A D D E N D U M NO. 2

October 02, 2024

NEW CANEY INDEPENDENT SCHOOL DISTRICT
NEW CANEY ELEMENTARY
New Caney, TX

BRW Project No.: 223117.00

The Construction Documents for the above referenced project, dated **September 9, 2024**, shall be amended as follows:

CLARIFICATIONS

2.01 A pre-proposal meeting was held at 9:30AM September 25, 2024, at 22784 Hwy 59S Building E, Porter, TX 77365. Attached is the sign in sheet.

SPECIFICATIONS

2.02 TABLE OF CONTENTS
- A. Add Section 03 52 16.19 Lightweight Insulating Concrete
- B. Revise section 10 26 13 to read Corner Guards and Wall Covering
- C. Add section 22 32 01 SANITARY SEWERAGE to table of contents only
- D. Add section 31 32 13.26 LIME-FLY ASH OR FLY ASH STABLIZATION
- E. Revise section 31 17 23.13 Painted Pavement markings to read 32 17 23.13 PAINTED PAVEMENT MARKINGS.
- F. Revise section 32 13 73.19 CAST IN PLACE CONCRETE to 32 13 73.19 CAST IN PLACE CONCRETE - SITE

2.03 SECTION 00 20 00 NCISD REQUEST FOR COMPETITIVE SEALED PROPOSALS
- A. Replace Attachment A: Proposal Form – Base Proposal (page 25)

2.04 SECTION 00 30 00 INFORMATION AVAILABLE TO BIDDERS
- A. Add letter dated September 26, 2024 from Ninyo & Moore to the end of section.

2.05 SECTION 03 30 00 CAST-IN-PLACE CONCRETE
- A. Replace section in its entirety.

2.06 SECTION 03 52 16.19 LIGHTWEIGHT INSULATING CONCRETE
- A. Add section in its entirety.

2.07 SECTION 04 20 22 UNIT MASONRY
- A. Revise 2.02 C. 1.a. to read “Acme Stonebrook Natural Stone”
- B. Revise 2.02 C.1.b to read “Stone color to be Khaki”
- C. Add 2.02 C.1.c “Sizes and shapes to be approved by Owner and architect.

2.08 SECTION 05 12 00 STRUCTURAL STEEL FRAMING
- A. Replace section in its entirety.

2.09 SECTION 05 31 23 STEEL ROOF DECKING
- A. Replace section in its entirety.

2.10 SECTION 09 21 13 PLASTER ASSEMBLIES

A. Revise paragraph 3.02.A.3 to read "All galvanized hanger wires to be 9-gauge wire spaced 4'-0" O.C. maximum. Do not use power actuated anchors through metal deck for wire supports"

2.11 SECTION 09 51 13 ACOUSTICAL CEILING TILES

A. Revise 2.03 A. 1. To read "Design is based on Armstrong "Cortega" acoustical ceiling tile.

2.12 SECTION 09 65 19 RESILIENT TILE FLOORING

A. Revise paragraph 2.04 D to read "Waterproof, must meet 99.9% relative humidity, stabilized type as manufactured by resilient material manufacturer.

2.13 SECTION 09 77 30 ACOUSTICAL DECK-MOUNTED PANELS

A. Revise 2.02.A.3. "Color: Manufacture's white, painted to match the deck."

2.14 SECTION 10 26 13 CORNER GUARDS

A. Revise section to read Corner Guards and Wall Covering
B. Add paragraph 2.01D
    1. Wall Covering (WC 1 and WC2)
        a. Size: 4' x 10' typical
        b. Material: High impact rigid sheet nominal thickness .040"
        c. Texture: Sued texture
        d. Color match trims as needed for joints / transitions
        e. Color: to be selected by architect from the manufacturer's full range of colors

2.15 SECTION 10 44 00 TOILET, BATH, AND LAUNDRY ACCESSORIES

A. Revise 4.01 A.8 TA-8 Feminine Napkin Disposal (4th, 5th, Special Education and Staff Restrooms only)

2.16 SECTION 11 52 13 PROJECTION SCREENS

A. 2.02 Remove 3.b Library A103: Viewing Size 78" high x 139" wide.

2.17 Section 11 66 23 GYMNASIUM EQUIPMENT

A. Remove 2.02.C.5 in its entirety.

2.18 SECTION 12 21 13 HORIZONTAL LOUVER BLINDS

A. Add 3.02 E. Coordinate glass stops to allow "inset" mounting of blinds where shown.

2.19 SECTION 12 32 16 MANUFACTURED PLASTIC-LAMINATED-CLAD CASEWORK

A. Revise 2.06 A.4 to read " Sub-base assemblies shall be fabricated from 2" x 4" dimensional lumber. No plywood.

2.20 SECTION 27 05 43 UNDERGROUND DUCTS AND RACEWAYS FOR COMMUNICATIONS SYSTEMS

A. Revise paragraph 3.03.B.1 to read the minimum size of hand-holes to be 4'-0" X 4'-0" X 3'-0"

2.21 SECTION 27 13 00 COMMUNICATIONS BACKBONE CABLING

A. Add sub-paragraph 1.03.B.f to read as:

"f. Shop drawing submittal must include port numbering/labeling scheme. Must be owner approved prior to any cabling being installed. "

B. Remove sub-paragraph 2.03.A. Fiber optic terminations are to be completed in splicing cassette. Only Fusion splicing is acceptable.
C. Removed all mentions of Cat3 Copper cabling and multi-mode fiber optic cabling

2.22 SECTION 27 15 00 COMMUNICATIONS HORIZONTAL CABLING
A. Reissue section in its entirety

2.23 SECTION 27 41 00 INTERCOMMUNICATION SYSTEM
A. Remove sub-paragraph 2.01.B Atlas/Soundolier – Speakers and Attenuators
B. Revise paragraph 2.02.A "shall be mounted in a 19" equipment rack with casters" to read as, "shall be mounted in a standard equipment rack in MDF"
C. Revise paragraph 2.04.A model number "DN-300Z" to read as, "DN-500 CB"
D. Revise paragraph 2.07.A.2 to include, "Classroom speakers must be enabled to provide 'Talk Back'"
E. Rewrite paragraph 2.07.B in its entirety to read as:
"B. Wall mounted volume control: Soundolier AT-1O-PA or Quam QC-10P qual recessed autotransformer volume control. Volume control shall have public address (PA) emergency override of volume control. Volume controls are to be installed in all offices, and teacher workrooms."
F. Rewrite paragraph 2.07.C in its entirety to read as:
"C. All Exterior Speakers are to be Recessed Vandal proof Wall Speaker Quam H16/SVPS Flush Mount horn with multitap line matching transformer. Provide each unit with Quam Stainless Steel recessed backbox / Stainless Steel screws. Tap at 2.0 watts"
G. Add sub-paragraph 2.08.B to read as, "Admin consoles shall be Telecor E300 and are to be provided at main reception and principals office."
H. Revise paragraph 2.09.A to read as, "eSeries Mic MCC-PM-MA (connect to e300 console) Provide at main reception and Principals Office."
I. Revise paragraph 2.11.A, Master Clock System shall be Telecor eMessage Host (eMH)
J. Rewrite paragraph 2.12.A in its entirety to read as, "Provide UPS Battery backup in every IDF/MDF for the communications system to operate a minimum of 20 minutes upon loss of power. Acceptable Manufacturers: APC or Tripplite."
K. Delete sub-paragraph 3.01.H.6 "Zone 6: SPORTS FIELDS"

2.24 SECTION 27 41 16 INTEGRATED AUDIO-VIDEO SYSTEM AND EQUIPMENT
A. Reissue section in its entirety

2.25 SECTION 27 51 19 SOUND REINFORCEMENT SYSTEM
A. Delete section in its entirety; all sound reinforcement components included in 27 41 16

2.26 SECTION 28 10 00 ACCESS CONTROL SYSTEM
A. Revise paragraph 2.02.B, card reader Model Number to HID Signo 20 or Signo 40

B. Revise paragraph 2.02.C "(By Division 08)" to read as, "(By Division 28)"

2.27 SECTION 28 20 00 VIDEO SURVEILLANCE SYSTEM

A. Reissue section in its entirety

2.28 SECTION 28 31 00 INTRUSION DETECTION SYSTEM

A. Reissue section in its entirety

2.29 Section 31 32 13.26 LIME-FLY ASH OR FLY ASH STABILIZATION

A. Add this section in its entirety.

DRAWINGS

2.30 SHEET G1.1 TITLE SHEET

A. Replace rendering with updated image

2.31 SHEET G1.2 MASTER KEYNOTE LIST

A. Reissue sheet in its entirety

2.32 SHEET G1.4 LIFE SAFETY PLAN

A. Shift door in 100N IDF down 1ft

2.33 SHEET AS1.4 CANOPY PLANS AND DETAILS

A. View 5 Canopy Plan – add light fixtures above all three entrances

2.34 SHEET C6.0 UTILITY PLAN

A. Reflected the revised underground electrical line routing received from MEP
B. Revised sanitary line to not be outside of transformer location near mechanical yard
C. Revised water line layout based on sanitary line adjustments at mechanical yard
D. Added two additional inlets per request of owner near playground areas

2.35 SHEET C7.0 GRADING PLAN

A. Added TR/TG elevations at proposed storm inlets and revised sanitary manhole locations

2.36 SHEET S4.1 DRILLED PIER & PLINTH SCHEDULE & DETAILS

A. Reissue sheet in its entirety.

2.37 SHEET S4.5 TYPICAL SITE FOUNDATION DETAILS

A. Reissue sheet in its entirety.

2.38 SHEET A1.1 COMPOSITE PLAN

A. Shift door in 100N IDF down 1ft

2.39 SHEET A1.1A FLOOR PLAN AREA A

A. Shift door in 100N IDF down 1ft
B. Add south-facing interior elevation to existing marker A5.3/16 in Room 100W

2.40 SHEET A1.4 ROOF PLAN

A. Reissue sheet in its entirety

2.41 SHEET A1.5 ROOF DETAILS

A. Reissue sheet in its entirety

2.42 SHEET A4.1 DOOR SCHEDULE

A. Update Door type of 118-1 through 118-4 to read as: A9

B. Update Door type of 118-5 and 118-6 to read as: A8

2.43 SHEET A5.5 INTERIOR ELEVATIONS

A. View 4 Elevation
   1. Shift display cases up 1ft from the ground for a total of 3ft from the finish floor

2.44 SHEET A5.7 INTERIOR ELEVATIONS

A. Reissue sheet in its entirety

2.45 SHEET A5.9 CASEWORK SECTIONS

A. Keynote Legend
   1. Remove keynotes: 0920.26, 1230.19, 1230.50, 1230.61, 1230.62, 1230.63, 1230.64, 1230.66, and 1230.72
   2. Add keynotes: 1010.59, 1010.60, and 1010.61
B. View 6 CSK "U300" – Reissue view in its entirety
C. View 7 CSK "U301" – Reissue view in its entirety
D. View 8 CSK "T700" Mail @ Wall – revise keynote 0640.71 to read as 1230.67
E. View 9 CSK Mailbox Detail – revise keynote 1230.68 to point to correct item
F. View 10 MISC Display Case Glass 1-Side – Reissue view in its entirety
G. View 11 MISC TLT counter-sink @ GYP – Remove view in its entirety

2.46 SHEET A6.1A REFLECTED CEILING PLAN AREA A

A. Reissue sheet in its entirety

2.47 SHEET A6.1B REFLECTED CEILING PLAN AREA B

A. Add light fixtures above entrances into 117 Cafe
B. Revise both projection screen keynotes in 117 CAFE "Ceiling-Mounted Projection Screen" to read as "Recessed Projection Screen"

2.48 SHEET A7.1 COMPOSITE FINISH PLAN

A. Finish Legend
   1. P-PAINT – add P8 PAINT (GYM CEILING), SHERWIN WILLIAMS, COLOR: FELTED WOOL SW9171
   2. RF – RESILIENT FLOORING – Revise RF7 Brand "Tarkeet" to read as "Tarkett"
   3. SF – SPORTS FLOORING – Revise "COLOR: MANDARIN 3278" to read as, "COLOR: GOLDEN MAPLE 26528002"
   4. T – TILE
      a. Revise T7 (Field) "COLOR: CHALKBOARD 0180" to read as, "DESERT GRAY X114"
      b. Revise T9 (Gray Accent) "COLOR: DESERT GRAY X114" to read as, "COLOR: CHALKBOARD 0180"
   5. WC – WALL COVERING
      a. Add WC2 in its entirety
B. Composite Finish Plan
   1. Shift door in 100N IDF down 1ft

2. 100K ISS – replace RF1 flooring with CPT1

2.49 SHEET A7.1A FINISH PLAN AREA A

A. Finish Legend
   1. P-PAINT – add P8 PAINT (GYM CEILING), SHERWIN WILLIAMS, COLOR: FELTED WOOL SW9171
   2. RF – RESILIENT FLOORING – Revise RF7 Brand "Tarkeet" to read as "Tarkett"
   3. SF – SPORTS FLOORING – Revise "COLOR: MANDARIN 3278" to read as, "COLOR: GOLDEN MAPLE 26528002"
   4. T – TILE
      a. Revise T7 (Field) "COLOR: CHALKBOARD 0180" to read as, "DESERT GRAY X114"
      b. Revise T9 (Gray Accent) "COLOR: DESERT GRAY X114" to read as, "COLOR: CHALKBOARD 0180"
   5. WC – WALL COVERING
      a. Add WC2 in its entirety

B. Finish Plan Area A
   1. Shift door in 100N IDF down 1ft
   2. 100K ISS – replace RF1 flooring with CPT1
   3. Room Tag 108 Gym – revise ceiling finish "P1" to read as, "P8"
   4. Room Tag 301 LIP Classroom – revise wall finish "P1" to read as, "WC2"

2.50 SHEET 7.1B FINISH PLAN AREA B

A. Finish Legend
   1. P-PAINT – add P8 PAINT (GYM CEILING), SHERWIN WILLIAMS, COLOR: FELTED WOOL SW9171
   2. RF – RESILIENT FLOORING – Revise RF7 Brand "Tarkeet" to read as "Tarkett"
   3. SF – SPORTS FLOORING – Revise "COLOR: MANDARIN 3278" to read as, "COLOR: GOLDEN MAPLE 26528002"
   4. T – TILE
      a. Revise T7 (Field) "COLOR: CHALKBOARD 0180" to read as, "DESERT GRAY X114"
      b. Revise T9 (Gray Accent) "COLOR: DESERT GRAY X114" to read as, "COLOR: CHALKBOARD 0180"
   5. WC – WALL COVERING
      a. Add WC2 in its entirety

2.51 SHEET 7.1C FINISH PLAN AREA C

A. Finish Legend
   1. P-PAINT – add P8 PAINT (GYM CEILING), SHERWIN WILLIAMS, COLOR: FELTED WOOL SW9171
   2. RF – RESILIENT FLOORING – Revise RF7 Brand "Tarkeet" to read as "Tarkett"

3. SF – SPORTS FLOORING – Revise "COLOR: MANDARIN 3278" to read as, "COLOR: GOLDEN MAPLE 26528002"
4. T – TILE
    a. Revise T7 (Field) "COLOR: CHALKBOARD 0180" to read as, "DESERT GRAY X114"
    b. Revise T9 (Gray Accent) "COLOR: DESERT GRAY X114" to read as, "COLOR: CHALKBOARD 0180"
5. WC – WALL COVERING
    a. Add WC2 in its entirety

2.52 SHEET 7.1D FINISH PLAN AREA D

A. Finish Legend
1. P-PAINT – add P8 PAINT (GYM CEILING), SHERWIN WILLIAMS, COLOR: FELTED WOOL SW9171
2. RF – RESILIENT FLOORING – Revise RF7 Brand "Tarkeet" to read as "Tarkett"
3. SF – SPORTS FLOORING – Revise "COLOR: MANDARIN 3278" to read as, "COLOR: GOLDEN MAPLE 26528002"
4. T – TILE
    a. Revise T7 (Field) "COLOR: CHALKBOARD 0180" to read as, "DESERT GRAY X114"
    b. Revise T9 (Gray Accent) "COLOR: DESERT GRAY X114" to read as, "COLOR: CHALKBOARD 0180"
5. WC – WALL COVERING
    a. Add WC2 in its entirety

B. Finish Plan Area D
1. Room Tag 305 LIP Classroom – revise wall finish "P1" to read as, "WC2"
2. Room Tag 315 SPEC ED Classroom – revise wall finish "P1" to read as, "WC2", and remove ceiling finish "WC1"
3. Room Tag 317 SPEC ED Classroom – revise wall finish "P1" to read as, "WC2"

2.53 SHEET A7.1E FINISH PLAN AREA E

A. Finish Legend
1. P-PAINT – add P8 PAINT (GYM CEILING), SHERWIN WILLIAMS, COLOR: FELTED WOOL SW9171
2. RF – RESILIENT FLOORING – Revise RF7 Brand "Tarkeet" to read as "Tarkett"
3. SF – SPORTS FLOORING – Revise "COLOR: MANDARIN 3278" to read as, "COLOR: GOLDEN MAPLE 26528002"
4. T – TILE
    a. Revise T7 (Field) "COLOR: CHALKBOARD 0180" to read as, "DESERT GRAY X114"

b. Revise T9 (Gray Accent) "COLOR: DESERT GRAY X114" to read as, "COLOR: CHALKBOARD 0180"

5. WC – WALL COVERING
   a. Add WC2 in its entirety

2.54 SHEET M2.1A MECHANICAL PLAN AREA A

A. Clarification: shifted AC-1 to be centered above the IDF room door.

2.55 SHEET P2.1B PLUMBING PLAN AREA B

A. Added keynote P8.7 to room 302A

2.56 SHEET P2.1C PLUMBING PLAN AREA C

A. All Pre-K and Kindergarten classroom sinks with designation tag SK-1 between CORR 360 and CORR 363 shall be an SK-4 with bubbler as described in the plumbing fixture schedule.

2.57 SHEET P2.1D PLUMBING PLAN AREA D

A. In SCIENCE CLASSROOM 230 plan north SK-8 designation tag shall switch with plan south SK-1 for ADA sink location.
B. In SCIENCE CLASSROOM 243 plan north SK-8 designation tag shall switch with plan south SK-1 for ADA sink location.
C. In SCIENCE PREP 228 plan north sink shall have designation tag SK-1 in lieu of SK-8 for ADA sink purposes.
D. In SCIENCE CLASSROOM 235, the sink closest to CORR 264 shall be SK-1 in lieu of SK-8 for ADA sink purposes.

2.58 SHEET E0.2 ELECTRICAL GENERAL NOTES

A. Added general note "J" to the fire alarm general notes to read as:
   "CONTRACTOR SHALL ADD TEST SWITCH AT SWITCH HEIGHT ON WALL FOR EACH DUCT SMOKE DETECTOR. TYPICAL OF ALL DUCT SMOKE DETECTORS IN MECHANICAL ROOMS."

2.59 SHEET E1.1 ELECTRICAL SITE PLAN

A. Revised service power routing.
B. Added power for exterior fan receptacles.
C. Added keyed note E4.16 and associated tags.
D. Removed keyed note E7.5 and associated tags.
E. Revised keyed notes E7.2, E7.27, and E7.28

2.60 SHEET E5.1 ELECTRICAL SCHEDULES

A. Added lighting contractor schedule

2.61 SHEET E5.2 ELECTRICAL PANEL SCHEDULES

A. Added circuit to panel 1LA1-18.
B. Added circuit to panel 1LA1-20.
C. Added circuit to panel 1LA1-29.
D. Added circuit to panel 1LA1-30.

E. Added circuit to panel 1LA1-31.
F. Added circuit to panel 1LA1-33.
G. Added circuit to panel 1LB1-35.
H. Added circuit to panel 1LB1-37.
I. Added circuit to panel 1LB1-39.
J. Added circuit to panel 1LB1-41.
K. Added circuit to panel 1LB1-63.

2.62 SHEET E5.3 ELECTRICAL PANEL SCHEDULES
A. Added circuit to panel 1LC1-60.

2.63 SHEET EL2.1A ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA A
A. Added voice evac mic adjacent to the annunciator panel.
B. Removed smoke detectors.
C. Added switches for exterior fan receptacles.
D. Added keyed note E10.12, and E10.13 and associated tags

2.64 SHEET EL2.1B ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA B
A. Removed smoke detectors

2.65 SHEET EL2.1C ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA C
A. Removed smoke detectors.
B. Added smoke detectors.

2.66 SHEET EL2.1D ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA D
A. Added voice evac mic adjacent to the annunciator panel.
B. Removed smoke detectors.
C. Added smoke detectors.
D. Added keyed note FA1.2 and associated tags.

2.67 SHEET EL2.1E ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA E
A. Removed smoke detectors.

2.68 SHEET EP2.1B ELECTRICAL POWER PLAN AREA B
A. Added power for local sounds speakers.
B. Added keyed note E5.19 and associated tags.

2.69 SHEET T0.1 TECHNOLOGY SYMBOL LEGEND
A. Updated wording from Cat6 to Cat6A for Cameras and Access Points.
B. Added symbol for Sounder Strobe
C. Revised Audio Video Legend
D. Edited Communication legend
E. Added Intercommunication System to responsibility matrix.

2.70 SHEET T1.1 TECHNOLOGY SITE PLAN
A. Moved pull boxes closer in to building.
B. Updated Keynotes
C. Added general site plan notes.

2.71 SHEET T2.1A TECHNOLOGY PLAN AREA A
- A. Reissue sheet in its entirety

2.72 SHEET T2.1B TECHNOLOGY PLAN AREA B
- A. Reissue sheet in its entirety

2.73 SHEET T2.1C TECHNOLOGY PLAN AREA C
- A. Reissue sheet in its entirety

2.74 SHEET T2.1D TECHNOLOGY PLAN AREA D
- A. Reissue sheet in its entirety

2.75 SHEET T2.1E TECHNOLOGY PLAN AREA E
- A. Reissue sheet in its entirety

2.76 SHEET T3.1 TECHNOLOGY ENLARGED
- A. Revised view titles.
- B. Rearranged IDF 1 layout.

2.77 SHEET T6.1 TECHNOLOGY DETAILS
- A. Deleted detail 1
- B. Revised detail 4

2.78 SHEET T6.3 SECURITY DETAIL
- A. Revised details 5 and 6

2.79 SHEET T6.4 SECURITY DETAIL
- A. Revised details 1 and 2

MEETING SIGN-IN SHEET
Date: 9/25/2024 **Time:** 9:30 a.m.
Project:
NCISD – New Caney Elementary School No.12
Project No: 22311700

BRW ARCHITECTS
FOCUSED ON WHAT MATTERS.

	NAME	INITIALS	COMPANY	PHONE	E-MAIL
1	Richard Ressler	✓	New Caney ISD	(281) 577-8628	rressler@newcaneyisd.org
2	Mark Smith		New Caney ISD		msmith5@newcaneyisd.org
3	T. M. Stewart	✓	New Caney ISD		tstewart@newcaneyisd.org
4	Isai Lemus (Jesse)		New Caney ISD		ilemus@newcaneyisd.org
5	Tanci Foster		New Caney ISD		tfoster@newcaneyisd.org
6	Jeffrey Choyce		BRW Architects	(281) 361-3800	jchoyce@brwarch.com
7	Adriana Haces	AH	BRW Architects	(281) 361-3800	ahaces@brwarch.com
8	Molly Rall		BRW Architects	(281) 361- 3800	mrall@brwarch.com
9	Jeff Schafer		ICI Construction	281 355 5151	bids@iciconstructioninc.com
10	Ryland Parker	RP	Prime Contractors	281-999-0875	estimating@primecontractorsinc.com
11	Pete Galyean	PG	GTT Const	832-728-8499	estimating@GTTConstruction.Com
12	Tad Bourgeois		Crain Group	214-701-3690	bids@craingroup.com
13	Nestor Gonzalez	N.G	C.A. Walker	713-956-7070	bids@cawalker.net
14	Brandon Watson	BW	DivisionOne Construction	713-688-7330	bid@d1construction.com
15	Carlos Garza		SEDALCO	713-205-3724	cgarza@sedalco.com
16	Fredy Amador	FA	Amador Builders	281-7292231	amadorbuildersllc@gmail.com
17					
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Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

35+ YEARS

September 26, 2024
Project No. 701551002

Mr. Richard Ressler
New Caney Independent School District (NCISD)
22784 US Highway 59, Building E
Porter, Texas 77365

Subject: Summary of Building Pad Preparation Recommendations
Tavola West Elementary School
Highway 59 and Future Via Corsica Drive
New Caney, Texas

Dear Mr. Ressler:

As you know, Ninyo & Moore performed a geotechnical study for the referenced project and presented our findings in our report "Geotechnical Evaluation, Tavola West Elementary School, Highway 59 and Future Via Corsica Drive, New Caney, Texas", dated July 27, 2023. NCISD has requested us to summarize our recommendations for preparation of the building pad. Based on emails from the design team, we understand that finished grade will be about 2 feet above existing grade.

