installation in the following quantities. 10% of field devices, one SLC (signaling line circuit) Loop Card, one CPU

Mark Twain School for the Talented and Gifted 28 31 00-14 Org #220 Dallas ISD Construction Services

(central processing unit), one ACM24AT control module ,if used, and one remote power supply.

3.2 CONDUCTORS

- A. The requirement of this section apply to all system conductors, including all signaling line, initiating device, notification appliance, auxiliary function, remote signaling, AC and DC power and grounding/shield drain circuits, and any other wiring installed by the Contractor pursuant to the requirements of these Specifications.
- B. All circuits shall be rated power limited in accordance with NEC Article
- 760. C. All system conductors shall be of the type(s) specified herein.
- D. All initiating circuit, signaling line circuit, AC power conductors, shield drain conductors and grounding conductors, shall be solid copper, stranded or bunch tinned (bonded) stranded copper.
- E. All signaling line circuits, including all addressable initiating device circuits shall be 18 AWG minimum multi-conductor jacketed twisted cable or twisted shielded or as per manufacturer's requirements.
- F. All non-addressable initiating device circuits, 24 VDC auxiliary function circuits shall be 18 AWG minimum or per manufacturer's requirements.
- G. All notification appliance circuit conductors shall be solid copper or bunch tinned (bonded) stranded copper. Where stranded conductors are utilized, a maximum of 7 strands shall be permitted for No. 16 and No. 18 conductors, and a maximum of 19 strands shall be permitted for No. 14 and larger conductors.
- H. All audible notification appliance circuits shall be 14 AWG minimum twisted pairs or twisted pairs shielded or per manufacturer's requirements.
- I. All visual notification appliance circuits shall be 14 AWG minimum THHN or twisted pairs or twisted shielded pairs or per manufacturer's requirements.

3.3 CONDUCTORS AND RACEWAY

- A. The entire system shall be installed in a skillful manner in accordance with approved manufacturer's installation manuals, shop drawings and wiring diagrams. The contractor shall furnish all conduit, wiring, outlet boxes, junction boxes, cabinets and similar devices necessary for the complete installation. All wiring shall be of the type required by the NEC and approved by local authorities having jurisdiction for the purpose.
- B. Any shorts, opens, or grounds found on new or existing wiring shall be corrected prior to the connection of these wires to any panel component or field device.

Mark Twain School for the Talented and Gifted 28 31 00-15 Org #220 Dallas ISD Construction Services

- C. The contractor shall neatly tie-wrap all field-wiring conductors in the gutter spaces of the control panels and secure the wiring away from all circuit boards and control equipment components. All field-wiring circuits shall be neatly and legibly labeled in the control panel. No wiring except home runs from life safety system circuits and system power supply circuits shall be permitted in the control panel enclosures. No wiring splices shall be permitted in a control panel enclosure.
- D. All penetration of floor slabs and firewalls shall be fire stopped in accordance with all local fire codes.

3.4 CONDUIT RACEWAY

A. Refer to the requirements of Section 260533 Raceways, fittings, and Boxes for Electrical

Systems for conduit requirements.

- B. All system conduits shall be red EMT, 3/4 -inch minimum, except for flexible metallic conduit used for whips to devices only, maximum length 6 feet, 3/4-inch diameter, minimum.
- C. All system conduits, which are installed in areas which may be subject to physical damage or located exterior to the facility, shall be IMC or rigid steel, 3/4 -inch minimum.
- D. Conduits shall be sized according to the conductors contained therein. Cross sectional area percentage fill for system conduits shall not exceed 40%.
- E. All fire alarm conduit systems shall be routed and installed to minimize the potential for physical, mechanical or by fire damage, and so as not to interfere with existing building systems, facilities or equipment, and to facilitate service and minimize maintenance.
- F. All conduits, except flexible conduit whips to devices, shall be solidly attached to building structural members, ceiling slabs or permanent walls. Conduits shall not be attached to existing conduit, duct work, cable trays, other ceiling equipment, drop ceiling hangers/grids or partition walls.
- G. All system conduits, junction boxes, pull boxes, terminal cabinets, electrical enclosures and device back boxes shall be readily accessible for inspection, testing, service and maintenance.

3.5 FIELD QUALITY CONTROL

A. Test &

Inspection

- 1. All intelligent analog addressable devices shall be tested for current address, sensitivity, and user defined message.
- 2. All wiring shall be tested for continuity, shorts, and grounds before the system is activated.

Mark Twain School for the Talented and Gifted 28 31 00-16 Org #220 Dallas ISD Construction Services

- 3. All test equipment, instruments, tools and labor required to conduct the tests shall be made available by the installing contractor.
- 4. The system including all its sequence of operations shall be demonstrated to the Owner, his representative, and the local fire inspector. In the event the system does not operate properly, the test shall be terminated. Corrections shall be made and the testing procedure shall be repeated until it is acceptable to the Owner, his representatives and the fire inspector.
- 5. At the final test and inspection, a factory trained representative of the system manufacturer shall demonstrate that the system functions properly in accordance with these specifications. The representative shall provide technical supervision, and participate during all of the testing for the system.
- 6. All fire alarm testing shall be in accordance with National Fire Alarm Code, NFPA 72.
- 7. A letter from the Contractor certifying that the system is installed entirely in accordance with the system manufacturer's recommendations and within the limitations of the required listings and approvals, that all system hardware and software has been visually inspected and functionally tested by a manufacturer's certified representative, and that the system is in proper working order.

END OF SECTION 28 3100
SECTION 31 10 00 - SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work included in this Section, while not inclusive but listed as a guide, shall include:
 - 1. Furnishing of all labor, tools, equipment, and incidentals required to complete the work.
 - 2. Layout of work.
 - 3. Protection of existing trees.
 - 4. Removal of trees and other vegetation.
 - 5. Topsoil stripping.
 - 6. Clearing and grubbing.
 - 7. General site excavation.
 - 8. Removing below-grade improvements.

1.02 RELATED SECTIONS

- A. Coordinate the work of this Section with the Work of other Sections as required to properly execute the Work and as necessary to maintain satisfactory progress of the work of other Sections. Other Sections containing related work include but are not limited to the following:
 - 1. Erosion Control Section 31 25 00

1.03 REFERENCES

Meet requirements and recommendations of applicable portions of Standard listed.

- A. ASTM D698 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 lb./ft;).
- B. ASTM D4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- C. Texas Department of Transportation Standard Specifications for Construction of Highways, Streets, and Bridges, current edition, TxDOT.

1.04 SUBMITTALS

A. Samples:

00-1

- 1. Provide adequate samples for determination of moisture density relationships and Plasticity Index (P.I.) of on-site materials, imported fill material and drainage aggregate.
- B. Tests Reports: Submit complete laboratory analysis of soil material proposed for fill material.
 - 1. Establish moisture density relationship of in-place sub-grade in accordance with ASTM D-698.
 - 2. Establish moisture density relationship of proposed select fill(s) material in accordance with ASTM D-698.
 - 3. Perform PI test on proposed select fill material to confirm conformance with the project specifications in accordance with ASTM D-4318.
 - 4. Gradation of drainage aggregate in accordance with ASTM C-136.

1.05 JOB CONDITIONS

- A. Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walk, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from the Owner or the City where applicable in public R.O.W. and easements.
- B. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.
- C. Protect improvements on adjoining properties and on Owner's property.