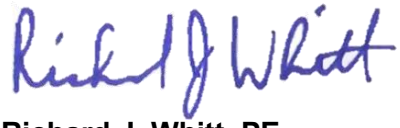
As stated in our report, there are two conditions that must be addressed in preparing the building pad. The existing potential vertical rise (PVR) must be reduced to 1-inch. As such, our report recommends the building pad consist of 3½ feet of select fill extending 5 feet beyond the building footprint. In addition, existing undocumented fill soils, encountered to up to 2 feet below grade in portions of the building footprint, must be remediated.

We recommend the following pad preparation procedure be followed:

- About 1½ feet of existing soils should be excavated from the building footprint and extending 5 feet or more beyond the building footprint;
- To remediate undocumented fill remaining in the proposed building area, the bottom of the excavation be scarified to a depth of 8 inches, and then moisture conditioned and recompacted as per our report.
- 3½ feet of select, engineered fill (as defined our report) should be placed in lifts per our report to finished pad elevation.

We appreciate the opportunity to be of continuing service to you during this phase of the project.

Sincerely,
NINYO & MOORE
TBPE Firm No. F-9782



Richard J. Whitt, PE
Senior Engineer

RJW/JTS/tah

9/26/2024

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Division 01 General Requirements and NCISD Procurement and Contracting Requirements, apply to this Section.

1.02 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
   1. Footings.
   2. Foundation walls.
   3. Slabs-on-grade.
   4. Suspended slabs.
   5. Concrete toppings.
   6. Building frame members.
   7. Building walls.

B. Related Sections:
   1. Section 01 45 23 “Structural Testing and Inspection Services”.
   2. Section 03 20 00 "Concrete Forming and Accessories".
   3. Section 03 10 00 "Concrete Reinforcing".
   4. Section 03 15 13 “Waterstops”.
   5. Section 03 05 80 “Under-slab Vapor Barrier – Retarder”.
   6. Section 31 63 29 “Drilled Concrete Piers and Shafts”.

1.03 REFERENCES

A. The latest adopted edition of all standards referenced in this section shall apply, unless noted otherwise.
   1. ACI 301 – Specification for Structural Concrete.
   2. ACI 302 – Guide for Concrete Floor Slab Construction.
   3. ACI 304 – Guide for Measuring, Mixing, Transporting and Placing Concrete.
   4. ACI 305 – Hot Weather Concreting.
   5. ACI 306 – Cold Weather Concreting.
   6. ACI 308 – Guide to Curing Concrete.
   7. ACI 309 – Guide for Consolidating Concrete.
   8. ACI 311 – ACI Manual for Concrete Inspection.
   9. ACI 318 – Building Code Requirements for Reinforced Concrete.
   10. ACI 347 – Guide to Concrete Formwork.
   11. ACI 207 – Mass Concrete.
   12. ACI 211.1 – Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
   13. ACI 211.2 – Standard Practice for Selecting Proportions for Structural Lightweight Concrete.
   14. ACI 212.3 – Chemical Admixture for Concrete.
   15. ACI 212.4 – Guide for the use of High Range Water Reducing Admixtures in Concrete.
   16. ACI 214 – Evaluation of Strength Test Results of Concrete.
   17. ACI 303 – Guide to Cast in Place Architectural Concrete Practice.
   18. Concrete Reinforcing Steel Institute, “Manual of Standard Practice”.

B. In the case of conflict between the Contract Documents and a referenced standard, the Contract Documents shall govern. In the case of a conflict between the Contract Documents and the Building Code, the more stringent shall govern.

1.04 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.05 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture include the following information. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
   1. Each proposed mix design shall be accompanied by a complete standard deviation analysis based on at least 30 consecutive strength tests, or by three laboratory trial mixtures with confirmation tests.
   2. Proportions of cement, fine, and coarse aggregate, and water.
   3. Design strength.
   4. Maximum slump.
   5. Air Content.
   6. Maximum water / cement ratio.
   7. Maximum and minimum concrete temperature that is acceptable at time of placement for which the manufacturer can guarantee the strength of the concrete.
   8. Type cement and aggregates.
   9. Type and quantities of all admixtures.
   10. Air dry density and splitting tensile strength for lightweight concrete determined in accordance with ASTM 330.
   11. Type, color, and quantities of integral coloring compounds, where applicable.
   12. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Refer Section 03 20 00.

D. Formwork Shop Drawings: Refer Section 03 10 00.

E. Provide Mockup 2’-0” x2’-0” for concrete finishes.

F. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
   1. Location of construction joints is subject to approval of the Architect.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Welding certificates.

C. Material Certificates: For each of the following, signed by manufacturers:
   1. Cementitious materials.
   2. Admixtures.
   3. Fiber reinforcement.
   4. Curing compounds.
   5. Floor and slab treatments.
   6. Bonding agents.
   7. Adhesives.
   8. Semi rigid joint filler.

9. Joint-filler strips.
10. Repair materials.

D. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
   1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

E. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.

F. Field quality-control reports.

G. Minutes of preinstallation conference.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.
   1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: See Section 01 45 23.
   1. Contractor’s responsibility to testing laboratory.
      a. Furnish all labor and materials as required to assist testing agency in obtaining, making and handling samples at the jobsite.
      b. Advise the Owner’s Testing Laboratory sufficiently in advance of operations to allow adequate time for the assignment of testing personnel.
      c. Furnish and maintain adequate facilities for proper curing of concrete test specimens on the project site in accordance with ASTM C31.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

E. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code - Reinforcing Steel."

F. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
   1. ACI 301, "Specifications for Structural Concrete."
   2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

G. Mockups: Cast concrete slab-on-grade and formed-surface panels to demonstrate typical joints, surface finish, texture, tolerances, floor treatments, and standard of workmanship.
   1. Build panel approximately 200 sq. ft. for slab-on-grade and 100 sq. ft. for formed surface in the location indicated or, if not indicated, as directed by Architect.

H. Preinstallation Conference: Conduct conference at Project site.
   1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
      a. Contractor's superintendent.
      b. Independent testing agency responsible for concrete design mixtures.
      c. Ready-mix concrete manufacturer.

d. Concrete subcontractor.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings, if any, on steel reinforcement.

B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.01 FORM-FACING MATERIALS

A. See Section 03 10 00.

2.02 STEEL REINFORCEMENT

A. See Section 03 20 00.

2.03 REINFORCEMENT ACCESSORIES

A. See Section 03 20 00.

2.04 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
   1. Portland Cement: ASTM C 150, Type I or Type I/II, gray. Supplement with the following
      a. Fly Ash: ASTM C 618, Class F or C. Carbon content shall not exceed 3 percent by volume.
      b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C 33, coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years of satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
   1. Maximum Coarse-Aggregate Size: 1-1/2 inches, 1 inch, or 3/4 inch nominal as indicated on Drawings for specific uses.
   2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Lightweight Aggregate: ASTM C 330, 3/4-inch nominal maximum aggregate size.

D. Water: ASTM C 94 and potable.

2.05 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that contain not more than 0.05 percent water soluble chloride ions. Do not use calcium chloride or admixtures containing calcium chloride.
   1. Water-Reducing Admixture: ASTM C 494, Type A.
   2. Retarding Admixture: ASTM C 494, Type B.
   3. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.
   4. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
   5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494, Type G.
   6. Plasticizing and Retarding Admixture: ASTM C 1017, Type II.

C. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    a. ChemMasters.
    b. Davis Colors.
    c. Dayton Superior Corporation.
    d. Hoover Color Corporation.
    e. Lambert Corporation.
    f. QC Construction Products.
    g. Rockwood Pigments NA, Inc.
    h. Scofield, L. M. Company.
    i. Solomon Colors, Inc.
2. Color: As selected by Architect from manufacturer's full range.

2.06 CONCRETE MIX DESIGNS

A. Selection of Proportions: Proportions of ingredients for concrete mixes shall be determined by a qualified concrete supplier in accordance with the requirements of ACI 301.

B. Required average strength above specified strength: Determination of required average strength above specified strength shall be based on the standard deviation record of the production facility in accordance with ACI 301. Calculation of standard deviation of compressive strength results shall be made in accordance with ACI 214. If a suitable record of strength tests is not available, proportions shall be selected on the basis of laboratory trial batches to produce an average strength greater than the strength f'c by the amount defined in ACI 301.

2.07 VAPOR RETARDERS

A. See Section 03 05 80

2.08 FLOOR AND SLAB TREATMENTS

A. Removed

2.09 LIQUID FLOOR TREATMENTS

A. VOC Content: Liquid floor treatments shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; that penetrates, hardens, and densifies concrete surfaces.
    1. Products: Subject to compliance with requirements.

C. Penetrating Liquid Floor Treatments for Polished Concrete Finish: Clear, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; that penetrates, hardens, and is suitable for polished concrete surfaces.
    1. Products: Subject to compliance with requirements, provide one of the following:
        a. Advanced Floor Products; Retro-Plate 99.
        b. L&M Construction Chemicals, Inc.; FGS Hardener Plus.
        c. QuestMark, a division of CentiMark Corporation; DiamondQuest Densifying Impregnator Application.

2.10 RELATED MATERIALS

A. Expansion and Isolation Joint Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

B. Semi-rigid Joint Filler: Two-component, semi-rigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 per ASTM D 2240.

C. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

D. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
   1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

E. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.11 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
   1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
   2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
   3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
   4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.
   1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
   2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
   3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
   4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109.

2.12 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
   1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of Portland cement, which would otherwise be used, as indicated in Structural General Notes.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

E. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

2.13 NON-SHRINK GROUT

A. Grout shall be prepackaged, non metallic, and non gaseous. It shall be non-shrink when tested in accordance with ASTM-C1107 Grade B or C at a fluid consistency (flow cone) of 20 to 30 seconds. Thirty-minute-old grout shall flow through the flow cone after slight agitation, in temperatures of 40 degrees to 90 degrees Fahrenheit. Grout shall be bleed free and attain 7,500 psi compressive strength in 28 days at fluid consistency. Certified independent test data required. Approved products include the following:
   1. “Euco NS” by Euclid Chemical Company
   2. “Masterflow 713” by Master Builders.

2.14 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Proportion normal-weight concrete mixture as indicated in Structural General Notes:

2.15 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.16 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116, and furnish batch ticket information.
   1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01 FORMWORK

A. See Section 03 10 00.

3.02 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
   2. Install dovetail anchor slots in concrete structures as indicated.

3.03 REMOVING AND REUSING FORMS

A. See Section 03 10 00.

3.04 SHORES AND RESHORES

A. See Section 03 10 00.

3.05 VAPOR RETARDERS/BARRIERS

A. See Section 03 05 80.

3.06 STEEL REINFORCEMENT

A. See Section 03 20 00

3.07 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
   1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
   2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
   3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
   4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
   5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
   6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
   7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
   1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
   2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
   1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
   2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants are specified or otherwise indicated.
   3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.08 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
   1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
   1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
   2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
   3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Do not permit concrete to drop freely any distance greater than 10’-0” for concrete containing a high range water reducing admixture or 5’-0” for other concrete. Provide chute or tremie to place concrete where longer drops are necessary. Do not place concrete into excavations with standing water. If place of deposit cannot be pumped dry, pour concrete through a tremie with its outlet near the bottom of the place of deposit.

F. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
   1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
   2. Maintain reinforcement in position on chairs during concrete placement.
   3. Screed slab surfaces with a straightedge and strike off to correct elevations.
   4. Slope surfaces uniformly to drains where required.
   5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleed water appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

G. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
   1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
   2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
   3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

H. Hot-Weather Placement: Comply with ACI 305 and as follows:
   1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is

calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.09 FINISHING FORMED SURFACES

A. See Section 03 10 00.

3.10 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish (CF-1): While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.

1. Apply scratch finish to surfaces indicated and/or to receive concrete floor toppings or to receive mortar setting beds for bonded cementitious floor finishes.

C. Float Finish (CF-2): Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces indicated and/or to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

D. Trowel Finish (CF-3): After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces indicated and/or exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
2. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-foot- (3.05-m-) long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 1/4 inch (6 mm).

E. Trowel and Fine-Broom Finish (CF-4): Apply a first trowel finish to surfaces indicated or where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

F. Broom Finish (CF-5): Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

G. Slip-Resistive Finish (CF-6): Before final floating, apply slip-resistive finish where indicated and to concrete stair treads, platforms, and ramps. Apply according to manufacturer's written instructions and as follows:

1. Uniformly spread 25 lb/100 sq. ft. of dampened slip-resistive granules over surface in one or two applications. Tamp aggregate flush with surface, but do not force below surface.
2. After broadcasting and tamping, apply float finish.

3. After curing, lightly work surface with a steel wire brush or an abrasive stone and water to expose slip-resistive granules.

H. Interior slab: Provide a troweled smooth flat matte finish, except at the cooler and freezer. Moisture mitigation is required due to over troweling slab to the point that moisture is trapped with the concrete. Slab shall be at the contractor's role risk, responsibility and shall be no cost to the owner.

3.11 CONCRETE FLOOR FINISH TOLERANCES

A. Floor Elevation Tolerance Envelope:
   1. The acceptable tolerance envelope for absolute elevation of any point on the slab surface, with respect to the elevation shown on the Drawings, is as follows:
      a. Slab-on-Grade, or Slab-on-Void Construction: +/- 3/4"
      b. Top surfaces of formed slabs measured prior to removal of supporting shores: +/- 3/4"
      c. Top surfaces of all other slabs: +/- 3/4"
      d. Slabs specified to slope shall have a tolerance from the specified slope of 3/8" in 10'-0" at any point, up to 3/4" from theoretical elevation at any point.

3.12 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel finish concrete surfaces.

3.13 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one of the following methods:
   1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

a. Water, maximum 2” depth.
b. Continuous water-fog spray.

2. Curing compound to be provided as specified by Architect and shall not interfere with other finishes.

3.14 LIQUID FLOOR TREATMENTS

A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturers written instructions.
   1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
   2. Do not apply to concrete that is less than 28 days' old.
   3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous.

B. Polished Concrete Floor Treatment: Apply polished concrete finish system to cured and prepared slabs to match accepted mockup.
   1. Machine grind floor surfaces to receive polished finishes level and smooth and to depth required to reveal aggregate to match approved mockup.
   2. Apply penetrating liquid floor treatment for polished concrete in polishing sequence and according to manufacturer's written instructions, allowing recommended drying time between successive coats.
   3. Continue polishing with progressively finer grit diamond polishing pads to gloss level to match approved mockup.
   4. Control and dispose of waste products produced by grinding and polishing operations.
   5. Neutralize and clean polished floor surfaces.

C. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.

3.15 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
   1. Defer joint filling until concrete has aged at least six month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semi-rigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.16 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part Portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
   1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes

and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.17 FIELD QUALITY CONTROL

A. Testing and Inspecting: See Section 01 45 23.
1. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

2. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

3.18 PROTECTION OF LIQUID FLOOR TREATMENTS

A. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.

END OF SECTION 03 30 00

SECTION 03 52 16.19 - LIGHTWEIGHT INSULATING CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Drawings and general provisions of the Contract, including Division 01 General Requirements and NCISD Procurement and Contracting Requirements, apply to this Section.

B. Refer to Section AB – Instructions to Proposers, Section AS – Subcontractor / Manufacturer Prequalification, and Section 01 25 00 – Request for Substitution Procedures.

C. Scope of Work:
   1. Provide lightweight insulating concrete deck at roof as indicated on the Drawings.
   2. Includes lightweight insulating concrete decks installed on structural steel metal deck and cementitious wood fiber decks.
   3. Provide all materials and accessories required for a complete installation.

D. Related Work:
   1. Section 01 45 23 – Testing and Inspection Services
   2. Section 05 31 00 – Steel Decking
   3. Section 06 10 00 – Rough Carpentry
   4. Section 07 52 19 – Modified Bituminous “Cool Roof” Membrane Roofing
   5. Section 07 72 00 – Roof Accessories
   6. Section 07 72 23 – Roof Hatches and Vents

1.02 SUBMITTALS

A. Review and comply with all provisions of section 01 33 00 – Submittal Procedures.

B. Product Data: Submit manufacturer’s literature, product data, certifications and supporting information for all products proposed to be furnished, as necessary to demonstrate compliance with the specified requirements.
   1. Mix Design: Indicate materials and proportions of proposed mix.
   2. Manufacturer’s letter of certification of the approved installer.

C. Shop Drawings: Submit complete shop drawings consisting of design, fabrication and erection / installation of proposed assemblies.
   1. Show profiles, sizes, spacing and locations of assembled components.
   2. Show details of shop fabrications, connections and details.
   3. Show details of field fabrications, connections and details.
   4. Provide calculations demonstrating compliance with wind load and other requirements.
   5. Shop drawings shall be sealed and signed by a Texas registered engineer.

D. Installation Instructions: Submit manufacturer’s complete installation instructions, including fastening, for all products and / or assemblies proposed to be furnished.
   1. Installation details submitted for review shall be specific to the work of this contract and accurately depict interface within the assembly(s) indicated on the Drawings.
   2. Generic details that do not depict actual conditions shall not be acceptable.

E. Maintenance Instructions: Submit manufacturer’s complete maintenance instructions and recommendations for all products and / or assemblies proposed to be furnished.
   1. Include recommended cleaning products and instructions for use.
   2. Where applicable, provide recommended maintenance schedules and procedures.

F. Manufacturer's specifications and other data for all products proposed to be furnished as needed to prove compliance with specified requirements.

G. Manufacturer's letter of certification of the approved installer.

1.03 REFERENCES

A. American Society for Testing and Material:
   1. ASTM C150 – Standard Specifications for Portland Cement
   2. ASTM C172 – Standard Practice for Sampling Freshly Mixed Concrete
   3. ASTM C332 – Standard Specification for Lightweight Aggregates for Insulating Concrete, Group 1
   4. ASTM C495 – Standard Test Method for Compressive Strength of Lightweight Insulating Concrete
   5. ASTM C513 – Standard Test Method for obtaining Specimens of Hardened Lightweight Insulating Concrete for Compressive Strength
   6. ASTM C578 – Standard Specifications for Rigid Cellular Polystyrene Thermal Insulation
   7. ASTM C796 – Standard Test Method for Foaming Agents for Use in Producing Cellular Concrete Using Preformed Foam
   8. ASTM C869, Standard Specifications for Foaming Agents Used in Making Preformed Foam for Cellular Concrete
   9. ASTM C1077 – Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
   10. ASTM E119 – Standard Test Method for Fire Tests of Building Construction and Materials
   11. ASTM E329 – Standard Specifications for Agencies Engaged in Construction Inspection, Testing and Special Inspection

B. Comply with all applicable recommendations of American National Standard Institute (ANSI) A122.1, and any others referred to herein. In any conflict between referenced standards, the more stringent requirements shall govern.
   1. ANSI / SPRI FX-1-2006 – Standard Field Test Procedures for Determining the Withdrawal Resistance of Roofing Fasteners.

1.04 QUALITY ASSURANCE AND TESTING PROCEDURES

A. Acceptable Applicators:
   1. Applicator must be approved / licensed by the system manufacturer. Approval shall be confirmed in writing to the Architect. Written approval by the manufacturer for the applicator shall include the project by name.
   2. Applicator must have at least five (5) years of satisfactory experience installing the specified system.
   3. Upon request by the Architect, provide a list of at three (3) projects where the applicator has installed the specified / proposed lightweight insulating concrete deck. The list shall include the name and contact information of the project architect and general contractor.

B. Testing Laboratory Services:
   1. The Owner will select the Testing Laboratory and pay for the cost of tests to determine the dry density and compressive strength of the lightweight insulating concrete deck. Testing shall be determined in accordance with ASTM C495.

C. Quality Assurance:
   1. The system shall conform to the requirements of FM Global and shall be currently listed as an approved component in the FM RoofNav Database.
   2. Roof Deck assembly shall conform to F.M. wind uplift Class 90.
   3. The system manufacturer's product shall be UL classified and listed in the current Underwriters Laboratories "Fire Resistance Design Directory".

D. Building / Construction Components:
   1. 01 Meet or exceed established standards.

2. Meet 30 R-value.

1.05 ROOF SYSTEM COORDINATION

A. Coordinate with roofing manufacturer / contractor as required to assure compatibility of the lightweight insulating roof deck with the performance and installation criteria of the specified basis of design roofing system.

B. If a roofing system other than the basis of design system is used on the project, coordinate as required to assure compatibility of the lightweight insulating roof deck with the performance and installation criteria of the roofing system.

C. Modify the design performance of the lightweight insulating roof deck as required to meet requirements of the roofing system to be installed.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. The following manufacturers are acceptable to provide the work of this section, provided their proposed systems / products meet or exceed all specified requirements:
   1. Elastizell
   2. Siplast
   3. Vermiculite Products Inc.
   4. Celcore
   5. Merlecrete

2.02 LIGHTWEIGHT CONCRETE

A. Aggregate:
   1. Vermiculite: Comply with ASTM C332, Group 1.
   2. Mix shall be 1:6 with 125 to 225 psi at 28 days compressive strength; 44 to 60 PCF cast density, and 22 to 28 PCF dry density.
   3. Vermiculite aggregate proposed for use shall be certified as being asbestos free.

B. Cellular:
   1. Foaming agent shall comply with ASTM C869 when tested in accordance with ASTM C796.
   2. Cast density of 36 to 44 PCF.
   3. Minimum dry density of 26 PCF.
   4. Minimum 28-day compressive strength of 200 PSI.

C. Cement: Portland, conforming to ASTM C150, Type I, I/II or III.

D. Admixture: As recommended by system manufacturer.

E. Reinforcing Fibers: shall be monofilament type and shall not exceed 1.5 PCY

F. Water: Free from any materials harmful to concrete or structural steel deck.

G. Expansion Joint Material: 1" thick fiberglass approved by the manufacturer for use in conjunction with and insulating concrete deck.

H. Metal Deck: Refer to structural drawings and specifications for size, type and section modulus of metal deck.
   1. Steel deck perforations for aggregate insulating concrete shall not exceed 1.5% open area.
   2. Steel deck vent perforations for cellular insulating concrete shall not exceed 0.75% open area.

I. Curing Compound: As required by the insulating concrete manufacturer and applied in accordance with the manufacturer's instructions.

2.03 INSULATION BOARD

A. Rigid, closed cell, un-faced Expanded Polystyrene (EPS) board stock complying with ASTM C578.

B. Thickness: six (6) inches minimum.

C. Nominal Density: 1.0 PCF, Type I.

D. Fire Resistance: Flame spread – ASTM E84. Smoke Density – ASTM E84.

E. Provide a minimum of six (6) 3” diameter bond holes for each 8 SF of board.

2.04 DESIGN OF ROOF DAMAGE

A. The design to drain roof areas, whether to roof drains or gutters, is generally accomplished by sloping the underlying steel structure sloping to the drainage vehicle.

B. In areas of the roof that are shown to be cricketed or similar, provide tapered rigid insulation or build up surface of lightweight concrete above the EPS insulation in the patterns shown or required to facilitate full drainage of the roof surface.
   1. Area to slope at 1/4" per foot unless noted otherwise.

PART 3 - EXECUTION

3.01 INSPECTION AND PREPARATION

A. Prior to erection of forms, inspect structural deck to ensure all work is complete and suitable for this installation to progress.

B. Prior to placing insulating concrete, inspect corrugated metal forms to ensure that they are secured to the structure and free of debris or foreign materials.

C. Verify that all deficiencies have been corrected prior to commencing installation.

D. Weather:
   1. Insulating concrete roof decks may be placed when temperatures are 40°F and rising.
   2. If colder temperatures are anticipated, the Applicator shall take suitable precautions for the installation of an acceptable deck.
   3. Do not place insulating concrete deck during precipitation or when there is a likely expectation that precipitation will occur during installation.
   4. Adverse weather precautions, actions and remedies shall be in strict accordance with the system manufacturer’s standards and recommendations.

E. The roofing membrane system application must be coordinated with the insulating concrete installation to avoid prolonged exposure of the roof deck.

3.02 INSTALLATION

A. Lightweight concrete shall be mixed in accordance with manufacturer’s standards and recommendations.

B. Fill valleys / voids of structural metal deck with a leveling thickness of lightweight concrete fill.

C. Install EPS rigid insulation board in the fresh bond coat of lightweight concrete fill.
   1. Install insulation board in fresh bond coat layer in such a manner that results in the underside of insulation boards making full coverage contact with bond coat layer.
   2. EPS board shall be held back 3(+) inches from the perimeter / edges of the roof deck. Voids to be filled with lightweight concrete fill.

D. The EPS layer shall be placed and allowed to set overnight, undisturbed, prior to installation of the lightweight concrete roof deck topping layer.

E. Where required, place reinforcing mesh with longitudinal wires at right angles to structural supports.
   1. Lap 6 inches and tie at intersections, both sides and ends.
   2. Ensure that mesh is in approximate center of the topping fill depth.

F. Install a minimum of 2" thickness of lightweight concrete fill over EPS board, filling all bond holes, perimeter voids and other locations to produce a smooth surface suitable for the installation of the specified roofing system.
   1. The surface to receive lightweight concrete fill shall be dry, free of water, dew, frost, ice and snow at the time of placement.

G. Where indicated on the drawings increase depth of lightweight concrete fill as required to form crickets, etc. required for positive drainage

H. Insulating concrete shall be screeded to the proper thickness and slope with a surface free of ridges and sharp projections prior to installation of the roofing membrane.

I. Cure roof deck topping in accordance with the system manufacturer's standards and recommendations.

3.03 FIELD QUALITY CONTROL AND TESTING

A. Check the cast density at point of placement and adjust the mix to obtain required cast density.
   1. End of hose cast density checks shall be taken, at minimum, every thirty (30) minutes at the point of placement.
   2. Do not rod specimens.
   3. A set of test specimens shall be considered to be six (6) 3x6 cylinders made from the same sampling.
   4. Four (4) specimens from each set shall be tested for compressive strength and two (2) for dry density.

B. Protect samples from damage and temperature extremes and test accordingly at 28 days to ASTM C495.

C. Applicator shall have test equipment available on job site at all times during pouring of insulating concrete for testing slump and cast density.
   1. Slump shall not exceed 5 inches.

D. Pull Test: Conduct pull tests to document / substantiate the lightweight concrete deck meets or exceeds the minimum pull-out requirements of the specified roofing system.
   1. Testing shall be done and recorded in accordance with ANSI / SPRI FX-1-2006.

3.04 COORDINATION WITH ROOFING WORK

A. Confirm prior to placement of the lightweight concrete that the specified roof system is compatible with the type of insulating concrete to be installed.

B. Begin roofing when the insulating concrete roof deck has open air cured sufficiently to a point where subsequent work can progress without damage to the lightweight insulating concrete deck.
   1. This is usually 3 to 5 days after the deck has been placed.
   2. Confirm the Contractor has coordinated with roofing installer as required.

C. The roof deck should not be left exposed for longer than 5 to 7 days following open-air cure period.

D. Consult the roofing manufacturers for their recommended attachment of the roofing system to the insulating concrete roof deck system.

3.05 REPAIRS

A. Where required to provide surface conditions suitable to receive the specified roof system, repairs to smooth the deck surface, correct depressions or fill divots shall be performed in accordance with written guidance provided by the systems manufacturer.

B. Remove and replace any area of the roof deck that fails to comply with the requirements of the systems manufacturer, this specification or applicable product approval.

END OF SECTION 03 52 16.19

SECTION 05 12 00 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Division 01 General Requirements and NCISD Procurement and Contracting Requirements, apply to this Section.

1.02 SUMMARY

A. Section Includes:
   1. Structural steel.
   2. Prefabricated building columns.

B. Related Sections:
   1. Section 01 45 23 "Testing and Inspection Services".
   2. Section 05 31 13 "Steel Floor Decking".
   3. Section 05 31 23 "Steel Roof Decking".
   4. Section 05 50 00 "Metal Fabrications".
   5. Section 05 51 00 "Metal Stairs."

1.03 DEFINITIONS

A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

B. Seismic-Load-Resisting System: Elements of structural-steel frame designated as "SLRS" or along grid lines designated as "SLRS" on Drawings, including columns, beams, and braces and their connections.

C. Heavy Sections: Rolled and built-up sections as follows:
   1. Shapes included in ASTM A 6 with flanges thicker than 1 1/2 inches.
   2. Welded built-up members with plates thicker than 2 inches.
   3. Column base plates thicker than 2 inches.

D. Protected Zone: Structural members or portions of structural members indicated as "Protected Zone" on Drawings. Connections of structural and nonstructural elements to protected zones are limited.

E. Demand Critical Welds: Those welds, the failure of which would result in significant degradation of the strength and stiffness of the Seismic-Load-Resisting System and which are indicated as "Demand Critical" or "Seismic Critical" on Drawings.

1.04 REFERENCES

A. Comply with applicable provisions of the following specifications and documents: The latest adopted edition of all standards referenced in this section shall apply, unless noted otherwise
   1. AISC "Code of Standard Practice for Steel Buildings and Bridges”.
   2. AISC "Specification for Structural Steel Buildings," including the "Commentary" and the Supplements thereto, as issued.
   3. AISC "Specification for Architecturally Exposed Structural Steel”.
   4. AISC's "Seismic Provisions for Structural Steel Buildings”.
   5. ASTM A 6 "Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use”.
   6. AWS D1.1 Structural Welding Code.
   7. Research Council on Structural Connections' (RCSC) "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts".

8. Research Council on Structural Connections' (RCSC) "Load and Resistance Factor Design Specification for Structural Joints Using ASTM A 325 or A 490 Bolts".
9. SSPC (Steel Structures Painting Council), Painting Manuals, Volumes 1 and 2.
10. UL Fire Resistance Directory.

B. In the case of conflict between the Contract Documents and a reference standard, the Contract Documents shall govern. In the case of a conflict between the Contract Documents and the Building Code, the more stringent shall govern.

1.05 PERFORMANCE REQUIREMENTS

A. Delegated Design: Prepare submittal documents including connection design calculations and drawings signed and sealed by registered design professional, licensed in state where project is located, employed by the steel fabricator.

B. Design all structural steel framing connections complying with specified performance:
1. Load Capacity: Resist loads indicated on drawings or resist full capacity of supported framing member if reaction not indicated. Account for connection and member loads and eccentricities.
   a. Request additional design criteria when necessary to complete connection design.
2. Configuration: Design and detail all connections for each member size, steel grade and connection type to resist the loads and reactions indicated on the drawings or specified herein. Use details consistent with details shown on drawings, supplementing where necessary. The details shown on drawings are conceptual and do not indicate the required weld sizes or number of bolts unless specifically noted. Use rational engineering design and standard practice in detailing, accounting for all loads and eccentricities in both the connection and the members. Promptly notify the design professional in charge of any location where the connection design criteria is not clearly indicated. The design of all connections is subject to the review and acceptance of the design professional in charge. Submit structural calculations prepared and sealed by a qualified engineer registered in the state where the project is located. Submit calculations for review before preparation of detail drawing.

1.06 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication of structural-steel components.
1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
5. Identify members and connections of the seismic-load-resisting system.
6. Indicate locations and dimensions of protected zones.
7. Identify demand critical welds.
8. For structural-steel connections indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. At full penetration welds, Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1, "Structural Welding Code - Steel," for each welded joint whether prequalified or qualified by testing, including the following:

1. Power source (constant current or constant voltage).
2. Electrode manufacturer and trade name, for demand critical welds.

1.07 INFORMATIONAL SUBMITTALS

A. Submit the following informational submittals:
   1. Qualification Data: For qualified installer, fabricator, and testing agency.
   2. Welding certificates.
   3. Mill test reports for structural steel, including chemical and physical properties.
   4. Product Test Reports: For the following:
      a. Bolts, nuts, and washers including mechanical properties and chemical analysis.
      b. Direct-tension indicators.
      c. Tension-control, high-strength bolt-nut-washer assemblies.
      d. Shear stud connectors.
      e. Shop primers.
   5. Source quality-control reports.
   6. **Delegated Design Drawings and Calculations: Signed and sealed by responsible Engineer.**
      a. Connection calculations.

1.08 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.

B. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.

C. Shop-Painting Applicators: Qualified according to AISC's Sophisticated Paint Endorsement P1, P2, or P3 as applicable for exposure or SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting Applicators."

D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
   1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

E. Comply with applicable provisions of the following specifications and documents:
   1. AISC 303.
   2. AISC 341 and AISC 341s1.
   3. AISC 360.
   4. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

F. Preinstallation Conference: Conduct conference at Project site.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
   1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
   1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.

2. Clean and re-lubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.10 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.01 STRUCTURAL-STEEL MATERIALS

A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than the following:
   1. W-Shapes: 60 percent.
   2. Channels, Angles, M, S-Shapes: 60 percent.
   3. Plate and Bar: 25 percent.
   4. Cold-Formed Hollow Structural Sections: 25 percent.
   5. Steel Pipe: 25 percent.
   6. All Other Steel Materials: 25 percent.

B. W-Shapes: Refer Structural General Notes.

C. Channels, Angles, M, S-Shapes: Refer Structural General Notes.

D. Plate and Bar: Refer Structural General Notes.

E. Corrosion-Resisting Structural-Steel Shapes, Plates, and Bars: ASTM A 588, Grade 50.

F. Cold-Formed Hollow Structural Sections: Refer Structural General Notes.

G. Steel Pipe: Refer Structural General Notes.
   1. Weight Class: See Plans.
   2. Finish: Black except where indicated to be galvanized.

H. Welding Electrodes: Comply with AWS requirements.

2.02 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts.
   1. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with plain finish.

B. Zinc-Coated High-Strength Bolts, Nuts, and Washers (All bolts located in Crawl Space): ASTM A 325, Type 1, heavy-hex steel structural bolts.
   1. Finish: Hot-dip or mechanically deposited zinc coating.
   2. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with mechanically deposited zinc coating finish.

C. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy hex or round head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.
   1. Finish: Plain or Mechanically deposited zinc coating, where required.

D. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B.

E. Unheaded Anchor Rods: ASTM F 1554, See Anchor Bolt Schedule on Drawings for Grade.
   1. Configuration: Straight.
   2. Nuts: ASTM A 563 heavy-hex carbon steel.
   3. Plate Washers: ASTM A 36 carbon steel.
   4. Washers: ASTM F 436, Type 1, hardened carbon steel.
   5. Finish:
      a. General Condition – Plain
      b. Crawl Space - Hot-dip zinc coating, ASTM A 153, Class C.

F. Clevises and Turnbuckles: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1035.

G. Eye Bolts and Nuts: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1030.

H. Sleeve Nuts: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1018.

I. Structural Slide Bearings: Low-friction assemblies, of configuration indicated, that provide vertical transfer of loads and allow horizontal movement perpendicular to plane of expansion joint while resisting movement within plane of expansion joint.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
      a. Amscot Structural Products Corp.
      b. Fluorocarbon Company Limited.
      c. R.J. Watson Bridge & Structural Engineered Systems.
      d. Seismic Energy Products, L.P.
   2. Mating Surfaces: PTFE and PTFE or mirror-finished stainless steel.
   3. Coefficient of Friction: Not more than 0.05.
   4. Design Load: Not less than 5,000 psi .
   5. Total Movement Capability: 2 inches.

2.03 PRIMER

A. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Primer (General): Fabricator's standard lead- and chromate-free, non-asphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

C. Galvanizing Repair Paint: SSPC-Paint 20.

D. Exposed miscellaneous steel such as brick angles to be hot dipped galvanized.

E. Exposed steel beams and columns to weather to receive High performance paint, coordinate shop primer and surface rep.

2.04 GROUT

A. Refer Section 03 30 00.

2.05 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.
   1. Camber structural-steel members where indicated.
   2. Fabricate beams with rolling camber up.

3. Identify high-strength structural steel according to ASTM A 6 and maintain markings until structural steel has been erected.
4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop priming operations.

B. Fabricate and assemble structural steel in shop to greatest extent possible. Fabricate structural steel according to AISC specifications referenced in this Section and in final approved Shop Drawings.
1. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence that will expedite erection and minimize field handling of materials.
2. 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 markings, burrs, and other effects.
3. Camber structural steel members where indicated. The camber specified is the camber that is measured in the field with the beam on its side so that the beam weight has no effect. During shipment and handling, cambered members shall be supported in a way that will not result in loss of camber.
4. Camber tolerance
   a. Beams 50 feet and less; plus or minus 1/2 inch.
   b. Beams greater than 50 feet; plus or minus 1/2 inch, except tolerance can be increased 1/8 inch for each 10 feet or fraction thereof in excess of 50 feet.
   c. Contact engineer for members outside specified camber tolerance. Provide engineer with a list of beam locations and actual measured camber amounts. Submit an engineered shoring plan, if requested, that will allow the beam to deflect to the horizontal position after concrete placement without overloading the framing below.
5. Complete structural steel assemblies, including welding of units, before starting shop priming operations.
6. Comply with fabrication tolerance limits of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for structural steel.

C. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.

D. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

E. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

F. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPCSP3, "Power Tool Cleaning."

G. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.

H. 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 approved shop drawings.
1. Provide threaded nuts welded to framing, and other specialty items as indicated to receive other work.
2. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame cut holes by burning.

I. Base-Plate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces. Base plates hole sizes for anchor bolts may be oversized to facilitate erection:
1. Bolts 3/4inch to 7/8 inch diameter: 1/2 inch oversize.
2. Bolts 1 inch to 1 1/2 inch diameter: 3/4 inch oversize.

3. Bolts over 1 3/4 inch diameter: 1 inch oversize.

J. Base Plate Washers: Sizes shall be as follows:
   1. 3/4 inch diameter Bolts: 2 inch diameter x 1/4 inch thick
   2. 7/8 inch diameter Bolts: 2 1/2 inch diameter x 5/16 inch thick
   3. 1 inch diameter Bolts: 3 inch diameter x 3/8 inch thick
   4. 1 1/4 inch diameter Bolts: 3 inch diameter x 1/2 inch thick
   5. 1 1/2 inch diameter Bolts: 3 1/2 inch diameter x 1/2 inch thick
   6. 1 3/4 inch diameter Bolts: 4 inch diameter x 5/8 inch thick
   7. 2 inch diameter Bolts: 5 inch diameter x 3/4 inch thick

K. Architecturally Exposed Structural Steel (AESS): Fabricate with exposed surfaces smooth, square, and free of surface blemishes, including pitting, rust and scale seam marks, roller marks, rolled trade names, and roughness.
   1. Remove blemishes by filling, grinding, or by welding and grinding, prior to cleaning, treating, and shop priming.
   2. Comply with fabrication requirements, including tolerance limits, of AISC's "Specification for Architecturally Exposed Structural Steel" for architecturally exposed structural steel.

2.06 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
   1. Joint Type: Snug tightened, Pretensioned, or Slip critical as required or indicated on Drawings.

B. Weld Connections: Comply with AWS D1.1 and AWS D1.8, where required, for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
   1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

2.07 SHOP PRIMING

A. Shop prime steel surfaces except the following:
   1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
   2. Surfaces to be field welded.
   3. Surfaces to be high-strength bolted with slip-critical connections.
   4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing) excluding crawl space steel. Crawl space steel shall be primed regardless of whether it is to receive fireproofing.
   5. Galvanized surfaces.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
   1. SSPC-SP 2, "Hand Tool Cleaning."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

D. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

E. Crawl space steel to be primed to a DFT between 2.5 and 3.5 mils.

F. Painting: Prepare steel and apply a one-coat, non-asphaltic primer complying with SSPCPS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems," to provide a dry film thickness of not less than 1.5 mils.

2.08 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123.
   1. Fill vent and drain holes that will be exposed in the finished Work unless they will function as weep holes, by plugging with zinc solder and filing off smooth.
   2. Galvanize lintels and shelf angles attached to structural steel frame and located in exterior walls.

2.09 SOURCE QUALITY

A. Testing Agency: Refer Section 01 45 23.
   1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify, with steel Erector present, elevations of concrete and masonry bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
   1. Prepare a certified survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.
   1. Do not remove temporary shoring supporting composite deck construction until cast-inplace concrete has attained its design compressive strength.

3.03 ERECTION

A. Set structural steel accurately in locations, to elevations indicated, and according to AISC 303 and AISC 360.

B. Base Bearing and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
   1. Set plates for structural members on wedges, shims, or setting nuts as required.
   2. Weld plate washers to top of baseplate.
   3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
   4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow it to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
   1. Level and plumb individual members of structure.
   2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection unless approved by Engineer. Finish thermally cut sections within smoothness limits in AWS D1.1.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

H. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.

3.04 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 Bolts" for type of bolt and type of joint specified.
   1. Joint Type: Snug tightened, Pretensioned, or Slip critical as indicated on Drawings.

B. Weld Connections: Comply with AWS D1.1 and AWS D1.8 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
   1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
   2. Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth.
   3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

3.05 FIELD QUALITY CONTROL

A. Testing Agency: See Section 01 45 23.

B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.06 REPAIRS AND PROTECTION

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780.

B. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPCPA1 for touching up shop-painted surfaces.
   1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

END OF SECTION 05 12 00

SECTION 05 31 23 - STEEL ROOF DECKING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Division 01 General Requirements and NCISD Procurement and Contracting Requirements, apply to this Section.

1.02 SUMMARY

A. Section Includes:
   1. Roof deck.
   2. Acoustical roof deck.
   3. Non-composite vented roof deck.

B. Related Requirements:
   1. Section 01 45 23 “Structural Testing and Inspection Services”
   2. Section 05 12 00 "Structural Steel Framing".
   3. Section 05 50 00 "Metal Fabrications".

1.03 REFERENCES

A. Comply with applicable provisions of the following specifications and documents. The latest adopted edition of all standard referenced in this section shall apply, unless noted otherwise.
   1. AWS D1.1 – Structural Welding Code
   2. AWS D1.3 – Structural Welding Code – Sheet Steel
   3. SDI – Design Manual
   4. SSPC – Painting Manual
   5. UL – Fire Resistance Directory
   6. ICBO – Product Evaluation Reports
   7. FM – Roof Assembly Classifications

B. In the case of conflict between the Contract Documents and a referenced standard, the Contract Documents shall govern. In the case of a conflict between the Contract Documents and the Building Code, the more stringent shall govern.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of deck, accessory, and product indicated.

B. Shop Drawings:
   1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.05 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Product Certificates: For each type of steel deck.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that each of the following complies with requirements:
   1. Power-actuated mechanical fasteners.
   2. Acoustical roof deck.

D. Evaluation Reports: For steel deck.

E. Field quality-control reports.

1.06 QUALITY ASSURANCE

A. Testing Agency Qualifications: Refer Section 01 45 23.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

C. FM Global Listing: Provide steel roof deck evaluated by FM Global and listed in its "Approval Guide, Building Materials" for Class 1 fire rating and Class 1-90 windstorm ratings.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.
   1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

B. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

C. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.

D. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.02 ROOF DECK

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. ASC Profiles, Inc.; a Blue Scope Steel company.
   2. Canam United States; Canam Group Inc.
   3. CMC Joist & Deck.
   4. Consolidated Systems, Inc.; Metal Dek Group.
   5. Cordeck.
   6. DACS, Inc.
   7. Epic Metals Corporation.
   8. Marlyn Steel Decks, Inc.
   9. New Millennium Building Systems, LLC.
   10. Nucor Corp.; Vulcraft Group.
   11. Roof Deck, Inc.
   12. Valley Joist; Subsidiary of EBSCO Industries, Inc.
   13. Verco Manufacturing Co.
   14. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

B. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:
   1. Prime-Painted Steel Sheet: ASTM A 1008, Structural Steel (SS), Grade 40 minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer.
      a. Color: Manufacturer's standard.
   2. Galvanized-Steel Sheet: ASTM A 653, Structural Steel (SS), Grade 40, G60 zinc coating.
   3. Galvanized and Shop-Primed Steel Sheet: ASTM A 653, Structural Steel (SS), Grade 40, G60 zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.
      a. Color: Manufacturer's standard.
   4. Deck Profile: As indicated on plan.
   5. Profile Depth: As indicated on plan.
   6. Design Uncoated-Steel Thickness: As indicated in Structural General Notes.
   7. Span Condition: Triple span or more.
   8. Side Laps: Overlapped or interlocking seam at Contractor's option.

2.03 ACOUSTICAL ROOF DECK

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. ASC Profiles, Inc.; a Blue Scope Steel company.
   2. Canam United States; Canam Group Inc.
   3. CMC Joist & Deck.
   4. Consolidated Systems, Inc.; Metal Dek Group.
   5. Cordeck.
   6. DACS, Inc.
   7. Epic Metals Corporation.
   8. Marlyn Steel Decks, Inc.
   9. New Millennium Building Systems, LLC.
   10. Nucor Corp.; Vulcraft Group.
   11. Roof Deck, Inc.
   12. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

2.04 NON-COMPOSITE VENTED ROOF DECK

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. ASC Profiles, Inc.; a Blue Scope Steel company.
   2. Canam United States; Canam Group Inc.
   3. CMC Joist & Deck.
   4. Consolidated Systems, Inc.; Metal Dek Group.
   5. Marlyn Steel Decks, Inc.
   6. New Millennium Building Systems, LLC.
   7. Nucor Corp.; Vulcraft Group.
   8. Roof Deck, Inc.
   9. Verco Manufacturing Co.
   10. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

B. Non-composite Vented Roof Deck: Fabricate ribbed- and vented-steel sheet non-composite form-deck panels to comply with "SDI Specifications and Commentary for Non-composite Steel Form Deck," in SDI Publication No. 31, and with the following:
   1. Galvanized-Steel Sheet: ASTM A 653, Structural Steel (SS), Grade 40, G60 zinc coating.
   2. Profile Depth: As indicated in Structural General Notes.

3. Design Uncoated-Steel Thickness: As indicated in Structural General Notes.
4. Span Condition: Triple span or more.
5. Side Laps: Overlapped or interlocking seam at Contractor's option.
6. Vent Slot Area: Manufacturer's standard vent slots providing 1-1/2.

2.05 ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 31 for overhang and slab depth unless otherwise indicated.

G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.

H. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0598 inch thick, with factory punched hole of 3/8-inch minimum diameter.

I. Flat Sump Plates: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.

J. Recessed Sump Pans: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck, with 3-inch- wide flanges and sloped recessed pans of 1-1/2-inch minimum depth. For drains, cut holes in the field.

K. Galvanizing Repair Paint: ASTM A 780.

L. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.

B. Install temporary shoring before placing deck panels if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.
   1. Fasteners shall provide diaphragm shear and uplift resistance equal to or greater than welding indicated herein and on Drawings.

3.03 ROOF-DECK INSTALLATION

A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:
   1. Weld Diameter: As indicated on Structural Plans.
   2. Weld Spacing: As indicated on Structural Plans.
   3. Weld Washers: Install weld washers at each weld location if deck gauge is lighter than 22 gauge.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals shown on Structural Plans:
   1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
   2. Fasten with a minimum of 1-1/2-inch- long welds.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
   1. End Joints: Lapped 2 inches minimum or butted at Contractor's option.

D. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and weld or mechanically fasten flanges to top of deck. Space welds or mechanical fasteners not more than 12 inches apart with at least one weld or fastener at each corner.
   1. Install reinforcing channels or zees in ribs to span between supports and weld or mechanically fasten.

E. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld or mechanically fasten to substrate to provide a complete deck installation.
   1. Weld cover plates at changes in direction of roof-deck panels unless otherwise indicated.

3.04 FIELD QUALITY CONTROL

A. Testing Agency: See Section 01 45 23.

B. Field welds will be subject to inspection.

C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.

D. Remove and replace work that does not comply with specified requirements.

E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.05 PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.
   1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.

C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 31 23

SECTION 27 15 00 - COMMUNICATIONS HORIZONTAL CABLING

PART 1 - GENERAL

1.01 SUMMARY

A This section of the horizontal cabling portion of a structured cabling system includes:

1. UTP Copper cabling
2. Termination and patch cables

B Provide all horizontal cabling, terminating hardware, adapters, and cross-connecting hardware necessary to interconnect all system equipment including equipment located in communications rooms.

C Related Sections

1. Section 27 02 00 - Basic Materials and Methods for Communications Systems
2. Section 27 05 26 - Grounding and Bonding for Communications Systems
3. Section 27 05 28 - Pathways for Communications Systems
4. Section 27 11 00 - Communications Room Fittings

1.02 REFERENCES

A The publications listed below form a part of this specification. The publications are referred to in the text by basic designation only.

B Specific reference in specifications to codes, rules, regulations, standards, manufacturer's instructions, or requirements of regulatory agencies shall mean the latest printed edition of each in effect at the date of contract unless the document is shown dated.

C Conflicts

1. Refer to section 27 02 00.

D Codes and Standards

1. Refer to section 27 02 00.

1.03 SUBMITTALS

A Refer to sections 27 02 00 and 27 13 00.

1.04 QUALITY ASSURANCE

A Refer to section 27 02 00.

1.05 DELIVERY, STORAGE, AND HANDLING

A Refer to sections 27 02 00 and 27 13 00.

B Storage temperature range: -40°F to 149°F (-40°C to 65°C)

1.06 PROJECT/SITE CONDITIONS

A Refer to section 27 02 00.

1.07 WARRANTY

A Refer to section 27 02 00.