1.06 NOTIFICATION OF OWNERS OF UTILITY LINES AND EQUIPMENT

- A. Notify any corporation, company, individual or local authority owning conduits, wires, pipes, or equipment on site that is affected by demolition work.
- B. Arrange for removal or relocation of indicated items and pay any fees or costs in conjunction with removal or relocation, except as otherwise noted.
- C. Cap lines in accordance with instructions of governing authorities or Owners.

1.07 PROTECTIONS

A. Prior to starting demolition or clearing operations, provide necessary protections as specified in Division 1 and Section 31 50 00, including necessary barricades.

1.08 EXPLOSIVES

Use of explosives is strictly prohibited.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

- A. Topsoil: Shall be rich, friable, sandy loam, free of lumps, debris, wood, roots, Nutgrass, Dallisgrass and reasonably free of other weeds and foreign grasses. Existing topsoil obtained by stripping and meeting the above requirements shall be stockpiled on site.
- B. Select Fill: Shall be select non-expansive sandy clay or clayey sand fill with a Plasticity Index (P.I.) of 4 to 12 and a Liquid Limit of 30% or less.
- C. Sand: Sand for wall backfill shall be pit run, free of organic matter, clays or other binders (concrete sand) with less than 10% passing the #200 mesh sieve.
- D. Non-select Fill: On-site clay material free of debris and vegetation processed so that clods or particles are a maximum of 2" in diameter.

PART 3 EXECUTION

3.01 PREPARATION

- A. Verify that abandoned utilities have been properly disconnected and capped.
- B. Verify that required barricades and other protective measures are in place.

3.02 DEMOLITION OPERATIONS

- A. Execute demolition of designated existing site items.
- B. Materials, equipment, and debris resulting from demolition operations shall become property of Contractor, unless otherwise noted. Immediately remove demolition debris from site and legally dispose.

SITE CLEARING CSP # 207459

3.03 SALVAGE

- A. Salvage designated site items for relocation and reinstallation.
- B. Store and protect items until ready for installation.

3.04 CLEARING AND GRUBBING

- A. The designated area shall be cleared of all trees, brush, shrubbery, plants, etc., not indicated on the plans to be preserved. Pavement shall be removed where indicated. Trees and brush designated to be left in place shall be carefully trimmed as directed and shall be protected from scarring, barking or other injuries during construction operations. Pruned limbs over two inches in diameter shall be treated by painting the exposed ends with an approved asphaltic material. Unless otherwise indicated on the plans, trees and stumps shall be cut off or otherwise removed as close to the natural ground as practicable on areas which are to be covered by at least three feet of embankment. On areas required for borrow sites and materials sources, stumps, roots, etc., shall be removed to the complete extent necessary to prevent such objectionable matter becoming mixed with the material to be used in construction.
- B. Refer to Landscape Plans and specifications where applicable, and Section 31 25 00 Erosion and Sedimentation Controls, for tree protection, maintenance, and misc. other requirements.

3.05 GENERAL SITE EXCAVATION

- A. The term Building Area shall mean the area generally within a line 5 feet from all exterior building wall lines and includes walks abutting the building or walks within the building area, unless noted or specified otherwise on plans.
- B. The entire building and paving site shall be cleaned of all debris, vegetation, organic matter, concrete, and asphalt paving to a depth of 4" minimum before excavation is begun.
- C. Perform the necessary cutting of the site to establish the grade indicated on the Grading Plan. Cutting shall be sufficiently deep to allow for fill materials to be placed on top of cut area with the finish topsoil or paving material to attain the final finish grades.
- D. After acceptance of exposed cut surfaces by the Testing Laboratory, the exposed surface shall be proof-rolled. Soft, loose areas shall be removed to a level of stiff or dense soil. Backfill with acceptable select fill, moisture condition and compact as required by these specifications and the plans.

- E. Areas designated for planting or within the limit of construction not covered by building or pavements shall be held down 6" below finish grade for topsoil placement.
- F. General Demolition: Shall consist of removal and disposal of pavements and other obstructions visible at the ground surface, underground structures and utilities indicated to be demolished and removed. Remove all such excavated materials from site.
- G. Unauthorized Excavation: Consists of removal of materials beyond indicated subgrade elevations or dimensions without prior approval by engineer. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending the indicated bottom elevation of the footing or base to the excavation bottom, without altering required top elevation. Backfill and compact unauthorized excavations as specified for authorized excavations of same classification.

3.06 BACKFILL AND FILL - GENERAL

- A. Surface Preparation for Fill: Scarify soil to a depth of 6", moisture condition the soil at optimum moisture. Compact to 95% of Standard Proctor at moisture contents at or +4% above the Proctor optimum.
- B. Backfill and Fill: Place backfill and Select Fill materials in 8" loose lift. Before compaction, bring soil to optimum moisture. Compact each layer to required percentage of maximum density for each area of classification. Do not place backfill material on surfaces that are muddy or frozen.
- 3.07 GRADING

Uniformly grade all areas including adjacent transition areas and at all miscellaneous ground structures, curbs and walks, grade surrounding area uniformly to top of curb, walk or structure unless shown otherwise.

- A. Finish Grading: Grade area adjacent to building lines to drain away from structures and to prevent ponding. Finish surfaces to be free from irregular surface changes.
- B. Topsoil: Where areas are designated as planting, hold down subgrade 6". Fill with topsoil to required finish grade or to top of surrounding ground structure. Topsoil shall be placed to a depth of 6", spread and hand raked to required finish grades. Topsoil shall be placed over all fill areas, areas designated as planting and all areas not covered by building or pavement included in this contract. Coordinate topsoil placement and requirements with landscape work.

3.08 MAINTENANCE

SITE CLEARING CSP # 207459

- A. Protect newly graded areas from traffic and erosion and keep free of trash and debris.
- B. Repair and re-establish grades in settled, eroded, and rutted areas to required finish elevations.
- C. When completed, compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, reshape, and compact to the required density prior to further construction.

3.09 DISPOSAL OF SPOILAGE AND CLEANOUT

- A. All materials excavated or scheduled to be removed from the site, including, but not limited to concrete paving, asphalt paving, natural soils, abandoned utilities, rock, etc. shall be legally disposed of off the site by the Contractor.
- B. During the course of the construction, the site shall be maintained free of excavated materials, spoilage, etc. and shall be kept clean and neat at all times.

END OF SECTION 31 10 00

SECTION 31 23 34 - EXCAVATION AND BACKFILL FOR CONDUITS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work included in this Section, while not all inclusive but listed as a guide, shall include:
 - 1. Furnishing of all labor, tools, equipment, materials, and incidentals to complete the work.
 - 2. Layout of work.
 - 3. Excavation and backfill for underground pipes and conduits.
 - 4. Trench safety.
 - 5. Testing.
 - 6. Clean up.

1.02 RELATED SECTIONS

- A. Coordinate the work of this Section with the Work of other Sections as required to properly execute the work as necessary to maintain satisfactory progress of the Work of other Sections. Other Sections containing related work include but are not limited to the following:
 - 1. Testing and Inspection Services Division 01

1.03 REFERENCES

Meet requirements and recommendations of applicable portions of the Standards listed.

- A. ASTM C33 Concrete Aggregates.
- B. ASTM D4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- C. ASTM D698 Laboratory Compaction Characteristics of Soil Using Standard Effort.
- D. American Society of Testing and Materials, ASTM.
- E. Geotechnical Report provided for project
- F. Texas Department of Transportation Standard Specifications for Construction of Highways, Streets, and Bridges, TxDOT current edition.
- G. City of Dallas Public Works and Water Utility District Standards and Details as applicable.