1.08 MAINTENANCE AND SUPPORT

A Refer to section 27 13 00

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A Labeling

1. Refer to section 27 02 00.

B Firestopping

1. Refer to section 27 02 00.

2.02 ACCEPTABLE COPPER MANUFACTURERS

A UTP Plenum Rated Cable Cat6 /Cat 6A

1. Commscope CS34P - 6 U/UTP Cable, plenum - Color Coded by System

a. Data / IP Phone - Blue - CS34P BLU C6 4/23 U/UTP CPK 1KFT

b. **Wireless (AP) - Blue- CS44P BLU C6A 4/23 U/UTP CPK 1KFT**

c. Access Control/Intrusion - Yellow - CS34P YEL C6 4/23 U/UTP CPK 1KFT

d. **Video Surveillance(Cameras)- Purple/Violet - CS44P VLT C6A 4/23 U/UTP CPK 1KFT**

e. Intercom - White - CS34P WHT C6 4/23 U/UTP CPK 1KFT

f. Fire Alarm - Red - CS34P RED C6 4/23 U/UTP CPK 1KFT

g. Building Controls/HVAC - Grey - CS34P GRY C6 4/23 U/UTP CPK 1KFT

h. Audio-Video Systems(Projectors/TV/Sound System) - Green - CS34P GRN C6 4/23 U/UTP CPK 1KFT

2. Owner approved alternate

B Data/Voice Outlet Components Cat6

1. **Commscope -UKJ600(Cat6) UKJ10G(Cat6A) - Color Coded by Ssytem**

   a. Data/IP Phones - Orange -**760257280 | UKJ600-OR**

   b. **Wireless(AP) CAT 6A - Blue - 760257290 | UKJ10G-BL**

   c. Access Control/Intrusion - Yellow - **760257283 | UKJ600-YL**

   d. **Video Surveillance(Cameras) CAT6A - Purple/Violet - 760241168-UKJ10G-VL**

   e. Intercom - White - **760237652 | UKJ600-P.WH**

   f. Fire Alarm- Red - **760257282 | UKJ600-RD**

   g. Building Controls/HVAC - Grey -**760237658 | UKJ600-GY**

   h. Audio Video Systems (Projectors/TV/Sound System) - Green -**760257284 | UKJ600-GN**

      1) **ALL CAT6/CAT6A JACKS ARE TO BE TERMINATED USING COMMSCOPE MODULAR JACK LACING TERMINATION TOOL KIT.**

   i. Or owner approved alternates

2. Owner approved alternate

C Patch Panels (24 or 48 port)

1. Comm

   a. ~~24-Port CPP-UDDM-KJ-1U-24~~

   b. 48-Port CPP-UDDM-KJ-2U-48

      1) **General Data , Access Point , Video Surveillance Category cabling is to be terminated on seperate 48 port patch panels. Each systems Category cabling is to receive dedicated patch panels**

      2) **Fire Alarm, BAS, Instrusion detection, Access Control and intercom sytems Category cabling may be combined to a single patch panel.**

   c. Or owner approved alternates

2. Owner approved alternate

D Copper Patch Cords Cat6 Pre-assembled

1. Commscope - Color Coded by Ssytem
    a. Data/IP Phones -
        1) MDF/IDF - Black - 1' - UC1BBB2-01F001
        2) Workstations/Field - Blue - 15' - UC1BBB2-0ZF015
    b. Wireless(AP) **(Cat 6A)**
        1) MDF/IDF- Blue- 1' - ~~UC1BBB2-0ZF001-~~**UC1AAA2 | UC1AAA2-0ZF001**
        2) Workstations/Field- Blue - 15' - ~~UC1BBB2-0ZF015 —~~**UC1AAA2 | UC1AAA2-0ZF015**
    c. Access Control/Intrusion
        1) MDF/IDF - Yellow - 1' - UC1BBB2-09F001
        2) Workstations/Field -Yellow - 15' - UC1BBB2-09F015
    d. Video Surveillance(Cameras)**(CAT 6A)**
        1) MDF/IDF - Purple/Violet - 1' - ~~UC1BBB2-0LF001.~~**UC1AAA2 | UC1AAA2-0LF001**
        2) Workstations/Field -Purple/Violet - 15' - ~~UC1BBB2-0LF015~~ **UC1AAA2 | UC1AAA2-0LF015**(Coordinate length with Div 28 prior to ordering)
    e. Intercom
        1) MDF/IDF - White- 1' - UC1BBB2-08F001
        2) Workstations/Field- White - 15' - UC1BBB2-08F015
    f. Fire Alarm
        1) MDF/IDF - Red - 1' - UC1BBB2-07F001
        2) Workstations/Field- Red - 15' -UC1BBB2-07F015
    g. Building Controls/HVAC
        1) MDF/IDF - Grey - 1' - UC1BBB2-0CF001
        2) Workstations/Field- Grey - 15' -UC1BBB2-0CF015
    h. Audio Video Systems (Projectors/TV/Sound System)
        1) MDF/IDF - Green - 1' - UC1BBB2-0MF001
        2) Workstations/Field- Black - 15' -UC1BBB2-01F015
    i. **Outdoor Cameras / Access Points (Cat 6A OSP)**

1) **CommScope CAT 6, F/UTP, Outdoor Rated Patch Cord - CO11152 | CO11152-01F015 (Coordinate length with Div 28 prior to ordering)**

2) Or owner approved equivalent.

E Biscuit Boxes

1. Commscope

a. 1-Port - SMB-1P-266

b. 2-Port - SMB-2P-266

c. Or owner approved alternate

F **Ceiling Connector Assemblies**

1. **CommScope CCA-Cat6A-Plenum-White**

2. **Or owner approved equivalent**

G Wall and/or Rack Mount 110 Termination Blocks

1. Commscope

2. Leviton

3. Owner approved alternate

H Faceplate for wall-mount telephones

1. Commscope 760100891 | M10LW4SP

2. Owner approved alternate

2.03 ACCESSORIES

A Mount one laminated full-size hard copy in color of an as-built floor plan designating workstation locations, pathways, and communications room locations. Confirm hard copy size with Owner.

B Provide clear plastic lamination serving each communication room.

C Install the laminated drawings within a protective Plexiglas encasement on the wall of the servicing communications rooms. To ease accessibility the Plexiglas encasement shall be in either flip-down format or file folder format.

2.04 HORIZONTAL COPPER CABLING

A Recognized cabling for providing the signal medium from the work area to the communications room shall include the following:

1. Category 6 UTP cable

B Category 6 UTP Cable Requirements

1. 23/24 AWG solid bare copper.

2. Cable jacket shall comply with NEC Article 800 for use as a plenum cable and shall be UL and c (UL) Listed Type CMP (communications multipurpose plenum).

3. Cable shall terminate on an eight-pin modular jack at each outlet. All horizontal cabling shall meet or exceed the ANSI/TIA-568-C.2 Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted Pair Cabling Components.

4. Cables shall be marked as UL verified with a minimum of Category 6 rating.

5. The cable shall support Voice, Analog Base band Video/Audio, Fax, Modem, Switched-56, T-1, ISDN, RS-232, RS-422, RS-485, 10BASE-T Ethernet, Token Ring, 100Mbps TP-PMD, 100BASE-T Ethernet, 155 Mbps ATM, AES/EBU Digital Audio, 270 Mbps Digital Video, 622 Mbps 64-CAP ATM and emerging high-bandwidth applications, including 1 Gbps Ethernet, gigabit ATM, as well as all 77 channels (550 Mhz) of analog broadband video.

6. The maximum horizontal cable tested length for Category 6 copper cable from the termination of the cable in the communications room to the outlet is 295’-0”. It’s contractor’s responsibility to reroute as necessary to bring all cable runs within distance limit without additional cost to the project. Plan ahead and get approval or exception from Owner before pulling the cables that would ne over the distance limit.

7. Cable shall meet or exceed the following electrical characteristics:

   a. Cable shall be specified to 250 MHz. Cable shall meet the manufacturer’s guaranteed electrical performance and physical specifications.

2.05 TERMINATION HARDWARE

A Patch panels

1. Patch panels shall be rated to match installed cable plant

2. The wiring block shall accommodate #23 AWG cable conductors.

3. All modular cross connect panels shall be UL-listed.

B Work Area Outlet Faceplates:

1. ~~Commscope~~ **Leviton** - 4-Port - 43080-1L4 - QP SS wallplate w/id single gang 4 port

2. ~~Commscope~~ **Leviton** - 6-Port - 43080-1L6 - QP SS wallplate w/id single gang 6 port

2.06 PATCH CABLES

A Verify exact quantities and lengths with Owner prior to purchase

B Patch Cable requirements:

1. Category 6, stranded UTP cable
2. **Category 6A , stranded UTP cable (Access Points,Cameras)**
3. **Color coded by system. Reference Colors and part numbers in Section 2.02**
4. Standard modular non-keyed, 8-position 8-conductor plug
5. 94V-0 rated
6. UL listed
7. Meets FCC Part 68

C Provide 3'-0", 5'-0", 7'-0", and 10'-0" Patch Cords at the communications room for each installed port.

1. Coordinate with Owner on the active equipment layout prior to purchase to ensure correct sizing of patch cords from patch panels to switching equipment.
2. When connecting voice ports to a copper riser, provide a one-pair stranded 8P8C connector on one end and 110GS on the other end and shall be of appropriate length for application.

D Provide a 10'-0" Station Cord for each work area outlet port.

E Place each size/length patch cord in a separate container, and mark the containers that hold the patch cords with the length of patch cords contained within.

F All cords shall conform to the requirements of ANSI/TIA-568-C.2 Commercial Building Telecommunications Cabling Standard, Horizontal Cabling Section, and be part of the UL LAN Certification and Follow-up Program.

G Cords shall be equipped with an eight-pin modular connector on each end, wired straight through and shall be of appropriate length for application.

H All rated patch cords shall be round, and consist of #23 AWG copper, stranded conductors, tightly twisted into individual pairs.

I Patch cords shall be made and warranted by the manufacturer of the cabling system installed in this project and shall meet or exceed patch cord specifications as outlined in TIA standards.

2.07 IDENTIFICATION (LABELING) SYSTEM

A Refer to sections 27 02 00 and 27 13 00.

PART 3 - EXECUTION

3.01 EXAMINATION

3.02 PREPARATION

A Refer to section 27 02 00.

B The Contractor shall check pathways, raceways, and other elements for compliance with space allocations, installation tolerances, debris, hazards to cable installation, and other conditions affecting installation prior to installation.

3.03 INSTALLATION REQUIREMENTS

A Refer to section 27 02 00.

B All installation shall be done in conformance with ANSI/TIA-568-C standards, BICSI methods, industry standards and manufacturer`s installation guidelines.

1. The Contractor shall ensure that the maximum pulling tensions of the specified distribution cables are not exceeded and cable bends maintain the proper radius during the placement of the facilities.

2. Failure to follow the appropriate guidelines shall require the Contractor to provide in a timely fashion the additional material and labor necessary to properly rectify the situation.

3. This shall also apply to any and all damages sustained to the cables by the Contractor during the implementation.

C Install cable using techniques, practices, and methods that are consistent with specified data cabling and the installed components and that ensure specified performance levels of completed and linked signal paths, end to end.

1. Pull cables in smooth and regular motions using methods that prevent cable kinking.

2. Pull cables simultaneously if more than one is being installed in the same raceway/pathway.

3. If necessary, use approved cable pulling lubricant

4. Use fish tape, cable, rope, basket weave wire/cable grips, and other tools that will ensure no damage to the media or raceway.

5. Install open cabling parallel and perpendicular to surfaces or structural members following surface contours where possible.

6. Do not bend cable greater than a bend radius of 0’-1”.

D Provide a 10’-0” service loop at the communications room and shall provide a 3’-0” service loop above the access ceiling or cable trays unless specified otherwise.

1. All service loops shall be a minimum of 1’-6” (18”) in diameter and be accessible for maintenance.

E Coordinate loop placement and orientation with the technology consultant.

1. This allows for future changes or expansion without installing new cables.

F Install cables in continuous “home run” lengths from work station outlet to specified patch panel.

1. No intermediate punch down blocks or splices may be installed or utilized between the communications rooms and the workstation outlet without written Owner permission.

G All cable must be handled with care during installation so as not to change performance specifications.

1. Factory twists of each individual pair must be maintained up to the connection points at both ends of the cable.

2. There shall never be more than 0’-1/2” of unsheathed cable at either the wiring closet or the workstation termination locations.

H All cabling and associated hardware shall be placed so as to make efficient use of available space.

1. All cabling and associated hardware shall be placed so as not to impair equipment`s efficient use of their full capacity.

3.04 CABLING METHODS

A The Contractor shall provide cabling in accessible spaces, cable tray, (surface and/or enclosed raceway), conduits, and/or J-Hook cable support system.

1. Within consoles, racks, cabinets, desks, and counters, in accessible ceilings spaces and in gypsum board partitions where open cable method may be used.

2. Use UL or ETL listed plenum rated cable in all spaces.

3. Provide all necessary installation materials, hardware, tools and equipment to perform insulation displacement type terminations at all data outlets, patch panels, and voice termination materials.

B Conceal raceway and cabling except in unfinished spaces as is practical.

C Exposed Cable

1. All station cabling shall be installed inside walls or ceiling spaces whenever possible.

2. Exposed station cable will only be run where indicated on the drawings and will only be allowed when no other options exist.

a. Owner must approve all exceptions.

D The Contractor shall utilize conduits/cable tray as indicated on the drawings.

E All cabling placed above drop ceilings must be supported by cable tray, J-hooks, caddy bags or conduit.

1. The Contractor shall permanently affix cable supports to the building structure or substrates and provide attachment hardware and anchors designed for the structure to which attached and are suitably sized to sustain the weight of the cables to be supported.

a. Attaching cable to pipes or other mechanical items is not permitted.

b. Cabling shall not be attached to ceiling grid wires.

2. Multiple cables are to be dressed every 5’-0” to 7’-0”.

a. Maximum cable sag between cable hooks is 3”-6”.

F The Contractor shall route data and voice cables separately in a neat and orderly fashion.

1. No cable ties or wraps shall be used to secure the cables in the runway outside of the communications rooms. Cable ties shall be rated for the environment.

G Keep all items protected before and after installation with dust and moisture proof barrier materials/envelopes.

H If wiring is terminated on patch panels, data, voice jacks prior to painting, carpet installation, and general finish clean up, these jacks shall be placed in a protective envelope to ensure dust, debris, moisture, and other foreign material do not settle onto jacks’ contacts.

1. Envelope will be removed on final trim out after other trades have completed their finish work.

2. It shall be the Contractor’s responsibility to ensure the integrity of these protective measures throughout the life/installation of the project.

a. Cable bundles brought into the communications rooms shall be routed and dressed in such a manner that prior to termination the cables are not subject to damage and misuse such as installers walking on the bundles that are on the floor.

b. Cable pulling force shall not exceed 25 lbs of pulling tension or cable manufacturer’s recommended pulling tensions.

c. Do not leave cables on the floor unprotected or cable bundles hanging from the ceilings. Coil them up in a temporary manner and protect them from damage.

I Communications room cables shall be combed and dressed in a manner as to prevent twists, “braiding” and crossed cables in the cable bundle from the communication room entrance to the termination point at the rear of the patch panel.

1. Behind the patch panel, the cable bundle shall be attached to the rear cable support bar, and shall drop out each cable in a neat, cascading manner to prevent crossed and/or interwoven cables to each patch panel port termination point.

a. Use Velcro wraps instead of cables ties for all bundling in the communications rooms.

b. Plastic/nylon tie-wraps are not allowed to permanently secure cables inside the communications room.

3.05 CABLING SEPARATION

A Comply with TIA rules for separating unshielded copper communication and data-processing equipment cables from potential EMI sources, including electrical power lines and equipment.

B Maintain a minimum spacing of 1’-6” (18”) from electrical feeders and/or branch circuit wiring including, but not limited to, light fixtures, sources of heat and EMI sources.

C Maintain a minimum spacing of 1’-0” from auxiliary systems cabling.

D Maintain a 1’-0” separation where cables must pass perpendicularly to electrical, plumbing, or other wiring, conduit, or piping systems.

1. Use non-conduit bushings, if necessary to maintain separation, which allow for the addition of a reasonable number of cables in the future.

E Maintain communications pathways away from electrical apparatus such as motor driven equipment and transformers, minimum separation distance of 10’-0” is recommended.

3.06 CABLING TERMINATION

A All terminations shall be done with lacing tool.

B Terminate cables in consistent consecutive order.

C Terminate cables onto 8P8C modular patch panels without damaging twisted pairs or jacket.

D Arrange cables on patch panels and voice termination hardware in ascending order of room numbers and outlet numbers within rooms.

E Provide a 10’-0” service loop for horizontal cables at each rack in communications rooms.

1. Locate loop at ceiling deck or on bottom of cable runway in minimum 1’-6” (18”) diameter.

F Provide a 3’ service loop for horizontal cables at work area outlets. Locate service loop above or below data/voice outlet were vertical cable run transitions to horizontal run.

G **At locations where Plenum rated cabling is coverted to OSP rated. Contractor shall provide 3' service loop on each side of the convertion. 3' service loop of plenum rated cable. 3' service loop of OSP rated cable.**

H Maintain twists in cable pairs to within 0’-1/2” of termination.

I Building Systems Cabling (BAS, FA, elevator line, etc)

1. Coordinate exact placement and connectivity requirements with applicable trade prior to installation.
2. Group all building systems cables in one group.
3. Clearly label cable number and function, in the last positions on the horizontal cabling blocks in each communications room.

J Limit cable-bending radius to 20X the cable diameter during installation, and 15X the cable diameter after installation.

K Start numbering at the left of the main door to the room and continue in a clockwise direction around the room.

1. The cables within the room will be terminated starting with the cables located to the left of the main door to the room and continue around the room in a clockwise direction.

3.07 TERMINATION HARDWARE

A Station Hardware

1. Flush mount jacks shall be mounted in a faceplate with back box.
2. Outlets shall not be mounted on temporary, movable, or removable surfaces, doors, or access hatches without prior Owner approval.
3. 8P8C Jack Pin Assignments for work area outlets shall match the T-568B wiring scheme.

B Patch panels

1. Copper cables shall be terminated in eight position/eight conductor (8P8C) modular patch panels.
2. All Modular jack panels shall match the T-568B wiring scheme.

C Work Area Outlet

1. 8P8C non-keyed modular outlets for applications up to one Gbps and ANSI/TIA-568-C compliant for the specified transmission requirements

D Work Area Outlet Faceplates:

1. Furnish and install blank plates in all unused ports.

3.08 SPECIAL CIRCUITS

A The Contractor shall coordinate with the Owner on the cable termination plan for special circuits, including cables to wireless access point locations, security, elevators, fire alarms, etc.

B Wireless Access Points

1. Install ~~two (2)~~**One (1) Cat6A cable** from dedicated wireless patch panel(s) in communications room to outlets having 8P8C connectors within a BISCUIT box.

2. Enclosures shall be NEMA rated for the environment to which they are exposed.

3. 30’-0” of cable slack shall be coiled and hung on a “J”-hook at the enclosure location.

3.09 IDENTIFICATION AND LABELING

A Labeling system shall consist of a hand-held portable printer and labels appropriate to the application. Handwritten labels are not acceptable.

B Labelling scheme shall meet Owner’s IT cabling standard and industry standards and best practices. Submit labelling scheme for approval before work to start.

C Fiber termination hardware (designation strip) shall have a 0’-3/4” x 0’-1/4” thermal transfer printable label with a permanent acrylic adhesive

D All labels shall be permanent and shall not fade, peel, or deteriorate due to environment or time.

E The Contractor shall provide a copy of the finalized plan in writing to the Owner representative and DBR for review and authorization to proceed.

1. Coordinate with Owner for specifications on labeling of all hardware, cabling, and related equipment prior to any testing.

F Labeling requirements:

1. Label cable terminations on designation strips

2. Label all cable at each terminating point.

3. Label each port of the work area outlet.

4. Cable identification numbers shall not be duplicated.

5. Label patch panels in the communications rooms to match those on the corresponding voice and data outlets.

a. The font shall be at least 0’-1/8” in height.

6. Where ~~a wireless access point is~~ **any cable** is installed above an acoustical ceiling, label the ceiling grid frame below the access point, displaying the data port number and, if applicable, the access point identification number. Coordinate labeling of grid with Owner and Architect prior to application of labels.

7. Label each distribution rack, block and other terminating equipment unit and field within that unit within 0’-4” from the block or patch panel termination. Keep labels in a neat and orderly lineup.

8. Label each connector and each discrete unit of cable-terminating and connecting hardware within connector fields, in wiring closets and equipment rooms.

   a. Where similar jacks and plugs are used for both communication and data-processing equipment, use a different color for jacks and plugs of each service.

9. Post the cable schedule in a prominent location in each wiring closet and equipment room. List incoming and outgoing cables and their designations, origins, and destinations.

G Location and termination field description

1. Room location

2. Rack-mount or Wall mount

3. Termination field type

   a. Specific patch panel ports versus a separate dedicated patch panel

H Unique identifiers

1. Segregation and position on equipment rack

2. Port color-coding

3. Unique labeling

I Documentation

1. Provide electronic copy of final comprehensive schedules for project in software and format selected by Owner.

   a. All labels shall correspond to as-built drawings and to final test reports.

2. All cable inventory data documentation shall be submitted in format coordinated with and approved by Owner so that data can be incorporated into existing databases.

3. Documentation shall include cable identification number, source and destination, type of cable, length of cable and number of pairs or fibers.

4. Complete cross connect documentation is required.

3.10 FIELD QUALITY CONTROL

A Refer to section 27 02 00.

3.11 POST-INSTALLATION TESTING

A Contractor shall test each pair or strand of every cable prior to acceptance. (100% PASS)

B Contractor shall submit acceptance documentation as defined below. No cabling installation is considered complete until test results have been completed, submitted and approved.

C Standards Compliance and Test Requirements:

1. Cabling shall meet ANSI/TIA-568-C.2 Category 6 Horizontal cabling requirements.

D Attenuation, NEXT, PSNEXT, Return Loss, ELFEXT, and PSELFEXT data that indicate the worst case result, the frequency at which it occurs, the limit at that point, and the margin.

1. These tests shall be performed in a swept frequency manner from 1 MHz to highest relevant frequency, using a swept frequency interval that is consistent with TIA and ISO requirements.

2. Information shall be provided for all pairs or pair combinations and in both directions when required by the appropriate standards.

3. Length, propagation delay, and delay skew relative to the relevant limit.

a. Length, propagation delay, and delay skew shall be tested relative to the relevant limit.

b. Test shall also include mutual capacitance and characteristic impedance.

1) Any individual test that fails the relevant performance specification shall be marked as a ‘FAIL”.

E Cable Test Documentation:

1. Cable test documentation shall be submitted in hard copy and electronic formats.

a. If proprietary software is used, disk or CD shall contain any necessary software application required to view test results.

b. Electronic reports shall be accompanied by a Certificate signed by an authorized representative of the Contractor warranting the truth and accuracy of the electronic report.

c. Certificate shall reference traceable circuit numbers that match the electronic record.

2. Each test record shall contain the cable ID as follows:

    a. “MEDIA TYPE – SOURCE ROOM – DESTINATION ROOM – STRAND/PAIR #”, e.g. MM-MC-HC23-001.

3. Test results saved within the field-test instrument shall be transferred into an accessible database utility that allows for the maintenance, inspection and archiving of the test records.

    a. These test records shall be uploaded to the PC unaltered, i.e., “as saved in the field-test instrument”.

    b. The file format, CSV (comma separated value), does not provide adequate protection of these records and shall not be used.

4. Test reports shall include the following information for each cabling element:

    a. Wire map results that indicate that 100% of the cabling has been tested for shorts, opens, miss-wires, splits, polarity reversals, transpositions, presence of AC voltage and end-to-end connectivity.

    b. Length, propagation delay, and delay skew relative to the relevant limit. Any individual test that fails the relevant performance specification shall be marked as a FAIL.

    c. Cable manufacturer, cable model number/type, and NVP

    d. Tester make & model, serial number, hardware version, and software version.

    e. Cable ID and project name

    f. Auto-test specification used

    g. Overall pass/fail indication

    h. Date of test

F Cable Test Equipment

1. Contractor shall supply all of the required test equipment used to conduct acceptance tests.

2. Test equipment used under this contract shall be from manufacturers that have a minimum of 5 years experience in producing field test equipment. Manufacturers shall be ISO 9001 certified.

3. Testing equipment shall be UL-verified to meet Level III accuracy.

    a. The cable installers shall have a copy of this reference in their possession and be familiar with the contents.