EXCAVATION AND BACKFILL FOR CONDUITS CSP # 207459

1.04 SUBMITTALS

A. Samples:

- 1. Provide adequate samples for determination of moisture density relationship and Plasticity Index (P.I.) of on-site materials, imported fill material and drainage aggregate.
- B. Trench Excavation Protection shall be as required by the provisions of Part 1926, Subpart P -Excavations, trenching, and shoring of the Occupational Safety and Health Administration Standards and Interpretations. Additional information may be obtained from the U.S. Department of Labor Occupational Safety and Health Administration (OSHA), 525 Griffin Square Building, Room 602, Dallas, Texas 75202, (214) 767-4731.
- C. Furnish and pay for services of Professional Engineer registered in the State of Texas to prepare detailed plans and specifications for trenching and excavation safety systems to meet the requirements of OSHA and Federal, City, and State Law and regulations. Such documents when prepared shall be separately issued by the Contractor to be included within the Construction Documents.
- D. Submit one copy of the trench and safety documents to the Owner's Representative.

PART 2 PRODUCTS

2.01 PIPE BEDDING MATERIAL FOR STORM SEWERS

A. <u>General:</u> The pipe shall be bedded in accordance with details shown on the plans for the type of bedding indicated or specified.

B. <u>Gravel:</u>

- 1. Screened Pit Gravel: Passing 1 inch sieve and retained on 5/8 inch sieve.
- 2. Pea Gravel: Passing 5/8 inch sieve and retained on 1/8 inch sieve.
- 3. The aggregate used shall contain no more than a total of eight percent by weight of deleterious substances such as clay, shale, or organic matter.

2.02 PIPE BEDDING MATERIAL FOR WATER AND SANITARY SEWER MAINS

A. <u>Crushed Stone Embedment</u>:

1. Description:

The aggregate shall consist of durable particles of crushed stone; free from frozen material or injurious amount of salt, alkali, vegetable matter or other material either free or as adherent coating; and its quality shall be reasonably uniform throughout. It shall have a wear of not more than 40 percent when tested in accordance with Texas TxDOT Test Method Tex-410-A.

2. <u>Test:</u>

When tested by standard laboratory methods, crushed rock embedment for each gradation shall meet the following requirements for percentage by weight.

Standard Crushed Rock - Aggregate Grade 4	PERCENT
Retained on 1-1/2 inch sieve	0%
Retained on 1 inch sieve	0-5%
Retained on 2 inch sieve	40-75%
Retained on No. 4 sieve	90-100%
Retained on No. 8 sieve	95-100%
Fine Crushed Rock - Aggregate Grade 8	PERCENT
Retained on 2 inch sieve	0%
Retained on 3/8 inch sieve	0-5%
Retained on No. 4 sieve	35-60%
Retained on No. 8 sieve	90-100%
Coarse Crushed Rock	PERCENT
Passing 1-1/2 inch sieve	100%
Retained on 3/4 inch sieve	100%

- B. <u>Granular Material:</u> Granular material shall be free flowing, such as sand or hydraulically graded crushed stone fines, or mixed sand and gravel, or sandy loam. The material shall be free from lumps, stones over two inches in diameter, clay, and organic matter.
- C. <u>Select Material:</u> Select material shall be gravel, fine rock cuttings sand, sandy loam, or loam free from excessive clay. Rock cuttings shall have no dimension greater than two inches.
- D. <u>Natural Gravel:</u> Natural gravel shall consist of uncrushed stones meeting the requirements for wear as outlined in Item 2.2A. The material shall be washed and screeded and not have by weight more than one percent organic matter, clays or loam are not more than five percent by weight of anyone of or combination of slate, shale, schist or soft particles of sandstone. The

graduation shall be:

	PERCENT
Passing 1-1/2 inch sieve	100%
Retained on 3/4 inch sieve	100%

E. <u>Sand:</u> Sand shall consist of clean, hard, durable, uncoated grains, free from lumps and organic material. All particles must pass a No. 8 sieve.

PART 3 EXECUTION

3.01 EXCAVATION

- A. <u>General:</u> In general, all excavation shall be made in open cut from the surface of the ground and shall be no greater in width or depth than is necessary to permit the proper construction of the work in accordance with the plans and these specifications. All excavation shall be to the line and grade shown on the plans. The entire foundation area in the bottom of all excavation shall be firm, stable, and at uniform density as nearly as practicable. Unless necessary, materials shall not be disturbed. The final cleaning off and preparing of the foundation area shall be done immediately prior to the placing of the conduit or structures.
 - 1. <u>Trench Bottom Elevation</u>. All trenches for installation of water, storm sewer and/or sanitary sewer lines shall be excavated to a point below the barrel of the pipe for the type of embedment specified.
 - 2. <u>Trench Overcut</u>. Should the Contractor excavate below the plan trench bottom for water or sewer lines, he shall backfill to trench bottom grade shown on the plan with approved aggregate, consolidated and compacted. If the Contractor elects to overcut the trench and use gravel and drainpipe as an underdrain in lieu of or in conjunction with pumping, draining or well pointing, the additional work shall be considered as incidental work; and additional compensation shall not be allowed.

Where the character of the foundation material is such that a proper foundation cannot be prepared at the elevation shown on the plans, the Contractor shall deepen the excavation to where a proper foundation can be prepared. Such material removed shall be replaced with foundation materials and thoroughly compacted in place to the finished grade elevation.

3. <u>Excess Trench Width</u>. When the following maximum trench widths are not maintained to

a point of one foot above the top of the pipe, the Contractor shall provide at his expense the next higher class of embedment; or embedment as directed by the Owner's Representative which shall provide adequate support.

- a) Width of Trench. The limiting trench width shall be as follow:
 - 1) For 24-inch pipe and smaller, the trench width shall be taken as 24 inches or O.D. of the pipe plus 16 inches whichever is greater.
 - 2) For pipe larger than 24 inch size, but not to exceed 72-inch, the trench width shall be taken as equal to the O.D. of the pipe installed plus 24 inches.
 - 3) For pipe larger than 72-inch (1.8M) size, the trench width shall be taken as equal to the O.D. times plus 1.25 plus 1 ft.
 - 4) <u>Progress:</u> The Owner's Representative shall have the right to limit the amount of trench opened, or partly opened, in advance of or following the pipe laying operation. Unless otherwise directed by the Owner's Representative, the completion of backfill shall immediately follow the pipe laying. In the event the Contractor fails to comply with this requirement, the Owner's Representative may stop the pipe laying until the requirements are met.
- B. <u>Excavation Classifications</u>: All excavation is unclassified and involves removal of all materials necessary to permit carrying on the completion of the work. Bidders must satisfy themselves as to the actual existing sub-surfaces conditions, including but not limited to the depth, location and sizes of pipe or conduits of various kinds in place.
- C. <u>Existing Utilities</u>: The Contractor shall thoroughly familiarize himself with available information regarding existing on-site utilities. He shall uncover critical points prior to beginning any trench excavation. Changes to the drawings due to conflicts with existing utilities require the prior approval of the Owners Representative.
- D. <u>Work Sequence</u>: The Contractor shall schedule his work so that all utilities are fully operational. Maintaining acceptable clearance between utilities will be the responsibility of the Contractor.

3.02 SHORING AND SHEETING

When necessary to prevent caving or unduly hazardous working conditions, or to comply with existing laws, trench walls shall be appropriately braced; or sheeted and braced. Where bracing or sheeting and bracing are used, the trench width shall be increased accordingly, shall be considered as incidental work; and shall not be paid for as a separate item. In wet, saturated, or flowing materials where it is necessary to install tight sheeting or cofferdams, wood or steel sheet piling shall be used. All sheeting, shoring, and bracing shall have strength and rigidity to withstand the pressure exerted; to maintain the side of the excavation properly in place; and to protect all persons or property from injury or damage. When excavations are made adjacent to existing buildings or other structures, or in paved streets, particular care shall be taken to

31 23 34-5

EXCAVATION AND BACKFILL FOR CONDUITS CSP # 207459 adequately sheet, shore and brace the sides of the excavation to prevent undermining of, or settlement beneath the structures or pavement. Underpinning of adjacent structures or pavement has become necessary it shall be removed, the void satisfactorily refilled, compacted and the pavement replaced. Wooden sheeting, shoring, and bracing shall be left in place where it is adjacent to the pipe embedment for the initial lift of backfill. The removal of all sheeting, shoring, and bracing shall be done in such manner as not to endanger or damage either new or existing structures, private or public properties; and so as to avoid cave-ins or sliding of the banks. All holes or voids left by the removal of the sheeting, shoring, or bracing shall be immediately and completely filled and compacted with suitable materials. If, for any reason, the Contractor elects to leave in place the sheeting, shoring, or bracing, no payment shall be allowed for such material left in place.

- A. <u>Disposal of excavated materials</u>: Suitable excavated materials may be piled adjacent to the work to be used for backfilling. Excavated materials unsuitable for backfilling, or in excess of that required for backfilling, shall be disposed of. Desirable topsoil, sod, etc., shall be carefully removed and piled separately adjacent to the work when required. Excavated materials shall be handled at all times in such manner as to cause a minimum of inconvenience to public travel and to permit safe and convenient access to private and public property adjacent to or along the lie of the work. The excavated material in rock which is not suitable material for bedding or backfill shall be disposed of. Suitable selected bedding or backfill material shall be provided at no additional cost to the Owner. The contractor shall indemnify and hold harmless the Owner and all of his officers, agents and employees from all suits, actions or claims of any character resulting from his arrangements for and disposal of soil.
- B. <u>Dewatering</u>: The Contractor shall remove all water from any source which may accumulate in the excavation. The embedment or pipe shall not be installed in water. No water shall be allowed to flow through or over unset concrete or through the completed line. All water removed from excavations shall be disposed of in an approved manner, so as not to create unsanitary conditions; nor to cause injury to persons or property; nor damage to the work in progress, and/or not to interfere unduly with the use of streets, private driveways, or entrances. Pumping, bailing, and draining, underdrains, ditches, etc., shall be considered as incidental work and shall not be paid for as separate items.

3.03 BACKFILL

- A. <u>Backfill Procedure</u>: Backfill procedure is that procedure required to return trenches or excavated areas to a satisfactory condition. Such backfilling occurs in two general areas: They are:
 - 1. Areas not subject to vehicular traffic:

and

2. Areas subjected directly to, or influenced by, vehicular traffic.

31 23 34-6

The methods of backfilling to be used shall vary with the width of trench, the character of the materials excavated, the method of excavation, the type of conduit and the degree of compaction required. The placing of backfill shall not begin until the pipe structure has

been properly bedded and jointed. The excavation shall be backfilled only with approved material. Backfill is divided into two major categories:

- a. Embedment is the material upon which the pipe rests; and which covers sewer and water lines.
- b. Trench backfill material is the material required to fill the trench from the top of the embedment to ground elevation or subgrade or a street.
- B. <u>Compaction</u>: Compaction of all backfill material shall be performed in a manner that shall not crack, crush and/or cause the installed pipe to be moved from the established grade and/or alignment, as shown on the plans. Satisfactory density shall be obtained at various depths on all backfill material as indicated from random selected test points prior to the required exfiltration or pressure tests that are to be performed on lines being constructed. The required densities shall be at not less than the optimum moisture of the material.
 - <u>Densities areas subjected to or influenced by vehicular traffic</u>. The trench backfill shall be mechanically compacted to the top of the subgrade in six-inch lifts to at least 95 percent of maximum density as determined by ASTM D698. Moisture content shall be within minus 2 to plus 4 of optimum. The embedment shall be compacted to a density as specified under the description of the embedment required.
 - 2. <u>Densities areas not subjected to or influenced by vehicular traffic</u>. The trench backfill shall be placed in layers into more than 10 inches in depth (loose measurement) and shall be compacted by whatever means the Contractor chooses, to a density comparable with the adjacent undisturbed material. The embedment shall be compacted to a density as specified under the description of the embedment required.
 - 3. <u>Special situations</u>. In areas specifically designated in the plans and specifications, the entire backfill shall be backfilled and compacted to the density specified.
 - 4. <u>Limitations</u>. Densities as specified shall be obtained as the project progresses. No more than 75 percent of the pipe installation on the project is to be completed until specified compaction and density requirements have been ascertained on backfill material for at least 25 percent of the pipe laid.
 - <u>Compaction methods</u>. The method of compaction shall be left to the discretion of the Contractor with the following exception, unless otherwise specified, provided the degree of compaction is obtained and provided that the pipe is not damaged in the process. Compaction of any backfill material by flooding or jetting shall not be permitted. Handoperated mechanical tampers may be used.
 - 6. <u>Embedment.</u> The type of embedment to be used for storm sewers, sanitary sewers or water mains shall be as on the plans.

3.04 DISPOSAL OF EXCESS MATERIAL:

A. Excess Excavated Material (soil material free of trees, stumps, logs, brush, roots, rubbish, and

other objectionable matter which has been accepted by the Owner's Representative): Remove excess excavated material from the construction site before Pre-final Inspection. Approved excess material shall be deposited on the Owner's property outside the perimeter road as indicated by the Drawings or as directed by the Owner's Representative.

B. <u>Waste Material</u> (soil material including trees, stumps, logs, brush, roots, rubbish, and other objectionable matter which has not been accepted by the Owner's Representative): Remove waste material from the project site before Pre-final Inspection. Legally dispose of material at a licensed site or with written and notarized permission from the Property Owner for a private disposal site. All costs associated with waste material removal and disposal shall be paid for by the Contractor.

3.05 TESTING

A. <u>Laboratory Testing and Inspection Services</u>: As specified in Division 01. At a min. provide one compaction test per 100 linear feet per each lift of utility trench.

END OF SECTION 31 23 34

31 23 34-8

SECTION 31 25 00 - EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

- **1.1 SECTION INCLUDES**
 - A. This Section pertains to the provisions for the control of erosion for all areas effected by construction and in stockpile areas and includes seeding, hydromulching, silt fences, sediment barriers, the construction of temporary swales and sedimentation basins as required and shown on the drawings.
 - B. Work under this section shall be coordinated with the Section 01570 Temporary Controls During Construction.

1.2 RELATED SECTIONS

- A. Section 01 57 00: Temporary Controls.
 B. Section 02 20 00: Site Preparation.
 C. Section 31 05 00: Earthwork.

PART 2 - PRODUCTS

2.1 GRASS

A. Materials for seeding shall conform to TxDOT Item 164 for the district in which the project is located.

2.2 FERTILIZER

Fertilizer shall conform to TxDOT Item 166. Use commercial grade fertilizers to insure germination and growth. Analysis by weight shall be 16-4-8 or 15-5-10 for Nitrogen, Phosphoric Acid and Potash.