4. Testing equipment shall be within the calibration period recommended by the manufacturer.
5. Testing equipment shall have the latest software and firmware installed.
6. Testing equipment of a given type shall be from the same manufacturer, and have compatible electronic results output.
7. Test adapter cables shall be approved by the manufacturer of the test equipment.
    a. Adapter cables from other sources are not acceptable.
    b. Adapter cables must be replaced after 1000 tests to ensure accuracy.
8. Test equipment must have a dynamic range of at least 100 dB to minimize measurement uncertainty.
9. Test equipment must be capable of storing full frequency sweep data for all tests and printing color graphical reports for all swept measurements.
10. Test equipment must include S-Band time domain diagnostics for NEXT and return loss (TDNXT and TDRL) for accurate and efficient troubleshooting.
11. Test equipment must be capable of running individual NEXT, return loss, etc measurements in addition to auto tests. Individual tests increase productivity when diagnosing faults.
12. Test equipment must include a library of cable types, sorted by major manufacturer.
13. Test equipment must be able to internally group auto tests and cables in project folders for good records management.
    a. Test equipment must store at least 1000 auto tests in internal memory.
14. Test equipment must include DSP technology for support of advanced measurements.
15. Test equipment must make swept frequency measurements in compliance with TIA standards.
16. The measurement reference plane of the test equipment shall start immediately at the output of the test equipment interface connector.
17. There shall not be a time domain dead zone of any distance that excludes any part of the link from the measurement.
18. Acceptable testers:
    a. Fluke DTX CableAnalyzer
    b. Owner approved equivalent

3.12 CLEANING

A Refer to section 27 02 00.

3.13 ACCEPTANCE

A Once all work has been completed, test documentation has been submitted and approved, and the Owner is satisfied that all work has been completed in accordance with contract documents, the Owner will notify Contractor in writing of formal acceptance of the system.

B Contractor's RCDD shall warrant in writing that 100% of the installation meets the requirements specified herein.

C Acceptance shall be subject to completion of all work, successful post-installation testing which yields 100% PASS rating, and submittal and approval of full documentation as described above. Tests with the "* PASS" (asterisk) will not be acceptable.

1. These circuits must be repaired to meet "PASS".

END OF SECTION 27 15 00

SECTION 27 41 16 - INTEGRATED AUDIO-VIDEO SYSTEM AND EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A This document covers the general requirements for the installation of audio-video (AV) systems.

1.02 RELATED DOCUMENTS

A Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B Related Sections

1. Section 27 02 00 - Basic Materials and Methods for Communications Systems
2. Section 27 05 28 - Pathways for Communications Systems
3. Section 27 05 26 - Grounding and Bonding for Communications Systems
4. Section 27 15 00 - Communications Horizontal Cabling

1.03 CODES

A Perform all work in strict accordance with the requirements and recommendations stated in the codes and standards except when requirements are exceeded by the contract documents.

B The equipment, materials, and installation shall confirm to the latest version of all applicable codes, standards and regulations of authorities having jurisdiction including the following:

1. NFPA 70, National Electrical Code.
2. NFPA 101, Code for Safety to Life from Fire in Buildings and Structures.
3. FCC Rules, Part 76.
4. UL 50, Enclosures for Electrical Equipment.
5. All applicable parts will be FCC Class B approved.
6. All equipment, cable, devices, and accessories provided shall be listed and labeled by Underwriters Laboratories, Inc. for the intended use under the latest appropriate testing standard.
7. Americans with Disabilities Act.
8. Texas Accessibility Standards.

9. International Building Codes (IBC).

10. State and Local Building Codes with Amendments.

11. All requirements of the local Authority Having Jurisdiction (AHJ).

1.04 REGULATIONS

A Comply with terms and conditions of Americans with Disabilities Act, especially regarding provisions for hearing impaired and wheelchair access in control areas.

1.05 SUBMITTALS

A General

1. Refer to Division 1 and section 27 02 00.

2. Submit in quantities, format and timetable as required by General Conditions.

B Product Data Binders

1. Minimum number of Sets: four (4) or one (1) electronic copy on CD.

2. Timetable

a. Submit within thirty (30) days after award of contract.

b. Submit simultaneously with Shop Drawings.

c. Allow minimum of ten (10) business days for review. All sets minus one (1) will be returned with review comments. If a resubmit is required, resubmit total quantity of complete sets. If second resubmit is required, Contractor shall reimburse Owner for expenses incurred during additional review process.

d. Review and approval of Product Data is required before equipment purchase and installation.

e. Bind product data sheets together either in GBC or 3-ring type binders.

C Shop Drawings

1. Minimum Number of Sets: four (4) or one (1) electronic copy on CD.

2. Timetable

a. Submit within thirty (30) days after award of contract.

b. Submit simultaneously with Product Data Binders.

c. Allow minimum of ten (10) business days for review. All sets minus one (1) will be returned with review comments. If a resubmit is required, resubmit total quantity of complete sets. If second resubmit is required, Contract shall reimburse Owner for expenses incurred during additional review process.

3. Description:

a. Shop Drawings shall be used for coordination between trades and updated as final record drawings.

b. Bind all Shop Drawings together to form set. Loose drawings will not be accepted.

c. Each drawing shall include: Project, Building, Location, Contractor Name, Architect, AV Consultant, Date and Revision Number.

d. Number and title each drawing in logical manner as a set.

e. Include cover sheet with listing of all drawings included in bound set.

f. Ensure that labeling on Shop Drawings match labeling on equipment.

g. Minimum Scale:

1) Floor Plans: 1/8 inch = 1 foot.

2) Rack Elevations: 1-½ inch = 1 foot.

3) Plate/Panel Details: 6 inches = 1 foot.

4) Loudspeaker Details: 1 inch = 1 foot.

h. Include as a minimum:

1) Floor plans indicating locations of all AV devices, vertical risers, pull boxes, and exposed wiring. Include Device ID (PRJ, SCREEN, FRK, FB, AVP, etc., as referenced in design contract documents), as appropriate for projectors, screens, racks, floor boxes, AV plates in walls, etc.

2) Schematic diagram showing all primary and secondary devices, interconnectivity and signal flow.

3) Plate details showing size, material, finish, connectors, engraving, etc.

4) Mounting detail drawings of loudspeakers, racks, and overhead equipment. Hire services of professional structural engineer, licensed by the appropriate governing authority, to review shop drawings, building structural drawings, and any existing structures from which equipment is to be suspended. Include Structural Engineer's stamped report with shop drawing submittal. Report shall include:

(a) Itemization of items reviewed by the Structural Engineer.

(b) Confirmation that proposed methods of suspending equipment as shown on the shop drawings conform to required safety factors.

(c) Confirmation that building structure from which equipment is to be suspended will support equipment including required safety factors.

5) Rack elevations.

6) Complete schematic diagram. One-line diagram with detailed descriptions of product inputs and outputs is acceptable. Include terminal strip details and cable label information. If wiring diagram spans more than three (3) sheets, additionally provide simplified block diagram of entire system on one (1) sheet.

7) Electrical power wiring diagram. Include circuit, switching, and control details.

8) Wiring diagram of grounding and shielding scheme.

9) Drawings for custom-fabricated items (i.e., plates, panels, cables, and assemblies).

10) General construction drawings necessary for completion of work.

D Operation and Maintenance Manuals

1. Minimum number of Sets: four (4).

2. Bind Operation and Maintenance Manuals using either GBC or 3-ring binders.

3. Format and Minimum Information below:

a. Section 1 - System Operation.

1) Introduction/overview to system components and their functions and locations. Include a brief listing of basic system functions.

2) Complete but simple system operating instructions to accomplish basic system functions, written for non-technical personnel.

3) Certificate indicating names of Owner personnel trained by AV Contactor, date of training, name of AV Contractor representative that provided training, and name of project.

b. Section 2 - System Documentation.

1) Simplified system one-line schematic diagram showing changes made during construction.

2) Complete inventory of system components including serial numbers. Identify location (equipment rack, over stage, stored in control room, etc.) of each component.

3) Cable and terminal strip documentation including cable numbers, functions, originating locations, terminating locations, and signal levels.

4) All Shop Drawings corrected to reflect as-built conditions.

5) Other data and drawings required during construction.

6) Initial Tests and Adjustments data.

7) Final Tests and Adjustments data.

8) CD-ROM discs including all utilized manufacturer's software and saved copies of software configurations (configurations as established during Final Tests and Adjustments).

c. Section 3 - Manufacturer's Documentation.

1) For each equipment model at no additional costs to Owner, even if manufacturer does not include costs of such documentation with purchase of equipment item.

2) Manufacturer's Product Data.

3) Operating instructions.

4) Installation instructions.

5) Service information.

6) Schematic diagrams.

7) Replacement parts list.

d. Section 4 - Maintenance Information.

1) Preventive maintenance schedule letter clearly stating target dates of six month and end-of-warranty preventative maintenance inspections, and list of maintenance tasks performed.

2) Maintenance instructions including manufacturer's recommended maintenance, recommended maintenance schedule and information concerning proper inspection, testing, and replacement of components.

3) Troubleshooting information complete with instructions for procedures during equipment failure.

e. Section 5 - Warranty Information

1) System warranty letter.

4. Provide three (3) sets on CD-R disc that include all material in Operation and Maintenance Manuals in PDF format except for copyrighted material.

5. Submit one (1) set of Operation and Maintenance Manuals at least ten (10) days before Final Tests and Adjustments procedures (minus data from Final Tests and Adjustments). This set will be reviewed by Owner and returned to Contractor. Re-submit after Final Tests and Adjustments and include data. NOTE: Do not schedule Final Tests and Adjustments or perform training of Owner personnel before submitting Operation and Maintenance Manual.

6. Submit remaining number of complete manuals as required by General Conditions within ten (10) days after return of reviewed set(s). Include Final Tests and Adjustment data, warranty period letter, and any other data not included in first submission.

E Samples.

1. Request for Samples - Upon request, furnish samples (at no additional cost) to Owner and/or General Contractor of submitted items proposed as substitutes for specified items. Products will be reviewed to determine if proposed substitute items meet required function and quality.

2. Product Tests

a. Products submitted as samples may require testing by independent laboratory. Testing at expense of Contractor.

b. Obtain written approval of tested products before incorporating into system.

1.06 QUALITY ASSURANCE

A AV Contractor Qualifications.

1. Be established AV System Contractor, regularly engaged in furnishing and installing AV systems. NOTE: Electrical or general contracting firms responsible for completion of this work, but not meeting above requirement, shall employ services of approved AV Contractor as subcontractor to perform work described herein.

2. Be experienced in installations of similar size and scope within last five (5) years. Submit list of four (4) (minimum) installed jobs of similar magnitude, completed within last five years. For verification, submit complete information, including project name, project address, contact person, daytime telephone number plus month and year of project completion. At Owner’s request, accompany Owner or Owner’s representative on visit to any or all example completed projects submitted.

3. Be Authorized Dealer for all major lines of equipment listed in Part 2 (Biamp, Chief, Crestron, JBL, Middle Atlantic, Shure, etc.) Must have at least one permanent staff member who is factory trained in the installation and maintenance of each major product line offered.

4. Employ personnel (at all levels of work) experienced in projects of similar size and scope. Provide list of key personnel to be responsible for each of the following aspects of work: Project Management, Technical Documentation, Control System programming, DSP programming and Leadership of Field Work (one who is present for all field work). For each identified employee, indicate number of years employed by contractor, number of years experience in assigned responsibilities, and list of previously completed projects where similar responsibilities were required.

5. Project manager assigned to this project must have a minimum of five (5) years experience in installing and integrating AV systems of similar scale. Project Manager shall also have either an AVIXA CTS-I or CTS-D certification.

PART 2 - PRODUCTS

2.01 GUIDELINES

A Infrastructure Products - All conduits, basket tray/cable tray, pull boxes and associated parts required for infrastructure shall be installed by the electrical contractor unless specifically excluded in these specifications or drawings.

B Performance - Regardless of completeness of descriptive paragraphs herein, each device shall meet its manufacturer's published specifications. Verify performance.

C Contract Documents - Drawings and specifications are to be used in conjunction with one another and to supplement one another. In general the specifications determine the nature and quality of the materials, and the drawings establish the quantities, details, and give characteristics of performance that should be adhered to in the installation of the AV system components. If there is an apparent conflict between the drawings and specifications, the items with the greater quantity or quality shall be provided and installed. Clarification with the owner about these items shall be made prior to the ordering and installation.

D Quantities - All quantities are indicated on AV drawings or in Part 2 AV Products list. Confirm quantities on final Contract Documents. If Contract Documents do not include quantities necessary to deliver complete working system, provide notification of disparity, and install required quantity of devices for complete working system.

E Small Parts - Systems are described in terms of major products. Even if not specifically mentioned, provide and install patch cables, connectors, hardware, converters, power supplies, labels, terminals, mounting accessories etc. necessary for complete and working system meeting design intent of specifications.

F Keys - Provide five (5) sets of keys for any AV system product requiring keys.

G Condition - Provide and install products listed in this section in factory new condition, conforming to applicable provisions of American National Standards Institute.

H Designations - Each major product item is given unique designation (such as MIX1 for mixer number 1). The product designations are unique in this section only and may be repeated in other specification sections.

I Security Screws - Use Bryce Security Penta-Plus button-head screws and bits to secure rack components, LCD mounts, Projector mounts and any other location deemed necessary by Owner. Use nylon washers (not provided by Bryce) to protect equipment surfaces. Account for appropriate tip wear when ordering quantity and do no use a bit beyond the manufacturer's recommendations. Provide ten (10) additional unused driver bits and deliver to the customer after completion.

J AV Electrical Power - Coordinate with Electrical Contractor regarding proper placement of isolated-ground duplex outlets for any AV equipment. Electrical circuits should be connected (and outlets wired) by the Electrical Contractor to the AV system circuit breaker panel (N.I.C.). Ensure that "Star" ground configuration is properly implemented by the Electrical Contractor. Ensure that ground wires from each outlet are isolated from conduit, neutrals, and each other.

K AV Screens - For any screen specified, size as indicated in drawings. Unless otherwise indicated in drawings or specifications, set limits so projected images are 48" above finished floor, and include additional black drop as appropriate considering screen size and mounting height.

L AV Racks:

1. Provide blank faceplate in any area marked BLANK in drawings.

2. Provide shelf for mounting of any device for which rack mount kit is not available.

3. PanelcraftersProvide one (1) Panelcrafters DBR-XXXXX-RHIM-01 designer/integrator information plate or approved alternate per rack. Install information plate at the top of each rack unless 1RU space is not available. Contact Panelcrafters sales department to add AV Contractor graphic to the "integrator" section (approximately 8.5" x 1.75" of the right-hand side). All alternates must include AV Consultant graphic. Submit to AV designer for approval of final plate design prior to purchasing and installation.

M AV Floor Boxes:

1. Clean floor boxes of all dust and debris prior to installation of any active or connectorized plate.

2. Any floor box with active or connectorized AV plates found to have any dust, debris or water in bottom of box are subject to replacement of all plates and components. A re-test of all associated components must be completed.

N Wireless Microphones - Coordinate frequency selection with other radio-frequency sources in the area and with manufacturer's recommendations.

O Control System Programming:

1. Program each panel to provide simple, intuitive control of all basic AV functions including:

    a. program and speech volume levels

    b. video source and destination routing

    c. screen control

    d. video projector lift control (where applicable)

    e. AV system power

    f. media player transport functions

    g. video conferencing CODEC controls including call initiation (where applicable)

    h. video conferencing PTZ camera control (where applicable)

    i. combine/uncombine settings for all combinations of controlled rooms

    j. local lighting and blackout shade controls (where applicable)

2. Utilize AVIXA's "Dashboard for Controls" concept and Crestron's SMART GRAPHICS for touch panel layout unless directed otherwise by Owner.

3. Provide layout of each and every touch panel and hard-button panel pages in the product data submittal for approval by Owner.

4. Provide web-control for each touch panel in AV system. Include page tracking, and track current button feedback between touch panel and web-control panel.

5. Staff member certified by control system manufacturer shall program control system.

6. After programming is approved, all control system code and programming, including touch panel code and graphics, will become property of Owner. AV Contractor shall provide Owner both raw and compiled code on CD-R disc.

7. Provide follow up meeting with Owner after 6 months of operation to make updates as requested to control programming.

P Audio System Programming - Owner shall coordinate layout and logical branching of DSP audio system. Include screen layout and menu branching drawings in AV submittal. After AV system is approved, all audio control system code and programming will become property of Owner. AV Contractor shall provide Owner both raw and compiled code on CD-R disc.

Q AV Design Bid & Substitutions:

1. System design is around products listed in Part 2. Intent of product specification is to provide standard of quality and function for installed materials. Certain performance specifications are given to clarify job requirements.

2. Bid AV system with products specified in Base Bid section below unless noted otherwise from Owner.

3. No substitutions will be allowed without prior approval from Owner specific to proposed manufacturer and model numbers.

4. Equipment listed in Part 2 is based on performance criteria to meet Owner design requirements.

5. All requested substitutions need to meet or exceed performance of devices listed in Part 2. For each request provide manufacturer's published specifications to verify performance and explain functional and cost impact.

6. Evaluation and approval of substitution requests will be performed by Owner.

2.02 ROOM DESCRIPTIONS

2.03 AV PRODUCTS - ACTIVE EQUIPMENT

A The following are major active products for this project.

1. **Interactive Displays (IVD) :**

   a. **Cleartouch 6000a+ 65"**

      1) **Provide (1) CTI-PCMOD-PC65-ST PC Module for each interactive display in the project.**

      2) **Provide (1) CTI-STAND-ADJM-V4 Adjustable mobile stand for each interactive display in the project.**

      3) **Provide (1) CM100 Collar Mic Kit for each interactive display in the project.**

   b. **Or owner approved Equivalents.**

2. **Flat Panel Display (FSD-1) (FSD-2) (FSD-3)**

   a. **FSD-1 Locations provide LG 65" UR340C Series Display with Chief MTM1U adjustable tilt mount. Or owner approved equivalents**

   b. **FSD-2 Locations provide LG 65" UR340C Series Display with Chief MTM1U adjustable tilt mount. Or owner approved equivalents**

1) **AV inputs associted to FSD-2 displays provide (1) Liberty DigitaLinx HDMI HDBaseT Wall Plate Extension Set AV DL-1H1A-WPKT-W.Or owner approved equivalents**

(a) **Shall use 24 AWG 4-Pair Dual Shielded HDBaseT Cable LLINX-HD for Transmitter /Receiver interconnections. Or approved equivalent.**

c. **FSD-3 Locations(Menu Boards)Provide LG 55" UR340C with Chief MTM1U adjustable tilt mount. Or owner approved equivalents**

3. **Cafeteria/Stage AV system Equipment**

a. **Provide (2) Epson EB-PU1008W Large Venue laser projectors . Chief Universal projector mount and Chief CMS492CP2 suspended storage box for each projector. Provide Standard Lense ELPLM08. Contractor is to confirm final lense part number required prior to placing order.**

b. **Provide (2) Draper Ultimate Access XL 100"H X160"W Motorized projection screens. With Draper ALR-MS1000X screen surface. Contractor is to verify required black drop prior to placing orders.**

c. **Video Input plates (AV-1)**

1) **Provide (2) Liberty DigitaLinx HDMI HDBaseT Wall Plate Extension Set AV DL-1H1A-WPKT-W .Or approved equivalents.**

2) **Provide (1) Liberty DigitaLinx 2x4 HDMI Distribution Amp / Splitter. Projectors are to mirror the same content.**

3) **Provide (2) DigitaLinx HDMI 2.0 HDBaseT Extension Sets. (1) Receiver per projector installed in projector ceiling storage box. (1) Transmitters per projector to be instlled in AV equipment rack.**

4) **Shall use 24 AWG 4-Pair Dual Shielded HDBaseT Cable LLINX-HD for all HDBASET Transmitter /Receiver interconnections. Or approved equivalent.**

5) **Provide (1) BSS BLU 100 Digital Signal Processor (DSP)**

6) **Provide (1) BSS BLU BIB input expander**

7) **Povide (2) BSS BLU-10 AV System controllers**

8) **Provide (2) Crown DCI 4|1250 Power Amplifiers .**

9) **Provide (1) CD/Media Player with Bluetooth: Denon DN-500CB**

10) **Local Sound Speakers ElectoVoice EVID-PC8.2. Quantity per the drawings.**

11) **Provide (3) Passive Stage monitor speakers EV MFX-12MC installed at stage left,right and center. Provide RCI NL4 Speakon custom wall plates for each**

12) **Provide Assistive Listening System: Williams Sound PPA 457 NET Pro System or Listen Tech equivalent**

13) **XLR Wall Plate (MIC): Atlas SG-XLR-F1 (Qty: per drawings)**

14) **Provide Wireless Microphone System : Shure QLXD 124/85 (Qty: 2).**

(a) **Provide SHURE UA844+/SWB antenna splitter and antennas to achieve full coverage of the space.**

15) **Provide Wired Microphone: Shure SM58 (Qty: 2)**

(a) **Provide one (1) 25-ft-long microphone cable (Qty: 2)**

(b) **Provide one (1) Atlas Mic Stand and Boom kit TB1930 (Qty: 2)**

16) **Provide Hanging Microphones: Shure MX202B/C (Qty: per drawings).**

17) **Provide (1) Atlas WMA24-23 wall mounted AV equipment Rack**

(a) **Provide one (1) Storage Drawer 3RU: Atlas SD3-14.**

(b) **Provide one (1) PDU: Furman M-8S**

(c) **Provide black panels to cover to all un-used rack spaces.**

18) **Intercom/Bell Relay: Radio Design Labs TX-70A.**

(a) **Provide all wiring and accessories required for connecting local sound system to building PA to mute local sound during all call.**

4. **GYM Sound System**

a. **Audio DSP: BSS Blu-100 (Qty: 1)**

b. **Amplifier: Provide (2) Crown DCI 4|1250 Power Amplifiers**

c. **Audio Controller (AVC): BSS EC-8BV Install inside AV enclosure**

d. **XLR (mic) Wall Plate (MIC): Atlas SG-XLR-F1 (Qty: per drawings)**

e. **Provide Whirlwind MIP3 Audio input plate**

f. **Provide Wireless Microphone System : Shure QLXD 124/85 (Qty: 2).**

1) **Provide SHURE UA844+/SWB antenna splitter and antennas to achieve full coverage of the space.**

g. **Wired Microphone: Shure SM58 (Qty: 2)**

1) **Provide one (1) 25-ft-long microphone cable (Qty: 2)**

2) **Provide one (1) Atlas Mic Stand and Boom kit TB1930 (Qty: 2)**

h. **Provide Assistive Listening System: Williams Sound PPA 457 NET Pro System or Listen Tech equivalent**

i. **CD/Media Player with Bluetooth: Denon DN-500CB(Qty:1).**

1) **Provide antenna to extend Bluetooth signal coverage to the entire space.**

j. **Provide (1) Liberty DigitaLinx HDMI HDBaseT Wall Plate Extension Set AV DL-1H1A-WPKT-W .Or approved equivalents.**

k. **Intercom/Bell Relay: Radio Design Labs TX-70A.**

1) **Provide all wiring and accessories required for connecting local sound system to building PA to mute local sound during all call.**

l. **Local sound speakers Electro-Voice ZLX-15 Quantity per the drawings.**

m. **Equipment Rack: Atlas, #WMA24-23**

1) **Provide black panels to cover to all un-used rack spaces.**

2) **Provide one (1) Storage Drawer 3RU: Atlas SD3-14.**

3) **Provide one (1) PDU: Furman M-8S**

5. **MUSIC Room Sound System**

a. **Provide (1) 12-channel Mixer Allen & Heath 12CH mixer CQ-12T**

b. **Provide Wireless Microphone System : Shure QLXD 124/85 (Qty: 2).**

c. **CD/Media Player with Bluetooth: Denon DN500CB (Qty:1).**

d. **Provide one (1) PDU: Furman CN1800S**

e. **Equipment Rack: Gator Case #GRC-10X12RU**

f. **Provide two (2) QSC #K8.2 Powered Speakers with wall mount Yoke**

g. **Provide Custom dual gang wall plate with XLR mixer feed Right and Left connectors to Wall mounted speakers.**

2.04 CABLES

A Interconnect Wiring – Provide and install following cable as required for connections in all areas. Meet provisions of N.E.C. Provide plenum rated cable where required.

1. Analog Audio/Microphone cable - West Penn D25291.

2. Digital Audio Plenum Rated Cable: West Penn DA252401/ DA252402/ DA252406, or AES/EBU compliant equivalent.
3. Analog Composite Video Plenum Rated Cable: West Penn 25806.
4. RGBHV Plenum Rated Cable: West Penn 258195.
5. Control Plenum Rated Cable: West Penn D25350.
6. Low Impedance Loudspeaker Cable
    a. For cable distance <50': 14-guage 2-conductor West Penn #25226B
    b. For cable distance from 50' to 100': 12-guage 2-conductor West Penn #25227B
    c. For cable distance > 100', consult with manufacturer and engineer before ordering/installation.
    d. Terminate with Neutrik "Speakon" type connectors when available.
7. High Impedance Loudspeaker Cable (25v/70v)
    a. For cable distance <300': 18-guage 2-conductor West Penn #25224B
    b. For cable distance from 300' to 500': 16-guage 2-conductor West Penn #25225B
    c. For cable distance > 500', consult with manufacturer and engineer before ordering/installation.
    d. Terminate with Neutrik "Speakon" type connectors when available.
8. HDMI cables: Belden HD-800 series. All HDMI cables used shall be certified to meet the performance of the display devices over the actual cable length. Provide HDMI transmitters and receivers as needed.
9. HDBaseT Cable: Belden 2183P (or as manufacturer recommended).