2.3 WATER

Use clean potable water for maintaining the grass.

2.4 EROSION CONTROL MATTING Enkamat 7010.

2.5 ROCK RIP RAP, CRUSHED STONE BEDDING, AND FILTER FABRIC

Rock rip rap shall consist of field stone or rough hewn guarry stone as nearly uniform in sections as practicable. The rock rip rap and crushed stone bedding shall have a specific gravity of at least 2.25 and shall have a percent wear not more than 30 when tested by the Los Angeles Abrasion Test, ASTM C131 and shall be resistant to action of air, water, and freeze/thaw. If thickness of rip-rap is not specified on drawings, 18-inches shall be required, meeting TxDOT Item 432.3 (2)(C). Gradation shall be as shown on the Construction Drawings. Filter fabric for rock rip rap shall meet the U.S. Army Corps of Engineers Specification CW02215, November, 1977, and shall meet or exceed the following criteria:

Equivalent Opening Size (EOS)	70-100
Tensile Strength (ASTM 1682)	200 lbs. min. each direction
Puncture Strength (ASTM D751)	80 lbs. min.
Abrasion Resistance (ASTM D1175/D1682)	55 lbs. min. each direction

PART 3 - EXECUTION

Mark Twain School for the Talented and Gifted	
Org # 220	
Dallas ISD Construction Services	31 25 00 -1

EROSION AND SEDIMENTATION CSP # 207459

3.1 GENERAL

Contractor shall keep disturbed areas to a minimum required to adequately perform the work. At all times the Contractor shall maintain the site in such a manner that minimizes erosion of the site. The execution of work under this section shall be in conformance with the NPDES rulings and the site Storm Water Pollution Prevention Plan.

3.2 SEEDING

- A. Disturbed portions of the site and stockpile areas shall be seeded within 14 days if the phasing of the construction operations are anticipated to leave those portions of the areas unworked for 21 days or more.
- B. Seeding operations shall be performed in accordance to the TxDOT Standard Specifications, Item 164, titled "Seeding for Erosion Control" using the materials specified for that District and the season in which the seeding operations are to occur.
- C. Seeded areas shall be maintained until the project is accepted by Owner. Maintenance shall include but not be limited to watering, fertilizing, reseeding, mowing and erosion repair as may be required. Grass shall be cut when the average height of the grass reaches six (6) inches. Clippings may be mulched back into the seeded areas. Prior to acceptance of the grassed areas, a minimum coverage of 95 percent shall be achieved, with no individual bare area greater than two square yards.
- D. Fertilizer shall be applied in accordance with TxDOT Item 166, at a rate of not less than 450 lbs/acre.

3.3 DRAINAGE DITCHES

- A. Drainage ditches shall be grassed immediately upon final grading.
- B. Erosion of the banks of the drainage ditches shall be repaired immediately and re-stabilized. Care shall be taken not to rut and damage ditch. Damaged ditch shall be repaired immediately.
- C. Sediment barriers shall be placed at intervals along the ditch as shown on the drawings and as necessary to help trap sediment on the site. Sediment and other debris trapped by the barriers shall be removed on a daily basis as needed.
- D. Ditch side slopes shall not be steeper than three (3) feet horizontal to one (1) foot vertical.
- E. Maintenance of the ditches during construction shall include but not be limited to mowing, re-grading, sediment removal, re-seeding, bank repair and debris removal.
- F. Sediment removed from the ditches may be respread on the site.
- G. Contractor shall work with other contractors at the site in maintaining existing ditch and ditches. Where necessary for access to the work areas, adequately sized culverts shall be installed and maintained to provide the access without disturbing the site drainage.
- H. Ditch not designated to remain in place at the completion of the contract shall be cleaned of any muck, debris and other unsuitable material and filled with approved fill before final grading operations begin.
- Temporary and permanent drainage ditches shall be provided as required to carry drainage away from the work area to an approved outfall point. Unless otherwise shown on the drawings, ditches shall be earthen "V" shaped channels graded to a sufficient depth and slope to carry the anticipated runoff, but at least two (2) feet deep with a slope of 0.1%.

3.4 FILL AND CUT SLOPES

- A. Fill slopes in all cases shall be no steeper than 3:1 unless specifically stated on the drawings.
- B. When cut slopes exceed 2:1 for depths over three (3) feet, proper bracing and shoring per OSHA requirements shall be used and maintained.
- C. For permanent slopes, cut or fill, between 2:1 and 10:1, erosion protection shall be provided with hydromulching, sodding, seeding, or other method as approved.

3.5 SEDIMENTATION BASINS

Mark Twain School for the Talented and Gifted Org # 220 Dallas ISD Construction Services 31 25 00 -2 EROSION AND SEDIMENTATION CSP # 207459

A. Description

- 1. Sedimentation ponds shall be provided where designated on the drawings.
- 2. All drainage from cleared areas shall be routed through the sedimentation basin.
- 3. Contractor shall be responsible for the operation and maintenance of the pond during construction.
- B. Maintenance
 - 1. Contractor shall be responsible for maintaining the pond and the outfall and sediment retarding structure in good working condition throughout the time the pond is to be in operation.
 - 2. When sediment and debris fill the pond to over one third (1/3) its designed capacity, the pond shall be cleaned out.
 - 3. The sediment from the clearing operation shall be stockpiled in its own separate area or removed from the site, as required, and adequate drainage provisions must be made such that drainage from the sediment stockpile drains back into the sediment pond. When approved by Engineer, sediment removed from the pond may be spread over the site.

3.6 EROSION CONTROL BARRIERS

- A. Erosion control barriers shall be provided at intervals along ditches as shown on the drawings and as necessary to meet the requirements of the Storm Water Pollution Prevention Plan.
- B. The barriers shall be silt fence or hay bales placed as shown on the drawings and details.
- C. Barriers shall be maintained in good working condition and replaced when damaged.

3.7 EROSION CONTROL MATTING

Install matting as per manufacturer's recommendation.

END OF SECTION

SECTION 31 63 29 - DRILLED PIERS

PART 1 - GENERAL

1.01 SUMMARY

- A. Description of Work: Furnish all labor, materials, services, equipment and appliances required in conjunction with drilled pier foundations complete, including, but not limited to the following:
 - 1. Layout of drilled piers.
 - 2. Excavation of drilled piers.
 - 3. Temporary steel casings if required.
 - 4. Furnishing and placing reinforcing steel.
 - 5. Furnishing and placing concrete.
 - 6. Placing anchor bolts for steel columns.
 - 7. Removal of spoil (excavated material) resulting from drilled pier excavations.
- B. The extent of drilled piers is shown on the drawings, including locations, diameters of shafts, elevation of top bearing stratum for bidding purposes, top of pier elevations, reinforcement, and details of construction.
- C. Related work specified in other sections:
 - 1. Testing Laboratory Services: Section 01 41 00.
 - 2. Soil Investigation Data: Section 02 20 00.
 - 3. Concrete Reinforcement: Section 03 20 00.
 - 4. Cast-in-Place Concrete: Section 03 30 00.

1.02 QUALITY ASSURANCE

- A. Pier drilling contractor shall be required to submit proof of qualifications requirements including:
 - 1. Minimum of 5 previous projects of similar scope and nature or larger.
 - 2. Verify having been in business for a minimum of three years.
- B. Testing laboratory services:

DRILLED PIERS CSP # 207459

- 1. Refer to section 01 41 00 for additional information concerning laboratory services in conjunction with drilled pier work.
- 2. The contractor shall pay for the services of an independent testing agency to design the concrete mix in conjunction with drilled piers and to perform continuous pier drilling observations.
- 3. Contractor shall give a minimum of 2 days notice to geotechnical consultant for services in conjunction with drilled piers.
- C. Drilling Log:

Geotechnical Representative shall keep an exact log of each pier, regardless of soil conditions, indicating:

- 1. Pier number.
- 2. Pier location.
- 3. Depth drilled through overburden.
- 4. Depth drilled in bearing stratum.
- 5. Elevation of ground surface.
- 6. Top elevation of concrete.
- 7. Top elevation and length of casing.
- 8. Diameter of shaft.
- 9. Diameter and type of bell (if bells are required).
- 10. Estimated inflow of water, source, and depth in bottom of hole when concrete is placed.
- 11. Description of bearing stratum.
- 12. Pumping required.

1.03 JOB CONDITIONS

- A. Scheduling:
 - 1. Schedule pier drilling so that piers will be filled with concrete within 8 hours after drilling.
 - 2. Fill each pier with concrete not later than the same day it is drilled.

PART 2 – PRODUCTS

2.01 DRILLING EQUIPMENT

A. The equipment used shall be adequate to drill the sizes indicated to depths necessary for a stable foundation, giving consideration to subsurface conditions reported by the Geotechnical Investigation.

2.02 MATERIALS

- A. Concrete Reinforcement: As specified in Section 03 20 00.
- B. Cement, Aggregates and Admixtures: As specified in Section 03 30 00.

2.03 MIXES

A. As specified in Section 03 30 00.

PART 3 – EXECUTION

3.01 CONSTRUCTION

- A. Drilling
 - 1. Drill piers with power auger foundation drilling rig designed for that purpose. Drill piers vertically, to diameters shown on drawings.
 - 2. If caving or substantial amounts of ground water are encountered, use casings, if required, to prevent caving and exclude water.

B. Casings

 Protective steel casing, at least as large in inside diameter as the nominal shaft size and of sufficient wall thickness to resist crushing by hydrostatic and earth pressures, shall be installed in each pier hole when needed, in the judgement of the Foundation Inspector (s), to prevent caving or fall-in.

C. Casing Removal

1. An initial jerk of "2" to "4" shall be allowed to start the lift; thereafter, while being removed from the pier hole, the casing must be kept plumb and must be pulled with a smooth, vertical motion (no rotation permitted), without jerks. Vibration of the casing during pulling is not approved. Maintain sufficient head of concrete to prevent reduction in diameter of pier shaft by earth pressure and to prevent extraneous material from mixing with fresh concrete. Coordinate withdrawal of

temporary casings with concrete placement to maintain a sufficient need of concrete above casing bottom.

- 2. Where cutoff elevation is below ground level, maintain protective casing to the ground surface if necessary to prevent detrimental caving or intrusion of shallow soils into the shaft.
- 3. Dowels shall be placed and positioned after the casing has been pulled and the surface of the concrete has been established.
- D. Removal of Groundwater Seepage
 - 1. Water above an average depth of 2" above the bottom of the excavation shall be pumped or removed before placement of concrete. If water cannot be held below this level long enough for concrete to be placed in the normal manner, place concrete by one of the following methods:
 - a. Use of a submersible pump in the bottom of a straight hole or in a sump excavated in the bottom of a bell, with concrete being placed to cover the intake pipe before the pump is lifted.
 - b. Use of a Tremie pipe or "elephant's truck".
 - c. Use of pumped-in concrete discharging through a pipe below the water and below the surface of the concrete in the hole.
- E. Allowable Tolerances:
 - The piers shall be installed as indicated on the Drawings and in accordance with these Specifications. No pier shall be off center from its design locations more than 1/24 of the shaft diameter or 3", whichever is less measured at the top of the pier. No vertical pier shall be out of plumb more than 1% of its length. All piers and shafts shall be at least as large in diameter as indicated on the Drawings. Deviations from underream configurations (if required) may be made only with prior written approval of the Structural Engineer.
 - 2. If any of the above tolerances are exceeded, additional construction (including costs of engineering and redesign) as required by the Structural Engineer, shall be paid for by the Contractor.

3.02 PLACING REINFORCING STEEL AND CONCRETE

A. Do not place steel or concrete until pier holes have been inspected, logged and approved by the Testing Laboratory.

- B. Reinforcing steel shall be installed as indicated on the Drawings. All steel shall be free from excessive rust, mud or any foreign material which would hinder bonding of concrete and steel. Reinforcement cages shall be straight and shall conform to the design dimensions. Adequate provision shall be made to ensure that the reinforcement steel will remain in place throughout placement of concrete and that specified concrete cover for the reinforcement steel is attained and maintained. The use of precast concrete spacer blocks or "Centraligner" pier sleds by Pieresearch, Arlington, TX (or equal) is recommended for this purpose.
- C. After approval of the excavated pier hole by the Testing Laboratory, concrete shall be placed, if necessary, with the use of a drop chute or tremie, limiting free fall to 25' maximum, such that will not cause segregation of the particles or permit infiltration of water or any other occurrence which would tend to decrease the strength of the concrete or the capacity of the finished pier. All concrete shall be placed in the presence of the Testing Laboratory.
- D. Maintain a minimum 3" clearance between bottom of excavation and reinforcement.

3.03 DISPOSAL OF SOIL

Remove spoil from the ground around the excavation before concrete placement is started, and dispose off the site in a legal manner.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Work included in this Section, while not all inclusive but listed as a guide, shall include:
 - 1. Furnishing of all labor, tools, equipment, and incidentals to complete the work.
 - 2. Construction of a foundation course for a surface course, in conformity with the plans and to the lines and grades as established by the plans.

1.02 RELATED SECTIONS:

- A. Coordinate the work of this Section with the Work of other Sections as required to properly execute the Work and as necessary to maintain satisfactory progress of the work of other Sections. Other Sections containing related work include but are not limited to the following:
 - 1. Earth Moving Section 31 20 00
 - 2. Subgrade Preparation Section 31 23 13
 - 3. Lime Treated Subgrade Section 32 11 29
 - 4. Portland Cement Concrete Paving Section 32 13 13
 - 5. Hot Mix Asphalt Concrete Paving Section 32 12 16

1.03 REFERENCES:

Meet Requirements and recommendations of applicable portions of the Standards listed:

- A. American Society for Testing and Materials, ASTM.
- B. North Central Texas Council of Governments Standard Specifications for Public Works Construction, Current Edition, NCTCOG.
- C. Texas Department of Transportation Standard Specifications for Construction of Highways, Streets, and Bridges, Current Edition, TxDOT.
- D. City of Dallas requirements and standards in Public Right-of-Way and easements.

PART 2 PRODUCTS

2.01 FLEXIBLE BASE (CRUSHED STONE)

A. General:

This item shall consist of a foundation course and shall be constructed as herein specified in one or more courses in conformity with the typical section shown on the plans. The material shall be crushed limestone meeting the requirements of TxDOT Item 247, Type A, Grade 1, with Gradation as shown in C, or as noted on plans.