PART 3 - EXECUTION

3.01 INSTALLATION

A General Guidelines

1. Quality of Work - Perform labor to accepted industry standards and state and local codes to accomplish complete and working system.
2. Material and Labor - Provide specified products and other incidental materials, appliances, tools, and transportation required for complete and functioning systems. Provide personnel to perform labor who are skilled in techniques and can demonstrate technical knowledge AV infrastructure system installations.

3. [if !vml][endif]Provide a complete functioning sound system that's been fully tested and properly balanced, configured, and equalized. Be of maximum assistance to the Owner during the warranty period of the system, to the degree that maximum Owner satisfaction is assured.

4. Observe proper circuit polarity and loudspeaker wiring polarity. No cables shall be wired with a polarity reversal between connectors with respect to either end. Special care shall be taken when wiring microphone cables, to ensure that constant polarity is maintained. Balanced audio connectors shall be wired as follows.

Wire	Connector	Signal
Black	Pin #3 or Ring	Low or Negative
Red or White	Pin #2 or Tip	High or Positive
Bare	Pin #1 or Shield	Ground

5. Provide all audio circuits balanced and floating, except as noted in the Specifications or directed by the Consultant at the time of final equalization and testing. Shields of audio cables shall be grounded at one end only, at the outputs of the various equipment items in the system

6. Route cables and wiring within equipment racks and cabinetry according to function, separating wires of different signal levels (video, microphone level, line level, amplifier output, 120VAC, intercom, control, etc.) by as much physical distance as possible. Neatly arrange and bundle all cables loosely with plastic cable ties. Cables and wires shall be continuous lengths without splices.[if !vml][endif]

7. All system wire, except spare wire, after being cut and stripped, shall have the wire strands twisted back to their original lay and be terminated by approved soldered or mechanical means. No unterminated wire ends will be accepted. Heat-shrink type tubing shall be used to insulate and dress the ends of all wire and cables. Include a separate tube for the ground or drain wire.

8. All cables in conduits shall be insulated from each other and from the conduit the entire length and shall not be spliced. All cables and wires are to be continuous lengths without splices.

9. All solder joints and terminations shall be made with resin-core silver solder. Temperature regulated soldering irons rated at least 60 watts shall be used for all soldering work. No soldering guns or temperature unregulated irons shall be used on the job site.

10. Each mechanical connector shall be attached using the proper size controlled- duty-cycle ratcheting crimp tool which has been approved by the manufacturer of the connectors. Conventional non-ratcheting type crimping tools are unacceptable, and shall not be used on the job site.

11. Label all wires in racks and console as to destination and purpose with permanent labels. Clearly and permanently label all controls and connections at the front and back of the rack, with permanent labels. Wall plates and custom panels shall be engraved and filled with contrasting paint, unless otherwise noted. All labeling shall be completed prior to final system inspection.

12. Documents at Job Site - Keep following documents at job site during entire construction period:

    a. Complete Specifications and Drawings.

    b. Approved Shop Drawings.

    c. Approved Product Data.

    d. Progress Set of Project Record Documents.

13. Mounting - Mount equipment and enclosures plumb and square. Ensure that permanently installed equipment is firmly and safely held in place. Design equipment supports to support loads imposed with project safety factor of five (5) or greater. For devices hung overhead, obtain review by Structural Engineer licensed by the appropriate governing authority prior to installation.

14. Locate wireless microphone system and hearing assist system antennas at or above ceiling or at bar joist height in areas without ceilings. Coordinate exact location with Owner to provide adequate coverage in the area served by the system. Adjust antenna location for best possible reception/transmission in area of coverage.

15. Provide adequate protective vandal guards for all devices located in areas subject to damage from activities or vandalization, such as school gym, sports field, school cafeteria.

16. Provide hearing assist transmitter(s) and receivers for each sound reinforcement system. The quantity of hearing assist receivers for each system shall be equal to a minimum of four (4) percent of the total seating capacity, but in no case less than ten (10) receivers for the area of coverage of each local sound reinforcement system.

17. Dimension Verification - Verify dimensions and space requirements to assure that proper mounting, clearance, and maintenance access space is available for system components.

18. Clean-Up - Leave project clean each day. Place debris where designated by General Contractor. Debris includes but not limited to: solder splatter, cable ends, stripped insulation, spent crimp connectors, gypsum board and ceiling tile dust, and product wrappings and cartons. After completion of installation, thoroughly clean areas worked, including non-visible areas such as equipment rack interiors, rack top panels, and inside lockable floor and wall boxes.

19. Coordinate installation of AV infrastructure and equipment with other trades in order to follow project schedule.

20. Maintain any licensing required by the appropriate governing authority to install and terminate low voltage systems.

B Labeling

1. Equipment Labels - AV Contractor shall provide engraved lamicoid labels on front and rear of rack-mounted equipment. Mount labels plumb and square. Include schematic reference design, item name, and system or area controlled by labeled component. On program preamps and mixers, provide label for each input indicating which source is controlled by labeled channel. Unless otherwise indicated, provide permanently-mounted black labels engraved with 1/8-inch white block characters. Handwritten, self-laminating, or embossed plastic (Dymo) labels are not acceptable. Provide labels for major equipment with two (2) lines (minimum) of engraving, coded as follows:

   a. Line 1: Generic name of device, such as MIXER AMPLIFIER.

   b. Line 2: Schematic designation of device, such as AV-MSW-1.

2. Control Labels - AV Contractor shall provide engraved label over each user-operated control that describes the function or purpose of control. Provide label of proper size to fit available space.

3. Terminal Strip Labels - AV Contractor shall label each terminal strip with unique identification code in addition to numerical label (Cinch MS series) for each terminal. Show terminal strip codes on system schematic drawings included with Project Record Documents.

4. Rear Equipment Labels - AV Contractor shall provide adhesive label on rear of equipment where cables attach, to indicate designation of cable connected at each point.

5. Cable and Wire Labels - Label cables and wiring logically, legibly and permanently for easy identification. Labels on cables shall be adhesive strip type, covered with clear heat shrink tubing. Factory stamped heat shrink tubing may be used. Hand-written or self-laminating type labels are not acceptable.

6. Cable Label Codes and Locations - Label each cable with unique alpha-numeric code. Locate cable designation at start and end of each cable run, within three (3) inches of termination point. For cable runs that have intermediate splice points, label cable with same designation throughout, with additional suffix to indicate each segment of run. Provide cable designation codes to schematic drawings included with Project Record Documents and Operation and Maintenance Manuals.

C Power and Grounding

1. Power Coordination - Coordinate final connection of power and ground wiring to rack. Electrical contractor will provide power to AV systems. Before installation, verify load requirements for systems as accepted.

2. Bus Bars - Install 1-inch by 1/4-inch copper ground bus bar, top to bottom in floor mounted AV racks. Ground and bond equipment chassis of each rack-mounted component without three-pin grounding plug to bus bars with #12 AWG insulated green wire using 6-32 or larger nuts, bolts, lock-washers, and appropriate NEMA connectors. Electrical Contractor (Division 26) shall provide and connect #4 AWG green insulated wire from Bus Bars to ground point in AV technical electrical panel.

D Equipment Racks

1. Ventilation - Provide ventilation adequate to keep temperature in rack below 85 degrees Fahrenheit. Use “whisper” type ventilation fans in racks, adjusted to come on when temperature in rack rises above 85 degrees Fahrenheit, only if adequate cooling cannot be provided by Owner.

E Wiring

1. Wiring Standards - Execute wiring in strict adherence to best AV engineering practices.

2. Field Connection Devices - Connect cable to active components through screw terminal connections and spade lugs when appropriate. For BNC connections use three-piece, dual crimp BNC properly sized for cable with insulating bushings. Wire nut or “Skotchlock” connectors are not acceptable. Do not wrap audio cable splices or connections with adhesive backed tape. Punch connectors or telephone-style punch blocks are not acceptable anywhere in the installation unless specifically authorized by Owner.

3. Run cable in ceiling plenums neatly parallel to building walls, supported every three feet to structure with plenum rated ties.

4. Raceways - Run vertical wiring inside rack in Panduit (or equivalent) plastic raceways with snap-on covers, sized to allow at least 50% future wiring. Mount raceways on full length 3/4-inch flat black plywood backboards, attached to rack sides. If between-rack wiring chases are provided, Panduit raceways are not required. Horizontal wiring in rack shall be neatly tied in manageable bundles with cable lengths cut to minimize excess cable slack, but still allow for service and testing. Provide horizontal support bars if cable bundles sag. Individually bundle excess AC power cable away from rack mounted equipment with plastic cable ties. Electrical tape and adhesive backed cable tie anchors are not acceptable.

5. Accessibility - Ensure that wiring and connections are completely visible and labeled in rack. Mount termination resistors, if required, on terminal strips, fully visible and not concealed within equipment or connectors.

6. Loudspeaker Polarity - Connect loudspeakers electrically in phase, using same wire color for loudspeaker wiring throughout project.

7. Physical Damage Prevention - Take necessary precautions to prevent physical damage to cables and equipment. Damaged cables or equipment will not be accepted. Separate, organize, and route cables to restrict channel crosstalk and feedback oscillation.

8. Racks - Looking into the rack from the rear, locate AC power, control, data and speaker wiring on the left; line level audio, control, video, and RF wiring on the right. Keep several inches of space between power cables and other signals.

9. Other Connections - Make connections using rosin core solder or approved mechanical connectors. Where spade lugs are used, crimp properly with ratchet type crimping tool. Solder spade lugs mounted on #22 AWG or smaller cable after crimping.

3.02 FIRESTOPPING

A Refer to section 27 02 00.

3.03 STORAGE AND HANDLING

A Power up any electronic equipment to ensure its proper functioning before its arrival onsite.

B Ensure that materials (especially electronic and electro-acoustic devices) are protected against physical, environmental, and electronic damage until final acceptance by Owner.

C Schedule delivery to minimize delays in the project.

D Provide storage protection against temperature and humidity extremes, theft, vandalism, physical damage, and environmental damage.

3.04 WARRANTY

A Refer to Division 1.

B Warranty - Submit letter providing warranty covering labor and materials supplied under this contract. Bind in Operation and Maintenance Manuals. Terms as described in General Conditions. Minimum terms as follows:

1. System - Systems shall be free of manufacturing or installation defects for a minimum period of one (1) year from the date of final acceptance. Clearly designate begin and end dates of system warranty period.

2. Parts and Labor - Provide parts and labor to repair defects in materials and workmanship during system warranty period.

3. Response Time - Within system warranty period, provide initial on-site service response within one (1) business day of service call. Provide resolution to any system defects within 72 hours or within 48 hours of receipt of repaired or replaced product from manufacturer.

4. Replacement Products - If any item must be removed for repair during system warranty period, provide replacement item of similar quality at no charge.

5. Repair Limit - Do not repair any piece of equipment found defective during installation or system warranty period more than two (2) times. After second repair, replace defective item with similar approved item at no additional cost to Owner.

6. Extended Manufacturer's Warranties - Identify products with manufacturer's warranties extending beyond one (1) year. Provide terms and conditions of such warranties.

7. Service Personnel Information - Provide name(s) and telephone number(s) of service personnel to be contacted regarding repair and maintenance.

C Extended Warranty - Provide cost to extend complete AV system warranty from one (1) year to three (3) years. Included a list of all provided services including maintenance schedules.

3.05 INITIAL TESTS

A Purpose - These tests are to ensure that the AV system is installed and functioning as specified, and to ensure the system is ready for Final Tests and Adjustments (described later).

B Testing Standards - Perform testing in accordance with ANSI standards.

C Inspection - Verify prior to beginning actual tests and adjustments on systems:

1. Proper grounding of all electronic components (through third prong of power connector or separate connection between component chassis and ground bus bar).

2. Cables dressed, routed, and labeled, connected with proper polarity.

3. Insulation and shrink tubing in place.

4. Dust, debris, solder splatter, etc. removed.

5. Proper frequency settings (or modules) at crossovers and controllers.

6. All equalizer bands and tone controls set for flat frequency response.

7. Survey temperatures of each piece of equipment after four (4) hours use (minimum). Note and report any hot equipment.

D Electrical Power Quality - While all sound and AV system components are unplugged from electrical power outlets, AV Contractor shall turn on power to outlets, and confirm proper voltages at each outlet across the following pairs of terminals: hot and neutral, hot and ground, and neutral and ground (zero volts across neutral and ground). AV Contractor to document measurements.

E General Function Tests - Test each piece of equipment to ensure that it performs its intended function. Include all portable equipment in tests. Intent of initial tests is to verify complete, functioning system before Final Tests and Adjustments. Correct problems found during initial testing before beginning Final Tests and Adjustments. Document whether all pieces performed intended functions; note any unresolved malfunctions.

F Initial Tests and Adjustments Data - Submit written report of Initial Tests and Adjustments data upon completion to Owner. Include printed name(s) of technician(s) performing tests, date(s) and time(s) of tests, model and serial numbers of test equipment, results of each initial test, descriptions of problems encountered and their solutions, and statement that system is ready for Final Tests and Adjustments. Initial Tests and Adjustments Data to include signatures of technician(s) performing tests.

3.06 FINAL TESTS AND ADJUSTMENTS

A Purpose - These tests are to be witnessed by AV Consultant to determine if system is complete and functioning as designed and specified. Also, AV Consultant will perform listening and viewing tests and witness adjustments of all images for optimum clarity.

B Timetable - Coordinate with Owner, General Contractor, and AV Consultant to schedule Final Tests and Adjustments after submittal of Initial Tests and Adjustments data.

C System and Site Conditions - AV Consultant will witness Final Tests and Adjustments. Have systems fully functional and ready for observation and testing upon AV Consultant's arrival. Coordinate with all trades for quiet conditions throughout the listening areas and for the duration of the test schedule. If upon AV Consultant's arrival, systems do not meet criteria, site is not sufficiently quiet, or if Owner or AV Consultant is required to make additional trips to job site to witness additional testing or perform additional reviews of installed equipment, Contractor shall reimburse Owner for labor and expenses incurred by having incurred costs deducted from payments to contractor.

D Test Labor - Provide technician familiar with this project's AV systems and operation of test equipment to perform testing. Provide additional technician to assist in the tests and to perform troubleshooting, repairs, and adjustments. Include labor for these technicians to be present for one (1), eight (8)-hour day during Final Tests and Adjustments.

E Tools - Provide standard hand tools including screwdrivers, pliers, wire strippers, nut drivers, soldering iron, and other tools appropriate for troubleshooting system problems.

F Ladders and Scaffolds - Provide ladders and scaffolds to inspect/adjust loudspeakers and rigging points.

G Verification of Initial Tests and Adjustments - Verify that Initial Tests and Adjustments have been performed and meet criteria. During Final Tests and Adjustments, AV Consultant may require portions of the Initial Tests and Adjustments to be repeated. Repeat measurements as requested without claim for additional payment.

H Installer shall perform thorough preliminary testing of the AV Systems prior to the final inspection by the Consultant. All systems and subsystems shall be tested to ensure that they are in proper working order and meet the performance specifications. Perform preliminary programming and setup of digital signal processors as necessary to conduct these tests.

I The testing and equalization work shall be performed after the installation work has been completed, but prior to any use of the system. During the testing and equalization work, the Installer shall have on the job site one (1) competent technician who is familiar with the project, and who will be prepared to stay as long as his services are needed. It is estimated that approximately eight (8) hours will be required for this work

J The process of equalizing and testing the system may necessitate moving and adjusting certain loudspeakers. Adjustments shall be performed without claim for additional payment.

K Coordinate as necessary to ensure a totally quiet room during the sound reinforcement systems testing and balancing period.

L Prior to requesting systems testing, verify the following:

1. All systems are in first-class working condition and free of short circuits, ground loops, parasitic oscillations, excessive system noise beyond published.

2. All specified equipment, including loose equipment, is on the job site for proper accounting.

3. All loudspeaker circuits have been tested, are connected to the proper crossover frequency, and are in perfect working order. Furnish impedance measurements of each circuit in PDF format prior to final tests.

4. All video systems and associated control systems have been tested and are in perfect working order.

5. All equipment controls shall be labeled, even if unused. If permanent labels cannot be furnished prior to system inspection, temporarily label every control on the front and in the rear of the racks as to its function with write-on tape. Supply printer labels or markers suitable for permanently indicating knob settings after equalization is performed.

6. Operation manuals for every equipment item furnished are on hand at the job site.

7. Installer shall provide all signal processing software loaded on a portable PC and ready for use at time of testing. Installer shall provide a calibrated RTA and microphone, and pink noise generator at time of testing.

M Should the performance testing show that the Installer has not properly completed the systems, the Installer shall make all necessary corrections or adjustments and a second demonstration shall be arranged at the Installer's expense.

N The final acceptance of the system by the Owner will be based upon the report of the Consultant following inspection, testing, and demonstration. A list of items in need of completion or correction shall be generated by the Consultant, which must be corrected by the Installer before final acceptance will be granted.

3.07 SOUND SYSTEM PERFORMANCE

A After equalization and testing, the sound system shall meet or exceed the following specifications:

1. System shall be free of short circuits, ground loops, parasitic oscillation, excessive system noise, hum, RF interference, and instability of any form.

2. Minimum SPL with band-limited pink noise input to the system in the targeted space shall be 95 dB before audible distortion occurs.

3. Seat-to-seat variation in SPL at 4kHz octave band pink noise shall be within a tolerance of plus or minus 3dB SPL.

4. Acoustic response of the system shall be plus or minus 1.5dB along a line which is flat from 50 Hz to 4000 Hz and which rolls off at 1dB per octave to 16kHz.

B The following tests and adjustments shall be performed by the Contractor. All equipment required supplied by the Contractor Follow EIA standard RS-160 and RS-219 in performing the tests. Make all necessary corrections to bring systems into specification compliance. Record the results of these tests in project record drawings. Submit written results of tests to Architect and Engineer prior to scheduled equalization and final inspection date.

1. Measure and record impedance of each speaker line at frequency of 1,000 Hz, with loudspeakers connected to their respective lines.

2. Measure and record overall system hum and noise level of each input channel with controls set so that -50 dBm microphone input or +4 dBm input would drive the system to full amplifier output. Terminate inputs with resistor (150 to 600 ohms) and disconnect power to noise generator for this test.

3. Adjust the gain of each active device to provide both optimum signal - to noise ratio, and at least 10 dB headroom at each active device. Observe the output of each active device with an oscilloscope of 5 MHZ band width, and verify visually that the signal required for full amplifier output is free of overload, clipping, parasitics, and radio frequency components. Adjust gain structure of all active components and record the input and output signal levels of all active components and record the input and output signal levels of all active components in both dBm and volts, during normal program levels.

4. Measure and record system electrical frequency response for each input channel through power amplifier. Required is flat response with permissible deviation of +/-1 dB within the range of 30 Hz to 16 kHz.

5. Check system to assure freedom from oscillations or stray RF pickup. Check inputs with no signal and with typical program material driving system to full output Detect unwanted signals on Oscilloscope at termination.

6. Check phasing of loudspeakers by applying constant power per octave (pink) noise to system and walking through the transition areas of coverage from one loudspeaker to the next. Transition should be smooth with no apparent shift in source from one speaker to the next. Apply sine wave sweet signal to each loudspeaker system sweeping from 50 Hz to 5,000 Hz and at a level of 10 Db below full amplifier output, and listen for rattle or objectionable noises Correct if apparent.

7. Achieve uniform distribution of sound from each loudspeaker (with bleachers in their extended position in gymnasium where applicable). Drive system with broadband, constant power per octave (pink) noise, and measure the SPL using a sound level meter incorporating an octave-band filter centered at 4 kHz. Adjust noise level until the meter readings are between 75 and 80 dB. Use a sound level meter filter that meets ANSI S1 4-1971 Type 2 and ANSI S1 11-1971 standards set for slow meter damping. Take all readings at seated ear height. Adjust speaker as necessary to achieve +/-3 dB over entire area covered by this system.

3.08 FINAL ACCEPTANCE BY OWNER

A Certificate - Submit Certificate of Final Acceptance form signed by Owner verifying complete installation and proper operation of systems upon fulfillment of all requirements and upon recommendation by Owner.

B General Adjustments - Adjust, balance, and align equipment for optimum quality, meeting manufacturers published specifications.

C Input/Output Jack Demonstration - Demonstrate proper performance and phase of each system input and output jack (all audio input and output jacks) as received at AV and network systems.

D Inventory - Inventory all installed and portable equipment for correct quantities.

E Functional Demonstration - Demonstrate operation of each function of each major piece of equipment.

F Other Tests - Perform any other tests on any part of the AV system as requested by Owner.

G Final Equipment Settings - Record final settings of all equalizer bands, tone controls, filters, delays, limiters, etc., including those established through computer software settings. Include descriptions of settings (including software settings) in Operation and Maintenance Manual. Include software copy of configuration file(s) in Operation and Maintenance Manual.

H Security Inspection - Inspect equipment for security from tampering (covers, shaft-locks, etc.).

I Review of Labels - Review installed labels on cables, equipment, controls, and terminal strips.

3.09 OWNER TRAINING

A Provide Owner training as described in General Conditions. As a minimum, provide eight (8) hours instruction (within two (2) trips to site) regarding AV Systems operation to Owner-designated personnel. Schedule instruction time(s) with Owner to occur after completion of Final Tests and Adjustments. Coordinate with Owner in advance to schedule instruction time. Document date, time, and attendees of the training session and include documentation in Operation and Maintenance Manuals to serve as record of trained personnel.

3.10 SUPPORT DURING OWNER'S FIRST USE OF COMPLETED SYSTEM

A Provide personnel familiar with design, installation, and operation of each system to be present at Owner's first use of each completed system (up to eight (8) hours total in a single session). During first use of each system, respond to Owner requests for troubleshooting, adjustments, and additional training. If no one contractor employee or representative can provide expertise in all aspects of the system, provide multiple personnel for the eight (8) hours per session as required. Schedule presence of personnel in advance with Owner. Should significant elements of the new system be operational prior to final completion, Owner may elect to schedule contractor presence for Owner function prior to final completion of system. hould Owner exercise this option, contractor presence will not be required at first use following final completion.

END OF SECTION 27 41 16

SECTION 28 20 00 - VIDEO SURVEILLANCE SYSTEM

PART 1 - GENERAL

1.01 SUMMARY/OVERVIEW

A This section provides specifications for the installation of an IP based Video Surveillance System (VS) and related components.

B Related Sections

1. Section 26 02 00 - Basic Materials and Methods for Electrical (including related sub-sections)
2. Section 27 02 00 - Basic Materials and Methods for Communications Systems (including related sub-sections)
3. Section 28 02 00 - Basic Materials and Methods for Safety and Security Systems
4. Section 28 10 00 - Access Control System
5. Section 28 31 00 - Intrusion Detection System

1.02 REFERENCES

A See Section 28 02 00

1.03 SYSTEM DESCRIPTION

A **The project will be ~~equipped with a new Video Management System (VMS) as a Stand Alone System~~. an addition to the owners existing Digital watchdog VMS. Contractor shall provide license for each new Camera ,and required intergration license for access control and intrusion systems.**

1. ~~Provide Network Video Recorder (NVR) and Network Attached Storage (NAS) located in relay rack in the MDF of the project site.~~**NVR for the project is exisitng centralized district NVR.**
    a. The new system shall provide for recording, local monitoring, and remote monitoring of IP cameras.

B The security integrator shall furnish and install the surveillance system, consisting of camera assemblies, ~~NVR~~, wiring & cabling, and low voltage camera power supplies.

1. All active surveillance equipment and communication devices shall be on emergency/UPS power.

C Camera assemblies include camera, lens, housing, and mount. Provide and install wiring and low voltage power from the security wall field/rack to the camera locations.

1. Scope of work shall be complete from point of origin (camera) to point of termination (security rack).

D Coordinate all work that must be performed in security head end spaces with the General Contractor, the Electrical Contractor, and the Telecommunications contractor. (if applicable)

E Camera images shall support H.264 compression formats.

F Camera lenses for fixed cameras shall be varifocal and sized to provide the owner approved field of view. The lens shall be IR corrected and have megapixel resolution.

G Surveillance camera audio functions shall not be installed and/or disabled unless specifically requested by Owner.

1.04 SUBMITTALS

A Follow provisions of Section 28 02 00 for additional requirements.

B Project Data

1. Provide a description of system operation indicating the purpose and capability of each device/component of the system with a functional diagram indicating all interfaces to other systems.

C IP: Video Quality test reports shall be provided for all cameras to confirm an optimum high definition video signal.

D Shop drawings shall reflect all requirements associated with Owner provided or existing equipment and materials that will be used as part of this system.

E Video Storage calculations to show the system capacity can accommodate the specified video retention.

F Battery calculations to show the expected loads and backup duration for camera power supplies and UPS devices for all active surveillance equipment.

G System programming, camera titles, descriptions, camera images and database

1. Camera titles and descriptions prior to system programming

2. Programming/database prior to performance testing

3. Provide a cross reference between specified camera numbers and programmed camera numbers

4. Final programming, camera images and system documentation on electronic media to Owner

H Product Data

1. Manufacturer’s technical data sheets and specifications

1.05 QUALITY ASSURANCE

A Follow provisions of Section 28 02 00

B Spare Parts:

1. Provide two (2) spare components for every model and configuration of electronic components and devices used on the project as spare parts inventory.

    a. The security integrator will turn over the new and unused components and devices to the owner at project closeout.

1.06 DELIVERY, STORAGE AND HANDLING

A See Section 28 02 00

1.07 PROJECT/SITE CONDITIONS

A See Section 28 02 00

1.08 WARRANTY

A See Section 28 02 00

PART 2 - PRODUCTS

2.01 CAMERA SPECIFICATIONS

A All cameras shall be a Dome Camera unless otherwise specified

1. Compatible with the VMS
2. Vandal resistant with polycarbonate dome
3. Wide Dynamic Range Feature: All exterior cameras and interior cameras that have exterior lighting or headlights in their field of view shall have a Wide Dynamic Range feature to improve picture quality in situations with strong backlighting.
4. Multi-stream so that recording and viewing can be at different frame rate and compression.
5. Day-night Color/B&W camera with cut filter
6. Exterior cameras:

    a. Shall be outdoor rated

    b. Include a heater to permit fog-free viewing in low temperatures

    c. Fan to prevent overheating in high temperatures (as required)

2.02 NETWORK VIDEO RECORDER (EXISTING)

A Coordinate with owner on the number of user licenses required

2.03 ACCEPTABLE MANUFACTURERS

A Video Management System (VMS) Platform Software

1. **Digital Watch Dog, VMS.**
2. Owner Approved Equivalent

B NVR Server: Compatible with VMS Requirements

1. i-Pro- Panasonic
2. Compatible with VMS Requirements

C Type A Camera:

1. ~~Advidia – Model M-45-FW , with built in Microphone~~**Digital Watchdog - DWC-VSDG04Bi - 4MP**
2. Owner Approved Equivalent

D Type B Camera:

1. ~~Advidia - Model M-87-V~~**Hanwha QNV-C9011R - 8MP**
2. Owner Approved Equivalent

E Type C Camera:

1. **I PRO** - WV-U85402-V2L - Dual Sensor - 2 X 4MP
2. Owner Approved Equivalent

F Type D Camera:

1. Advidia - WV-S8574L - Multi-directional Camera - 4X 4K (33MP)
2. Owner Approved Equivalent

G Type E Camera:

1. **I PRO** - WV-S85702-F3L - Dual sensor 2 X 4K
2. Owner Approved Equivalent

H **Type -F Camera:**

1. **I PRO WV-S8573L 3X4K(25MP)**
2. Owner approved Equivalent

I Equipment Racks and Racks Components: (By Division 27)

1. Ortronics

J **Surge Protection Devices**

1. **Ditek DTK-MRJPOES (at Device)**
2. **Ditek DTK-RM12POE (MDF/IDF)**
3. **Owner Approved Equivalent**

K Video Wire & Cable

1. CommScope
2. Owner Approved Equivalent

PART 3 - EXECUTION

3.01 CONFIGURATION

A Video Cameras

1. Provide day/night cameras in exterior locations
2. Lenses shall be field tested with Owner present to verify clear, crisp images and desired field of view
    a. Substitute camera lenses as necessary to obtain required field of view at no additional cost
    b. Provide spot filters for exterior lenses as required to reduce picture washout caused by sunlight

B IP PoE Cameras

1. The security integrator shall coordinate network and IP address requirements with Owner to identify the Media Access Control (MAC) address (Layer 2) of each provided camera, the location to be installed, and the port configuration needed for communication.
2. Make all necessary adjustments to camera lenses to obtain clear, crisp images and desired field of view to the Owners satisfaction.
    a. Substitute camera lenses as necessary to obtain required field of view at no additional cost.
        1) Adjust all cameras to produce high-definition images with no blooming, streaking or noticeable lag.

2) Provide and install in-line PoE injectors as required when non PoE network switches are used or when manufacturer specified power is not available to the camera.

3) All camera power shall comply with the specified power requirements.

3.02 POWER REQUIREMENTS

A Provide uninterruptible power supplies for all active surveillance equipment

1. Rack mounted components, including all active network communication hardware, shall be on an Uninterruptible Power Supply (UPS) system.

2. Refer to Section 28 02 00 for UPS and power requirements

3. Camera power supplies shall be on an Auxiliary Power Supply (APS), system as required, with a battery backup.

a. The Auxiliary power supply shall be furnished with a power distribution panel with each camera individually fused or protected with an over-current protector.

B Power supplies shall provide:

1. 120 VAC input and output voltage as required

2. UL Listed

3. Power fail contacts to monitor the status of the input power

a. Connect each power supply power fail alarm as a separate alarm input into AC/ID system

4. Key lockable wall mount metal enclosure with tamper switch

5. Independently fused outputs

3.03 INSTALLATION

A Refer to provisions of Section 28 02 00

B All surveillance system devices and components shall be compatible.

C Camera Housings and Mounts

1. Cameras shall include housings and mounts as indicated in the Drawings.

a. Provide the smallest available housing for each camera application.

1) Integrated miniature dome cameras are preferred

2. Wiring to cameras shall pass from the back-box through the mount and into the housing. Exposed wiring or conduit shall not be acceptable.

3. Provide sun shields for camera housings in outdoor locations exposed directly to sunlight.

4. Provide surge protection for power and copper video cables for exterior cameras at the camera and at the point of termination (security rack).

5. Field verify the exact camera location, position, and mounting prior to installation.

6. Roof mounted cameras shall use roof deck brackets.

D Video Management Control System

1. System platform software shall be 'open architecture' allowing for compatibility and integration with other building automated systems.

2. The system shall allow for secure remote viewing of live and recorded video as required.

E Provide labeling suitable to Owner for all major equipment components. Coordinate with Owner on numbering scheme to match existing. Major equipment components:

1. IP Video monitors, IP camera Patch Panels, PoE Switches (or mid-span units), Network Video Recorders (NVR), and fiber mux units (if required).

F Coordinate with Telecommunication subcontractor for network and patch panel provisions for security connections in the IT room. (If applicable)

G Coordinate with Owner for all system programming and database requirements.

1. Provide all programming, setup, camera and device titling and data entry

2. Camera and device title and descriptions shall be consistent for all components

H Install all Point-to-Point wiring with appropriate terminal connections for every wire and component termination so that all connections are mechanically and electrically secure.

I Install field wiring in continuous lengths, without splices.

J Verify upon job completion that all wiring and terminations are clearly labeled to identify the wire and terminal.

K Testing of the surveillance system includes checkout of installed cameras back to the Security head end equipment to confirm proper operation of camera assemblies. Security integrator shall provide all necessary test equipment to fully demonstrate proper performance of field devices. Copies of test results shall be included in the project completion submittals given to the Owner.

END OF SECTION 28 20 00

SECTION 28 31 00 - INTRUSION DETECTION SYSTEM

PART 1 - GENERAL

1.01 SUMMARY/OVERVIEW

A This section provides specifications for the installation of Electronic Intrusion Detection (ID), and related components.

1.02 RELATED SECTIONS

A Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B Related Spec Sections

1. Section 08 71 00 - Door Hardware
2. Section 26 00 00 - Electrical (including related sub-sections)
3. Section 27 02 00 - Basic Materials and Methods for Communications Systems (including related sub-sections)
4. Section 28 02 00 - Basic Materials and Methods for Safety and Security Systems
5. Section 28 10 00 - Access Control System
6. Section 28 20 00 - Video Surveillance System
7. Section 284600 - Fire Alarm and Smoke Detection

1.03 REFERENCES

A See Section 28 02 00

1.04 SYSTEM COORDINATION

A The Security Integrator shall completely coordinate all relevant work of other trades/systems including, but not limited to:

1. Door Hardware
2. Fire Alarm System
3. Electrical Systems(s)
4. Telecommunications System(s)

1.05 GENERAL SYSTEM DESCRIPTION

A General Requirements

1. Furnish all labor, materials, tools, equipment, and services for a complete security system as indicated and in accordance with provisions of the contract documents.

2. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, and devices incidental to or necessary for a sound, secure and complete installation.

3. Comply with the provisions of Division 1 for General Requirements.

   a. In the event of a conflict between the provisions of this Section and Division 1, the more stringent provisions shall apply.

4. All system devices and components included shall be compatible.

B The project shall be equipped with new system that is maintained by the police department.

1. All work required within the project for new ID system head end shall be furnished and installed by the project security contractor.

C The ID system will support the needs of the project in accordance with these specifications.

1. The ID system shall have the capability for future expansion to support the security needs of the completed complex.

D The ID system shall be interfaced with the Fire Alarm system (by others) as required to comply with all building code requirements.

E Emergency/UPS power will be utilized to power the ID system's computer workstation (client) at the Security head end equipment location.

F Emergency/APS power will be utilized to power the ID system's Data Gathering Panels and control components as required throughout the facility.

1.06 INTRUSION DETECTION SYSTEM

A A series of field installed alarm initiating devices shall be connected to the ID system so that status changes of the devices are transmitted to the security management system.

1. Provide Data Gathering Panels (DGP), alarm devices, and keypads to be connected to the security management system via Local Area Network (LAN).

2. The security integrator shall coordinate network and IP address requirements with Owner to identify the Media Access Control (MAC) address (Layer 2) of each provided device, the location to be installed, and the port configuration needed for communication.

B Tamper Switches

1. Typically closed tamper switches to monitor the secure status of all DGP's, power supplies, terminal cabinets, power distribution units, and other Security System cabinets and enclosures.

2. Fasten tamper switches within the cabinet to provide no access to the switch and fasteners when the cabinet is closed.

3. Provide independent monitoring of tamper conditions for each cabinet.

    a. Include the number of tamper switches in the total alarm input figures.

C Provide ID keypads conveniently located near areas being protected so as to allow devices to arm and disarm.

1.07 SUBMITTALS

A Follow provisions of Section 28 02 00 additional requirements.

B Field Test Reports

1. Upon completion and testing of the installed system, test reports shall be submitted in booklet form and electronic media showing all field tests performed on, and adjustments made to each/any component and all field tests performed to prove compliance with the specified performance criteria.

2. Indicate and interpret test results in written form and verbally to owner/DBR for compliance with performance requirements at a pre-scheduled meeting.

C Battery calculations to show the expected loads and backup duration for power supplies and UPS devices for all active ID equipment.

D Security Contractor is responsible to prepare and submit as required to the Authority Having Jurisdiction (AHJ) any and all information to obtain an Electronic Locking Mechanisms permit.

1.08 QUALITY ASSURANCE

A Follow provisions of Section 28 02 00

B Spare Parts:

1. Provide two (2) spare components for every model and configuration of electronic components and devices used on the project as spare parts inventory.

    a. The security integrator will turn over the new and unused components and devices to the owner at project closeout.

1.09 DELIVERY, STORAGE AND HANDLING

A Follow provisions of Section 28 02 00

1.10 PROJECT/SITE CONDITIONS

A Follow provisions of Section 28 02 00

1.11 WARRANTY

A Follow provisions of Section

B All devices and components shall comply with applicable U.L. standards.

PART 2 - PRODUCTS

2.01 ACCEPTABLE INTRUSION DETECTION MANUFACTURERS

A ID System Platform Software

1. Bosch RPS (Remote Programming Software) D5500CU

B Intrusion Detection Data Gathering Panels (DGP)

1. Bosch B9512G
2. Owner Approved Equivalent

C Keypads

1. Bosch Bosch B915
2. Owner Approved Equivalent

D Tamper Switches

1. Sentrol 3010
2. Owner Approved Equivalent

E Dual Technology Motion Detectors

1. 360 degree: Bosch DS9370
2. Owner Approved Equivalent

F **Wall Mounted Motion Detectors**

1. **Wide Angle: Bosch ISC-PDL1-W18G**
2. **Narrow Angle,Long Range : Bosch ISC-PDL1-WC30G**
3. **Or owner approved Equivalent**

G **Speaker Strobe with Colored Lenses**

1. **Bosch E70 Speaker Strobe Blue**

2. **Or owner approved Equivalent**

H **POPIT Expansion Module**

1. **Bosch B299**
2. **Or approved Equivalent**

I **POPIT Input Module**

1. **Bosch D9127T**
2. **Or approved Equivalent**

J **Ethernet Expansion Module**

1. **Bosch B426**
2. **Or approved equivalent**

K **Powe Supply Expansion Module**

1. **Bosch B520**
2. **Or approved Equivalent**

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A Power Supplies

1. Power supply requirements
    a. A switch and on/off indicator within the power supply cabinet.
    b. Four hours of sealed gel battery backup to provide continuous operation during power failure.
        1) Provide batteries as required to provide specified battery backup time for a fully loaded power supply, regardless of the connected load.
    c. A battery charger to maintain the battery.
    d. Low battery and power fail contacts to monitor the status of the input power and the battery.
        1) Connect each power supply low battery and power fail alarm as a separate alarm input into DGP.
    e. Key lockable wall mount metal enclosure with tamper switch.
2. Additional DGP Power Supply Requirements

a. The DGP power supply provides power only to DGP's and shall not provide power for locks or any other low voltage device.

3. Additional Device Power Supply Requirements

a. Provide device power supplies for other security system devices requiring power (e.g. card readers, local alarms, motion sensors, etc.)

b. Provide power distribution boards with independently fused outputs.

B Video Surveillance System Integration

1. Automatic Video Call-up

a. All alarms shall call up all cameras in the area of alarm to the screen of the ACID alarm operator workstation to allow for operator assessment of the alarm.

2. Pre and Post Alarm Video

a. The operator shall be able to view up to 10 seconds of video before the alarm and 30 seconds after the alarm for all cameras associated with the alarm.

b. This feature is to be integrated with the operator alarm notification to assist in alarm assessment.

c. This feature shall be displayed as an option on the alarm notification screen and will not require operator to make a manual video search.

3. Recording

a. All cameras whose field of view that include images of the area affected by the alarm, shall be recorded when an alarm is detected for use in forensic analysis, including the pre and post alarm video.

4. Duress and Emergency Intercommunications Integration

a. Calls from emergency intercoms/phones with cameras shall provide the above video call-up and the pre and post alarm video capabilities.

C **Access Control Intergration**

1. **Intrusion system is to be intergrated with owners RS2 access control system. Contractor shall coordinate arm and disarm fuction required for all exterior door card readers and dedicated arming card readers .**

D Tamper Resistant Screws

1. Provide appropriate screw heads for each application (e.g. countersunk heads for recessed cover plate screws, flat head screws for standard junction box covers, etc.).

2. The security integrator shall provide Torx® tamper resistant screws for:

a. Junction boxes located above doors

b. Junction boxes located below ceiling height and/or within reach of hatch ladders

c. Security device cover plates

d. Surface mounted door position switches and armored cable

3.02 ENCLOSURE INSTALLATION

A Enclosures shall be lockable with a tamper switch and installed in a manner to be accessible with clearance to fully open enclosure door.

B All security panels shall be wired through a dedicated power supply with battery backup.

1. Power to the data gathering panels is to be hardwired utilizing EMT or rigid conduit in accordance with the Electrical specifications.

2. A circuit from the Fire Alarm panel must be installed to each lock power distribution panel.

C Enclosures shall be installed on designated wall fields in a neat and compact manner to allow for future growth.

D Enclosures shall be sized to allow for 20% growth in each panel.

E All panels and boards shall be installed in enclosure(s) suitable to their environment and have sufficient size and orientation to include all system components.

F Each panel shall be labeled accordance with Owner standards.

1. The label for each panel shall be posted on the exterior of the panel door.

a. Each panel shall have a list of devices connected to it located on the inside cover.

b. A detailed device layout drawing will be located on the inside of the panel door in an appropriate sleeve and keeper.

3.03 FURTHER REQUIREMENTS

A Refer to provisions of Section 28 02 00

B Furnish and coordinate installation of all special device back boxes and ACID field devices as shown on the security drawings and as specified in this section.

C The exact installation locations of all equipment shall be coordinated and verified with the Contractor prior to installation.

1. Subcontractor shall notify the Contractor if any location appears to be unsuitable.

D Provide low voltage power supplies for electric locking devices and ACID devices and components as shown on the security drawings and specified in this Section.

E Coordinate with the Telecommunications Subcontractor for data network connections, IP address requirements, and telephone circuits as required.

F Prepare all systems for user operation.

1. The security system must be complete and ready to operate prior to Owner final acceptance of the system.

G Coordinate with the Owner for all system programming requirements.

H **Kitchen area is to be programmed as an independent Zone. Coordinate the exact programming with the owner**

I Perform database programming as required to support the card reader, alarm point, surveillance system integration, and control panel configuration as required.

END OF SECTION 28 31 00

SECTION 31 32 13.26 - LIME-FLY ASH OR FLY ASH STABILIZATION

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. This Section specifies the requirements for treating and stabilizing existing subgrade material or select fill material under pavements or site structures as shown on the drawings, by pulverizing, adding lime and or fly ash, and finishing to the lines and grades shown on the drawings and constructed as specified herein.

B. This section excludes work necessary for building pad preparations. Work within the building footprint and surrounding 5 feet shall be accomplished under technical specification 31 23 00 Excavation and Fill prepared by structural engineer.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Drawings and general provisions of the Contract, including A-procurement and Contracting Requirements, Division 00 and Division 01 apply to this section.

B. Clearing and Grubbing: Section 31 11 00

C. Site Grading: Section 31 22 13

D. Asphalt Concrete Paving: Section 32 12 16

E. Concrete Pavement: Section 32 13 13

1.03 PROJECT/SITE CONDITIONS

A. It is the primary requirement of this specification to secure a completed course of treated material containing a uniform lime fly ash or fly ash mixture free from loose or segregated areas, or uniform density and moisture content, well bound for its full depth and with a smooth surface suitable for placing subsequent courses. It is to be the responsibility of the Contractor to regulate the sequence of his work, to process a sufficient quantity of material to provide full depth as shown on PLANS, to use the proper amounts of lime and fly ash, maintain the work, and rework the courses as necessary to meet the above requirements.

1.04 SUBMITTALS (Not Used)

1.05 APPLICABLE PUBLICATIONS

A. American Society for Testing and Materials (ASTM) C977-03 Standard Specification for Quicklime and Hydrated Lime for Soil Stabilization.

B. ASTM Specification C618-08 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

C. Texas Department of Transportation Test Method Tex-114-E, Laboratory Compaction Characteristics and Moisture-Density Relationship of Subgrade, Embankment Soils, and Backfill Material

D. Texas Department of Transportation 2004 Standard Specifications for Construction of Highways, Streets and Bridges (TxDOT) Item 420 Weighing and Measuring Equipment.

1.06 DEFINITIONS

A. Subgrade: The uppermost surface of an excavation, including excavation for trenches, or the top surface of a fill or backfill immediately below the base course, pavement, granular leveling fill, or topsoil materials.

B. Geotechnical Engineer: The Geotechnical Engineer responsible for geotechnical design and materials testing.

C. Base Course: The granular material forming the pavement base supported by the subgrade in asphalt pavement or unit paver pavement sections.

D. Embankment: soil material used to fill an excavation

1.07 QUALITY ASSURANCE

A. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.

B. Testing and Inspection Service: Owner will employ a qualified independent geotechnical engineering testing agency to classify proposed on-site and borrow soil materials to verify that soils comply with specified requirements and to perform required field and laboratory testing. Contractor responsible to coordinate with the testing agency prior to start of work requiring testing so as to minimize unnecessary cost or delays to the project.

C. Testing:

1. Owner will retain and pay a qualified Geotechnical engineer to take all field samples and do all laboratory testing necessary to verify compliance of the work to these Specifications or as required by City or other regulatory agencies. The Geotechnical Engineer shall submit results of all testing done during the course of the work to the Owner, Architect, and Contractor.

2. Notify testing lab a minimum of 48 hours in advance of the time testing is required to satisfy requirements of this section.

3. Should testing specified above show work which does not satisfy these Specifications, the Contractor shall pay, through the Owner, for all additional tests required to determine the extent of work that is not satisfactory and for all additional tests necessary to demonstrate compliance with these specifications.

4. All tests shall be performed by the Geotechnical Engineer in accordance with Test Method Tex-114-E or other approved methods selected by Geotechnical Engineer.

D. Certification: (none needed)

PART 2 - PRODUCTS

2.01 LIME

A. Lime to meet the requirements of ASTM C977-03 for hydrated lime or quicklime. When Quicklime is specified, the Contractor is to select, prior to construction, the grade to be used and notify the Engineer in writing before changing from one grade to another.

2.02 FLY ASH

A. Fly ash to meet ASTM Specification C618-05, Class C. Fly ash to also have a minimum CaO content of 20 percent.

2.03 WATER

A. Water used for mixing or curing shall be reasonably clean and free of oil, salt, acid, alkali, sugar, vegetable matter or other substances injurious to the finished product.

B. Water sources other than the local municipal domestic water supply must be approved by the Owner.

1. If onsite reclaimed water sources are used, tanks and apprentices must be clearly marked with the words “non-potable” water.

2.04 SOIL

A. Soil should be a clayey type soil, free of organic material, large rocks and other unsuitable materials with a plasticity index greater than 10 and a liquid limit in excess of 30. The soil should not contain more than twenty percent sands or silts.

PART 3 - EXECUTION

3.01 EQUIPMENT

A. All machinery, tools, and equipment used are to be maintained in a satisfactory and workmanlike manner.

B. Lime and fly ash is to be stored and handled in closed weather-proof containers until immediately before distribution on the road. If storage bins are used, they are to be completely enclosed. Material in bags to be stored in weatherproof buildings with adequate protection from ground dampness.

C. If lime and/or fly ash is furnished in trucks, each truck is to have the weight of lime and fly ash verified on public scales. Scales are to conform to the requirements of the TxDOT Item 420 "Weighing and Measuring Equipment."

D. If lime and/or fly ash is furnished in bags, each bag is to bear the manufacturer's certified weight. Bags varying more than 5 percent from that weight may be rejected. The average weight of

bags in any shipment, as shown by weighing 50 bags taken at random, is to be not less than the manufacturer's certified weight.

3.02 CONSTRUCTION

A. Preparation of Roadbed: Before other operations are begun, the roadbed is to be graded and shaped as required to construct in conformance with the lines, grades, thickness, and typical cross-section on the PLANS. Unsuitable soil or material to be removed and replaced with acceptable material. The subgrade to be firm and able to support, without displacement, the construction equipment and the compaction hereinafter made stable by scarifying, and aeration or adding lime and/or fly ash, and compacting until it is of uniform stability. If the Contractor elects to use a cutting and pulverizing machine to remove the subgrade material accurately to the secondary grade and pulverizing the material at the same time, there is no requirement to neither expose the secondary grade nor windrow the material. However, the Contractor will be required to roll the subgrade, as directed by the geotechnical engineer, before using the pulverizing machine and correct any soft areas that this riling may reveal. This method to be permitted only where a machine is provided, which ensures that the material is cut uniformly to the proper depth and which has cutters to plane the secondary grade to a smooth surface over the entire width of the cut. The machine to be of such design that a visible indication is given at all times that the machine is cutting to the proper depth.

B. Application: Lime to be spread only on that area where the first mixing operation can be completed during the same working day. The sequence for application of lime and fly ash to be as specified below. The application and mixing of lime or fly ash with the material to be accomplished by the methods hereinafter described as "Slurry Placing."

1. Slurry Placing: The lime or fly ash to be mixed with water in vehicles with approved distributors and applied as a thin water suspension or slurry. Quicklime to be applied with a lime percentage not less than that applicable for the grade used. The distribution of lime or fly ash as directed by the Owner to be attained by successive passes over a measured section of roadway until the proper moisture and lime or fly ash content has been secured. The distributor vehicle to be equipped with an agitator to keep the lime or fly ash and water in a uniform mixture.

C. Mixing

1. Mixing: The materials to be uniformly mixed by approved methods.

a. If the soil binder lime mixture contains clods, they are to be reduced in size by raking, blading, sinking, barrowing, scarifying, or the use of other approved pulverization methods. This shall be done in a way such that when all nonslaking aggregates retained on the No. 4 sieve are removed, the remainder of the material is to meet the following requirements when tested at the field moisture condition or dry by laboratory sieves.

1) Minimum Passing 1-3/4-inch Sieve: 100 percent.