B. Test:

The soil binder shall meet the following requirements:

- 1. The liquid limit shall not exceed 40 when tested in accordance with ASTM Designation D 423.
- 2. The plastic limit shall be determined by testing in accordance with ASTM Designation D 424.
- 3. The plasticity index shall not exceed 12 nor be less than four when calculated in accordance with ASTM Designation D 424.
- 4. The preparation of samples for testing according to ASTM Designations D423 and D424 shall be in accordance with the requirements of ASTM Designation D 2217.
- 5. Materials retained on the N. 4 Sieve (4.75 mm) shall have a percent wear of not more than 45 when tested according to ASTM Designation C 131.
- 6. The material when tested under the Wet Ball for Determining the Disintegration of flexible Base Materials, Texas SDHPT Test Method Tex-116-E, shall not develop more than 50 percent soil binder.
- C. Gradation:

The material shall be obtained from approved sources; shall be crushed; and shall consist of durable particles of stone mixed with approved binding materials. The material shall be approved by the Geotechnical Engineer. The processed material when properly shaken and tested by standard laboratory methods shall meet the following requirements:

Passing 1-3/4-inch sieve 100% Passing 3/8 inch sieve 50 to 70% Passing 7/8-inch sieve 65 to 90% Passing No. 4 sieve 35 to 55%

Mark Twain School for the Talented and Gifted Org # 220 Dallas ISD Construction Services 32 12 30-2

Passing No. 40 sieve 15 to 50%

Materials passing the No. 4 (4.75 mm) sieve shall be known as "binder." The portion of material passing the No. 40 (425 mm) sieve shall be known as "soil binder." Gradation of material to be used under porous pavement, shall be approved by the Geotechnical Engineer and the Manufacturer.

D. Rejection:

Aggregate which fails to meet the requirements of these specifications may be rejected by the Owner's Representative. Such rejection shall incur no cost to the Owner.

PART 3 EXECUTION

3.01 CONSTRUCTION METHODS:

A. Preparation of Subgrade:

The preparation of the subgrade shall be in conformity with the requirements of Section 31 3 13 "Subgrade Preparation" and Section 32 11 29 "Lime Treated Subgrade".

B. Placing:

Immediately before placing the base course material, the subgrade shall be checked as to conformity with grade and section.

The material shall be delivered in approved vehicles of a uniform capacity. It shall be the charge of the Contractor that the required amount of specified material shall be delivered to secure the proper thickness of the completed base course. Material deposited on the subgrade shall be spread and shaped the same day. All material shall be moved at least once from the original position in which it is deposited. In the event of inclement weather or other unforeseen circumstances which render impracticable the spreading of the material during the first 24-hour period, the material shall be scarified and spread as directed by the Owner's Representative. The material shall be sprinkled, if directed, and shall then be bladed, dragged, and shaped to conform to the typical section as shown on the plans.

All areas and "nests" of segregated course of fine material shall be corrected or removed and replaced with well graded material. If additional binder is considered desirable or necessary after the material is spread and shaped, it shall be furnished and applied in the amount directed by the Owner's Representative. Such binder shall be carefully incorporated with the material in place by scarifying, harrowing, brooming or by other

32 12 30-3

approved methods. The course shall be sprinkled as required and compacted to the extent necessary to provide not less than the percent density as hereinafter specified under "Density." In addition to the requirements specified for density, the full depth of flexible base shown on the plans shall be compacted to the extent necessary to remain firm and stable under construction equipment. After each section of flexible base is completed, tests as necessary shall be made as specified in the special provisions. If the material fails to meet the density requirements, it shall be reworked as necessary to meet these requirements.

Throughout this entire operation, the shape of the course shall be maintained by blading. The surface, upon completion, shall be smooth and in conformity with the typical sections shown on the plans to the established lines and grades. Deviations in excess of one-half inch in cross section and in a length of 16 feet (12.5 mm in 5 M) measured longitudinally shall be corrected by loosening, adding, or removing material, reshaping and re-compacting by sprinkling and rolling. All irregularities, depressions or weak spots which develop shall be corrected immediately by scarifying the areas affected, adding suitable material as required, reshaping and re-compacting by sprinkling and re-longituding by sprinkling and re-compacting by sprinkling.

Should the base course, due to any reason or cause, lose the required stability, density, and finish before acceptance of the project it shall be re-compacted and refinished at the sole expense of the Contractor.

C. Density:

The density required under this item shall not be less than 98 percent compaction using SDHPT Test Method TEX – 113 - E.

D. Testing:

SDHPT Test Method TEX – 113 - E. At least one set of tests shall be conducted for each 2000 SF of completed base material.

END OF SECTION 32 12 30

32 12 30-4

SECTION 32 13 14 - SIDEWALKS

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
 - A. Drawings, Bidding Requirements, Contract Forms, Conditions of the Contract and Division 1 General Requirements apply to the work of this section.
- 1.2 DESCRIPTION OF WORK
 - A. Work included in this section: Concrete walks, inclines and ramps.
 - B. Related work described elsewhere:
 - 1. Section 31 05 00 Earthwork
 - 2. Section 32 13 13 Rigid Pavement

PART 2 - PRODUCTS

- 2.1 CONCRETE 3500 psi at 28 days.
- 2.2 REINFORCEMENT #3 bars @ 16" o.c. both ways
- 2.3 EXPANSION JOINTS Premolded joint filler at 48' o.c. maximum.
- 2.4 NON-SLIP FINISH
 - A. Provide 1/4" deep grooves at 2" o.c. on ramps and incline walks.
 - B. Provide cast aluminum nosings at exterior steps.
- 2.5 DIVIDER STRIPS Construction grade Redwood where indicated.

PART 3 - EXECUTION

- 3.1 PLACEMENT AND CURINGA. Place and cure as per requirements of Section 03 30 00.
- 3.2 FINIS
 - A. Unless otherwise indicated, finish will be fine hair broom finish on all exterior walks.
 - 1. Draw fine-hair broom across concrete surface perpendicular to line of traffic.

END OF SECTION

Mark Twain School for the Talented and Gifted Org # 220 Dallas ISD Construction Services SIDEWALKS CSP # 207459

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work included in this Section, while not at all inclusive but listed as a guide, shall include:
 - 1. Furnish all labor, tools, equipment, and incidentals to complete the work.
 - 2. Curbs and gutters, rip-rap, manholes, headwalls, steps planters and miscellaneous other uses.
 - 3. Expansion joint fillers.
 - 4. Sawed joints.
 - 5. Sealing of Joints.

1.02 RELATED SECTIONS

- A. Coordinate the work of this Section with the Work of other Sections as required to properly execute the Work and as necessary to maintain satisfactory progress of the work of other Sections. Other Sections containing relate work include but are not limited to the following:
 - 1. Testing and Inspection Services Division 01
 - 2. Site Clearing Section 31 10 00
 - 3. Earth Moving Section 31 20 00
 - 4. Subgrade Preparation Section 31 23 13
 - 5. Portland Cement Concrete Paving Section 32 13 13
 - 6. Pavement Markings Section 32 17 23
 - 7. Sidewalks Section 32 20 00

1.03 REFERENCES

- A. American Concrete Institute (ACI)
 - 1. ACI 305-77 Recommended Practice for Hot Weather Concreting.
 - 2. ACI 306-72 Recommended Practice for Cold Weather Concreting.
- B. American Society for Testing and Materials (ASTM) (latest edition).
- C. Geotechnical Report provided for project
- D. Texas Department of Transportation Standards Specifications for Construction of Highways, Streets and Bridges, current edition, TxDOT.
- E. Governing Authority (City, Utility District, TxDOT, TCEQ, etc.). Work in Public Right-of-Way and

easements must conform to City Standards and Requirements with separate mix design.

1.04 PRODUCT HANDLING

- A. Protection:
 - 1. Protect from damage until acceptance.
 - 2. Exclude traffic for 14 days after placement.

1.05 CONTROL

- A. Grade Control: Establish and maintain required lines and grades.
- B. Traffic Control:
 - 1. Maintain vehicular and pedestrian traffic as required for other construction activities.
 - 2. Provide barricades, warning signs, and warning lights as required to control traffic, maintain safety, and cause least interruption of work.

PART 2 PRODUCTS

- 2.01 REINFORCEMENT: As noted on Drawings.
- 2.02 CONCRETE: 3,600 psi at 28 days min, or as noted on Drawings.

2.03 FORMS:

- A. Steel or wood.
- B. Straight and free of distortion and defects.
- C. Radius Bends: Flexible spring steel or laminated boards.
- D. Form Oil: Non-staining, clear, paraffin base.
- 2.04 FILLERS AND JOINTS: Expansion Joints: Pre-molded joint filler.

- 2.05 FLY ASH: The use of fly ash will be permitted unless approved otherwise. When approved, 20% max. is allowed. Refer to Gov. Authority Requirements (i.e., City) where appropriate.
- 2.06 CURING COMPOUND: Liquid membrane, ASTM C309, Type 2 white pigmented. Max. of 10% solvents

PART 3 EXECUTION

3.01 PREPARATION

- A. Proof roll prepared subgrade to check for unstable areas requiring additional compaction.
- B. Do not begin work until any discrepancies have been corrected.
- C. Remove loose material from subgrade immediately prior to placing concrete.

3.02 INSTALLATION

- A. Forms:
 - 1. Set to required grades and lines.
 - 2. Brace securely with wood or metal stakes.
 - 3. Leave in place 24 hours after concrete placement.
- B. Automatic Curb and Gutter Machine:
 - 1. May be used at Contractors option with Owner's Representative approval.
 - 2. Machine placement must produce curbs and gutters equal in all respects to formed concrete.
 - 3. If results are not acceptable, remove and replace with formed concrete.
- C. Joints:
 - 1. General:
 - a. Expansion, weakened-plane (contraction) and construction joints; true to line, face perpendicular to surface of curb and gutter.
 - b. Transverse joints: at right angles to curb center line.
 - c. Where joining existing pavement: align transverse joints with existing joints unless otherwise shown.
 - 2. Expansion Joints:
 - a. Locate at 75'-0" o.c. unless otherwise shown.
 - b. Provide where curb abuts manholes, inlets, structures, walks or other fixed

objects.

- c. Extend joint fillers full width and depth of joints.
- d. Not less than 2 inch or more than 1 inch below finished surface.
- e. Conform top edge to top profile of curb and gutter.
- 3. Weakened-plane (Contraction Joints):
 - a. Locate at 15'-0" o.c. unless otherwise shown.
 - b. Embed strips of metal or sealed wood to form joints.
 - c. Set strips in plastic concrete and remove after concrete has hardened.
- 4. Construction Joints:
 - a. Place at end of all pours.
 - b. Located where placement stops for more than 2 hours except where pours terminate at expansion joints.

3.03 FINISHING

- A. Broom Finish:
 - 1. Draw fine-hair broom across concrete surface perpendicular to line of traffic.
 - 2. Repeat if required to provide texture suitable to match exiting curbs.
 - 3. Apply membrane curing compound at a uniform rate of approximately 200 sq. ft. per gallon, or as recommended by manufacturer, as soon as finishing operation has been completed and concrete has lost its water sheen

3.04 CLEANING

- A. When construction traffic is permitted, remove surface stains and spillage of materials as they occur.
- B. Sweep and wash free of stains, discoloration, dirt, and other foreign material just prior to final inspection.

3.05 FIELD QUALITY CONTROL

A. Inspection and testing as specified in Division 01 and Section 32 13 13.

END OF SECTION 32 16 00

SECTION 32 17 23 - PAVEMENT MARKINGS

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Work included in this Section, while not all inclusive but listed as a guide, shall include:
 - 1. Furnish all labor, materials, services, equipment, and appliances required in conjunction with painted pavement markings.
 - 2. Layout all markings.
 - 3. Four inch (4") white or yellow color stripping and markings for driveways and parking spaces in parking lots and hard top court areas as indicated on site plan or that matches existing striping. Red and white color striping/markings for fire lanes, per City Requirements.
 - 4. Provide Blue code compliant color markings for Accessible Parking Symbol.
 - 5. All paint and colors to be submitted and approved by A/E prior to striping/marking.

1.02 RELATED SECTIONS

- A. Coordinate the work of this Section with the Work of other Sections as required to properly execute the Work and as necessary to maintain satisfactory progress of the work of other Sections. Other Sections containing related work include but are not limited to the following:
 - 1. Portland Cement Concrete Paving Section 32 13 13

1.03 REFERENCES

- A. American Society for Testing and Materials, ASTM.
- B. Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges, current edition, TxDOT.
- C. Governing Authority (City, Utility District, TxDOT, TCEQ, etc.). Work in Public Right-of-Way and easements must conform to City Standards and Requirements with separate mix design.

1.04 QUALITY ASSURANCE

A. Subcontractor for work of this section shall be of firm specializing in application of pavement markings.

PAVEMENT MARKINGS CSP # 207459

1.05 PROJECT CONDITIONS

- A. Concrete paving and curbs shall have been in place a minimum of 14 days prior to application of pavement markings.
- B. Do not apply marking paint when weather is foggy or rainy, or ambient or pavement temperature are below 40 F, nor when such conditions are anticipated during eight hours after application.

PART 2 PRODUCTS

2.01 MATERIALS

(For private work. Refer to Gov. Authority Requirements (i.e., City) where appropriate.)

A. Paint for markings: Equal to Standard Paints, Inc., 1007 W. Commerce Street, Dallas, Texas, or Sherwin Williams Traffic Marking Paint, conforming to Fed. Spec. TT-P-115F, Type III, or approved equal. No Lead.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surface on which pavement markings are to be applied and report any unsatisfactory conditions which will prevent the proper application of markings to the Contractor.

3.02 PREPARATION:

A. Thoroughly clean surfaces to receive pavement markings. Layout markings in conformance with drawings. Surfaces to receive markings shall be dry.

3.03 APPLICATION

A. Equipment: Hand operated push-type machines of a type commonly used for application of paint to pavement surfaces. Use hand-operated spray guns in areas where the push-type machines cannot be used.

32 17 23 -2

PAVEMENT MARKINGS CSP # 207459

- B. Application: Apply paint in one coat evenly to clean, dry surfaces. Apply marking paint at not less than rate of one gallon per 100 sq.ft. (equivalent to approximately one gallon for 300 lineal feet of 4" wide strip), to result in uniform complete coverage of surfaces to be painted. Apply paint only when air and surfaces temperatures are above 40 F. Provide guidelines and template necessary to control paint application. Edges of markings shall be sharply outlined.
- C. Protection: Protect newly painted surfaces from damage by vehicles during time required for paint to harden sufficiently to withstand traffic. During period of high wind, discontinue painting operations.

3.04 CLEANING

A. Cleanup all debris caused by the work of this section, keeping the premises clean and neat at all times.

END OF SECTION 32 17 23

32 17 23 -3