2) Minimum Passing No 4 Sieve: 60 percent.

b. It is the intent of this specification that lime and fly ash may be spread sequentially prior to commencement of mixing operations.

c. During the interval of time between application and mixing, hydrated lime or fly ash that has been exposed to excessive loss due to washing or blowing not to be accepted for payment. Spreading, mixing, compaction, and finishing for lime-fly ash stabilized subgrade to be completed during daylight hours of the same day.

2. Mixing Procedures for Fly Ash Only: If fly ash only is to be used without lime, the following mixing procedures to apply.

a. The raw material to be thoroughly mixed by approved road mixers or other approved equipment, and the mixing continued until a homogeneous, friable mixture is obtained, free from all clods or lumps.

b. The fly ash to be distributed at a uniform rate and in such manner as to reduce the scattering of fly ash by wind. Fly ash not to be applied when wind conditions are such that blowing fly ash becomes objectionable to traffic or adjacent property owners. A motor grade shall not be used to spread fly ash.

c. The material and fly ash to be thoroughly mixed by approved road mixers or other approved equipment, and the mixing continued until a homogeneous, friable mixture of material is obtained, free from all clods or lumps. If the soil bind-fly ash mixture contained clods, they are to be reduced in size by raking, blading, discing, hallowing scarifying, or the use of other approved pulverization methods. This shall be done in a way such that when all nonslaking aggregates retained on the No. 4 sieve are removed, the remainder of the material meets the following requirements when tested at the field moisture condition or dry by laboratory sieves:

1) Minimum Passing 1-3/4-inch Sieve: 100 percent.

2) Minimum Passing No. 4 Sieve: 60 percent.

d. Fly ash to be applied only to such an area that all the operations can be continuous and completed in daylight.

e. During the interval of time between application and mixing, fly ash that has been exposed to the open air for a period of 6 hours or more or to excessive loss due to washing or blowing not to be accepted for payment. It is recommended that mixing and compaction of fly ash stabilized subgrade be completed within 2 hours in order to take advantage of rapid initial set characteristics.

f. Mixing after the addition of fly ash to be accomplished dry or with a minimum amount of water to prevent fly ash balls.

D. Compaction: Compaction of the mixture to begin immediately after adding and mixing of the last stabilizing agent and be completed within 6 hours. The material to be aerated or sprinkled as necessary to provide the optimum moisture. Compaction to begin at the bottom and continue until the entire depth of mixture is uniformly compacted by the "Density Control" method.

Description	Density
For Lime-Fly Ash or Fly Ash Treated Subgrade	Not less than 95 percent

The testing to be as outlined in Test Method Tex-114-E or other approved methods. In addition to the requirements specified for density, the full depth of the material shown on the PLANS to be compacted to the extent necessary to remain firm and stable under construction equipment. Throughout this entire operation, the shape of the base course to be maintained by blading, and the surface upon completion to be smooth and in conformity with the typical section shown on the PLANS and to the established lines and grades.

E. Finishing, Curing, and Preparation for Surfacing: After the final layer or course of the lime-fly ash or fly ash treated subgrade, subbase, or base has been compacted, it is to be brought to the required lines and grades in accordance with the typical sections.

1. The resulting base surface to be thoroughly rolled with a pneumatic tire roller and "clipped," "skinned," or "tight bladed" by a power grader to a depth of approximately 1/4-inch, removing all loosened stabilized material from the section. The surface then to be thoroughly compacted with the pneumatic roller, adding small increments of moisture as needed during rolling. If plus No. 4 aggregate is present in the mixture, one complete coverage of the section with the flat wheel roller to be made immediately after the "clipping" operation. Surface finishing methods to be varied from this procedure provided a dense, uniform surface free of surface compaction planes is produced. The moisture content of the surface material must be maintained at optimum during all finishing operations. Surface compaction and finishing to proceed in such a manner as to produce, in not more than 2 hours, a smooth, closely knit surface, free of cracks, ridges, or loose material conforming to the crown, grade, and line shown on the plans.

2. After the lime-fly ash or fly ash treated course has been finished as specified herein, the surface is to be protected against rapid drying by either of the following curing methods for a period of not less than 3 days or until the surface or subsequent courses are placed.

   a. Maintain a thorough and continuously moist condition by sprinkling.

   b. Apply a 2-inch layer of earth on the completed course and maintain in a moist condition.

3. Completed sections of lime-fly ash or fly ash treated material in place may be opened immediately to local traffic and to construction equipment and to all traffic after the curing period, provided the lime-fly ash or fly ash treated course has hardened sufficiently to prevent marring or distorting the surface by equipment or traffic.

3.03 MEASUREMENT

A. Lime-fly ash or fly ash treatment of the subgrade, existing subbase, and existing base to be measured by the square yard to neat lines as shown on the typical sections. When dry lime or quick lime is used, the quantity of lime to be measured by the ton of 2,000 pounds dry weight. When Quicklime is used, the quantity of lime to be calculated from the required minimum percent solids based upon the use of Grade 1, Grade 2, or Grade 3 as follows.

1. Grade 1: The "Dry Solids Content" to be at least 31 percent by weight of the slurry and the quantity of lime to be calculated by the ton of 2,000 pounds based on the 31 percent, as delivered on the road.

2. Grade 2: The "Dry Solids Content" to be at least 35 percent by weight of the slurry and the quantity of lime to be calculated by the ton of 2,000 pounds based on the 35 percent, as delivered on the road.

3. Grade 3: The "Dry Solids Content" to be at least 46 percent by weight of the slurry and the quantity of lime to be calculated by the ton of 2,000 pounds based on the 46 percent, as delivered on the road.

B. Fly ash to be measured by the ton of 2,000 pounds dry weight. Fly ash may be applied in dry or in Slurry form. Moisture content in the final mix not to exceed moisture by more than 2 percent.

3.04 PAYMENT

Work performed and materials furnished as prescribed by this Item and measured as provided under paragraph 3.3A are to be paid at the lump sum price bid in the proposal.

A. Fly ash to be paid for at the unit bid per ton of 2,000 pounds for "Fly Ash," which price to be full compensation for furnishing all fly ash.

B. "Lime-Fly Ash Treated Subgrade (Density Control)" and "Fly Ash Treated Subgrade (Density Control)" to be paid for at the unit price bid per square yard of compacted subgrade.

1. Manipulation of "Lime-Fly Ash Treated Subgrade" and "Fly Ash Treated Subgrade" to be paid for at the unit price bid per square yard per Item "Manipulation of Lime, Fly Ash, and or Cement for Stabilization of Compacted Subgrade."

2. "Density Control" is required on this project. Sprinkling and rolling not to be paid for directly, but the cost of all sprinkling and rolling to be subsidiary to other bid items.

3. The unit price bid to be full compensation for all correction of secondary subgrade; for loosening, mixing, pulverizing, spreading, drying, application of lime and/or application of fly ash, water content of the slurry, shaping, and maintaining; for all manipulations required; for all hauling and freight involved; for all tools equipment, labor, and for all incidentals necessary to complete the work.

END OF SECTION

NEW CANEY I.S.D.

NEW CANEY ELEMENTARY SCHOOL

19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

BRW PROJECT NO.: 223117.00
CLIENT PROJECT NO. 102-2023
SEPTEMBER 9, 2024

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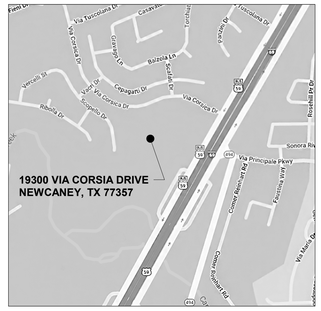
VICINITY MAP



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22784 US HIGHWY 59, BUILDING E
PORTER, TX 77365
281.577.8600

ARCHITECT — **BROWN REYNOLDS WATFORD ARCHITECTS**
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CIVIL ENGINEER/ STRUCTURAL ENGINEER — **DALLY + ASSOCIATES, INC.**
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FOODSERVICE — **FOODSERVICE DESIGN PROFESSIONALS**
253171 I-45,
THE WOODLANDS, TEXAS 77380
281.350.2323

SYMBOL LEGEND

NORTH ARROWS (PLAN / TRUE)
ARTIFICIAL PROPERTY LINE / LIMITS OF CONSTRUCTION
BUILDING SETBACK LINE/EASEMENT
EXISTING CONTOURS (100)
REVISED CONTOURS (100)
EXISTING SPOT GRADE (100)
REVISED SPOT GRADE (100)
WORKING POINT, CONTROL OR DATUM POINT
COLUMN DESIGNATION (0)
DETAIL BUBBLE (1 / A1.2)
BUILDING SECTION (1 / A1.2)
WALL SECTION (1 / A1.2)
FACE OF FINISH DIMENSIONING (1")
MATCH LINE
1 TITLE — SCALE — VIEW TITLE
SHEET NUMBERING: A 1 .1 — SHEET NUMBER / SHEET TYPE DESIGNATOR / DISCIPLINE DESIGNATOR

A1.2 1 — EXTERIOR ELEVATION
3 A1.2 1 — INTERIOR ELEVATION
3111.10 — KEYNOTE
A1 — WALL TYPE
101 — DOOR NUMBER
A — WINDOW TYPE
/1 — REVISIONS
ROOM NAME / 101A / CP1 RB1 P1 AC1 — ROOM NAME DESIGNATION & NUMBER; CEILING FINISH; WALL FINISH; BASE FINISH; FLOOR FINISH
ROOM NAME / 101A / AC1 P1 RB1 CP1 — ROOM NAME DESIGNATION & NUMBER; CEILING FINISH; WALL FINISH; BASE FINISH; FLOOR FINISH
CT1 — FINISH SYMBOL
2 A — SIGNAGE SYMBOL
NEW CONSTRUCTION
2 — NEW FIRE RATED CONSTRUCTION
EXISTING WALL TO REMAIN
ALIGN — ALIGN
TEMPERED GLASS
1 / A1.1 — REFERENCES: SHEET NUMBER / DETAIL NUMBER

ARCHITECTURAL ABBREVIATIONS

A.F.F.	ABOVE FINISH FLOOR	MNTD.	MOUNTED
B.O.	BOTTOM OF	NOM.	NOMINAL
C.J.	CONTROL JOINT	N.I.C.	NOT IN CONTRACT
CLR	CLEAR	O.C.(E.W.)	ON CENTER (EACH WAY)
DIA.	DIAMETER	O.H.	OPPOSITE HAND
DN	DOWN	RE:	REFERENCE
E.J.	EXPANSION JOINT	REQ./REQD	REQUIRED
EQ.	EQUAL	R.O.	ROUGH OPENING
F.F.	FINISH FLOOR	SIM.	SIMILAR
F.V.	FIELD VERIFY	T.O.	TOP OF
H.M.	HOLLOW METAL	TYP.	TYPICAL
GA.	GAUGE	U.N.O.	UNLESS NOTED OTHERWISE
M.O.	MASONRY OPENING	W/	WITH
MAX.	MAXIMUM	W.B.	WIND BRACE
MIN.	MINIMUM	W.P	WORKING POINT

INDEX OF DRAWINGS

REGISTERED ARCHITECT — JEFFREY S. CHOATE — 16762 — STATE OF TEXAS — 9/9/24

BROWN REYNOLDS WATFORD ARCHITECTS
4501 MAGNOLIA COVE DRIVE
SUITE 250 BUILDING A
HOUSTON, TEXAS 77345
281.361.3800
WWW.BRWARCH.COM

DATE — SEPTEMBER 9, 2024
DRAWN BY — HN, AH, QN, LB
CHECKED BY — JSC
BRW PROJECT NUMBER — 223117.00

NO.	REVISION	DATE
1	ADDENDUM NO.1	09/23/24
2	ADDENDUM NO.2	10/2/2024

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

G1.1
TITLE SHEET

MASTER KEYNOTE LIST

0100	DIVISION 01 - GENERAL REQUIREMENTS
0150.02	TEMPORARY CONSTRUCTION SIGN
0200	DIVISION 02 - EXISTING CONDITIONS (TO REMAIN, U.N.O.) & DEMOLITION
0300	DIVISION 03 - CONCRETE
0310.01	TAMPED, SCREEDED DRY SAND
0310.02	3/4" CHAMFER
0310.06	WATER STOP
0310.10	CONCRETE EXPANSION JOINT, FILL WITH SEALANT TO WITHIN 1/4" OF SURFACE
0310.11	EXPANSION JOINT PREMOLDED EXPANSION FILLER
0320.01	DOWEL INTO CONCRETE SLAB
0320.02	STEEL REINFORCING
0330.01	CONCRETE
0330.02	CONCRETE SLAB
0330.05	CONCRETE GRADE BEAM
0330.07	CONCRETE FOOTING
0330.11	CONCRETE RAMP
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0510.03	STEEL TUBE COLUMN (RE: STRUCTURAL)
0510.04	STEEL ANGLE (RE: STRUCTURAL)
0510.05	STEEL CHANNEL (RE: STRUCTURAL)
0510.06	STEEL LINTEL (RE: STRUCTURAL)
0510.08	STEEL BENT PLATE (RE: STRUCTURAL)
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0770.14	PRESSURE BAR WITH MECHANICAL FASTENERS
0770.15	REMOVABLE STAINLESS STEEL COUNTERFLASHING
0770.16	4 LB. LEAD FLASHING. SET IN PLASTIC CEMENT AND EXTEND 2'-0" FROM DRAIN
0770.19	PREFABRICATED METAL SPLASH PAN
0770.24	CONTINUOUS PREFINISHED VENTED SCREED
0770.31	STAINLESS STEEL CAP WITH STAINLESS STEEL CLAMPING RING
0770.32	REMOVABLE 16 GA. STAINLESS STEEL HOOD, CROSS-BREAK OR SLOPE FOR DRAINAGE
0770.33	SHEET METAL OT FLEX TUBE COLLAR
0770.34	BIRD SCREEN
0790.01	SEALANT WITH BACKER ROD AS REQUIRED
0790.02	CAULKING
0790.03	SEAL WALL TO DECK
0790.05	METAL ROOF EXPANSION JOINT COVER
0790.07	SET IN BED OF SEALANT
0790.09	ROOF EXPANSION JOINT SYSTEM
0790.12	WATER CUT-OFF MASTIC
0790.13	SEALANT
0790.14	STAINLESS STEEL DRIVE- CLEAT COVER JOINT
0790.15	STAINLESS STEEL EXP. JT. COVER, TAPER END DOWN
0790.16	STAINLESS STEEL SCREWS WITH NEOPRENE WASHERS @ 12" O.C.
0800	DIVISION 08 - OPENINGS
0810.01	ALUMINUM DOOR FRAME
0810.02	HOLLOW METAL FRAME
0810.03	HOLLOW METAL STOP
0810.04	HOLLOW METAL DOOR AND FRAME
0810.05	JAMB ANCHOR (3 PER JAMB)
0810.06	HOLLOW METAL DOOR
0810.18	ALUMINUM FRAME
0810.19	ALUMINUM FRAME WITH STIFFENER AS REQUIRED
0810.20	SLIDING GLASS WINDOW HARDWARE
0830.07	COILING COUNTER DOOR
0830.15	OVERHEAD COILING DOOR HOUSING
0830.18	DOOR TRACK
0840.01	ALUMINUM STOREFRONT
0840.02	ALUMINUM STOREFRONT DOOR
0840.04	ALUMINUM TRIM TO MATCH ADJACENT ALUMINUM FINISH U.N.O.
0840.05	CONTINUOUS ALUMINUM SILL PAN FLASHING WITH BACK AND END DAMS
0840.12	ALUMINUM CURTAIN WALL
0840.14	ALUMINUM STOREFRONT SUBSILL
0850.08	SLIDING TRANSACTION WINDOW
0870.01	METAL THRESHOLD. SET IN BED OF SEALANT
0870.10	DOOR BOTTOM WITH DRIP SKIRT
0880.58	MIRROR GLASS
0880.64	GLASS TYPE G-2 (FULLY TEMPERED CLEAR GLASS)
0880.65	GLASS TYPE G-4 (INSULATED GLASS)
0880.67	GLASS TYPE G-8 (TRANSPARENT MIRROR GLASS)
0880.68	GLASS TYPE G-10 (MONOLITHIC INTERIOR SECURITY GLAZING)
0880.69	GLASS TYPE G-12 (EXTERIOR SECURITY GLAZING)
0890.01	PREFINISHED FIXED ALUMINUM LOUVER (WITH BIRD SCREEN)
0890.08	METAL CLIP ANGLE FOR LOUVER FRAME MOUNTING AS REQUIRED
0900	DIVISION 09 - FINISHES
0920.04	3 5/8" METAL STUDS (20 GAUGE MINIMUM) AT 16" O.C.
0920.07	6" METAL STUDS (20 GAUGE MINIMUM) AT 16" O.C.
0920.08	STUD BRACE AT 4'-0" O.C. MAX.
0920.10	7/8" FURRING CHANNELS AT 16" O.C.
0920.11	1/2" RESILIENT CHANNELS AT 16" O.C. HORIZONTAL
0920.15	METAL SUPPORT SYSTEM WITH UPLIFT BRACING
0920.18	1" PORTLAND CEMENT STUCCO ON METAL LATH
0920.23	5/8" MOLD AND MOISTURE RESISTANT GYPSUM BOARD
0920.26	5/8" CEMENTITIOUS BACKER BOARD
0920.27	1/2" EXTERIOR GYPSUM SHEATHING
0920.28	5/8" GYPSUM BOARD (TYPE X)
0920.35	CORNER BEAD, TYPICAL
0920.42	L-BEAD, TYPICAL
0920.43	5/8" EXTERIOR GYPSUM SHEATHING
0920.44	STUD BRACE AT 32" O.C.
0920.46	J-MOLD, TYPICAL
0920.47	CEMENT PLASTER SOFFIT SYSTEM
0930.01	CERAMIC TILE
0930.02	COVED CERAMIC TILE BASE
0930.13	WALL TILE
0950.01	SUSPENDED ACOUSTICAL LAY-IN TILE CEILING (revision 1)
0960.01	FLOORING AS SCHEDULED
0960.13	4" RESILIENT BASE
0960.14	RUBBER STAIR TREAD / RISER / FLOORING
0960.25	SEAMLESS EPOXY BASE
0960.26	OAK TRIM
0960.27	3/4" OAK RISER
0960.28	3/4" OAK STRIPS
0970.01	WALL COVERING
0980.01	3 1/2" FIBERGLASS SOUND ATTENUATION BATT INSULATION
0980.03	1" THICK, FABRIC-WRAPPED ACOUSTICAL WALL PANELS
0980.13	2" FIBERGLASS SOUND ATTENUATION BATT INSULATION
0990.03	CLEAN AND PREP SURFACE AND PAINT (TO MATCH EXISTING)
1000	DIVISION 10 - SPECIALTIES
1010.04	TACKBOARD
1010.09	RECESSED DISPLAY CASE
1010.12	BUILDING DEDICATION PLAQUE
1010.14	DIMENSIONAL SIGN LETTERS
1010.16	VINYL LETTERING
1010.30	POLE MOUNTED SIGNAGE - "STOP"
1010.33	POLE MOUNTED SIGNAGE - "H.C. PARKING ONLY"
1010.34	POLE MOUNTED SIGNAGE - "VAN-ACCESSIBLE"
1010.47	POLE MOUNTED SIGNAGE - "VIOLATORS SUBJECT TO FINE AND TOWING"
1010.48	4' MARKERBOARD
1010.49	8' MARKERBOARD
1010.50	12' MARKERBOARD
1010.51	16' MARKERBOARD
1010.52	4' TACKBOARD
1010.53	8' TACKBOARD
1010.54	REMOVABLE MAGNETIC MARKER TRAY
1010.55	POST AND PANEL SIGNAGE - "VISITOR ENTRANCE. STUDENT DROP OFF/ PICK UP"
1010.56	POST AND PANEL SIGNAGE - "BUS ENTRANCE ONLY. DELIVERIES"
1010.57	POST AND PANEL SIGNAGE - "VISITOR PARKING. DROP OFF."
1010.58	POST AND PANEL SIGNAGE - "EXIT"
1010.59	3/8" CLEAR TEMPERED GLASS SHELVES
1010.60	1/4" CLEAR TEMPERED GLASS BYPASS SLIDING DOORS AND ALUMINUM TRACK
1010.61	RATCHET LOCK
1020.01	FLOOR MOUNTED, OVERHEAD BRACED, TOILET PARTITION
1020.02	URINAL SCREEN
1020.13	CORNER GUARD
1020.16	STAINLESS STEEL 1 1/2" DIAMETER GRAB BAR (36" LONG)
1020.17	STAINLESS STEEL 1 1/2" DIAMETER GRAB BAR (42" LONG)
1020.19	STAINLESS STEEL 1 1/2" DIAMETER GRAB BAR (L-SHAPED)
1020.20	SOAP DISPENSER (SURFACE-MOUNTED) (OFCI)
1020.21	SOAP DISPENSER (COUNTER-MOUNTED)
1020.22	PAPER TOWEL DISPENSER (SURFACE-MOUNTED) (OFCI)
1020.26	JUMBO ROLL TOILET PAPER DISPENSER (OFCI)
1020.27	STAINLESS STEEL SANITARY NAPKIN DISPOSAL (OFCI)
1020.33	MOP & BROOM HOLDER
1020.37	WALL-MOUNTED FOLDING SHOWER SEAT
1020.38	STAINLESS STEEL SHOWER CURTAIN ROD WITH VINYL CURTAIN AND HOOKS
1020.42	SURFACE MOUNTED BABY CHANGING STATION
1020.47	FLOOR MOUNTED LIFT
1020.48	STAINLESS STEEL SANITARY NAPKIN DISPOSAL (WALL MOUNTED)
1020.49	STAINLESS STEEL 1 1/2" DIAMETER GRAB BAR (24" LONG)
1020.50	STAINLESS STEEL FRAMED MIRROR (24" x 36")
1020.51	STAINLESS STEEL FRAMED MIRROR (24" x 60")
1020.52	CEILING MOUNTED SWING (OFCI)
1040.02	FIRE EXTINGUISHER AND WALL BRACKET
1040.03	FIRE EXTINGUISHER AND SEMI-RECESSED CABINET
1040.06	AUTOMATIC EXTERNAL DEFIBRILATOR (AED) IN SEMI-RECESSED CABINET (OFCI)
1040.08	KNOX PADLOCK
1040.12	BLEEDING CONTROL KIT SEMI-RECESSED CABINET (OFCI)
1050.02	TWO-TIER METAL LOCKERS
1050.14	MANUFACTURED ADA ACCESSIBLE LOCKER ROOM BENCH
1050.20	LOCKERS ON WD. 2X4 BASE RE: A5 SERIES
1050.21	METAL STORAGE SHELVING 36" X 18"
1050.22	METAL STORAGE SHELVING 36" X 24"
1050.23	METAL STORAGE SHELVING 48" X 18"
1050.24	METAL STORAGE SHELVING 48" X 24"
1050.25	THREE-TIER METAL LOCKERS
1070.01	PRE-MANUFACTURED EXTERIOR ALUMINUM CANOPY SYSTEM
1070.03	GROUND-SET FLAGPOLE
1070.05	FLAGPOLE COLLAR
1070.07	ALUMINUM CANOPY DECK
1070.09	ALUMINUM FLASHING CAP
1070.10	ALUMINUM CANOPY COLUMN
1070.11	ALUMINUM FASCIA
1070.12	ALUMINUM GUTTER BEAM
1070.13	ALUMINUM T PLATE ANCHOR TO STRUCTURE
1070.14	UNDERGROUND CANOPY DRAINAGE
1100	DIVISION 11 - EQUIPMENT
1120.03	VENDING MACHINES (N.I.C.)
1120.05	COPIER (N.I.C.)
1130.01	MICROWAVE (N.I.C.)
1130.02	REFRIGERATOR
1130.03	REFRIGERATOR WITH ICE MAKER
1130.05	DISHWASHER
1130.06	WASHING MACHINE
1130.07	CLOTHES DRYER
1130.17	FLAT SCREEN TV W/ MOUNTING BRACKET
1130.18	STACKABLE WASHER/ DRYER (RE: SPECS)
1130.19	55" CEILING MOUNTED FLAT SCREEN
1140.03	KITCHEN EQUIPMENT (RE: FOOD SERVICE)
1140.09	ICE MACHINE
1150.26	CEILING MOUNTED PROJECTOR
1150.27	CEILING MOUNTED PROJECTION SCREEN
1160.01	THEATRICAL PROSCENIUM CURTAIN AND SUPPORT SYSTEM
1160.02	THEATRICAL PROSCENIUM VALANCE CURTAIN AND SUPPORT SYSTEM
1160.03	THEATRICAL SIDE CURTAIN AND SUPPORT SYSTEM
1160.04	THEATRICAL BORDER CURTAIN AND SUPPORT SYSTEM
1160.05	THEATRICAL REAR STAGE CURTAIN AND SUPPORT SYSTEM
1165.04	TEMPERED GLASS BASKETBALL BACKBOARD WITH RIM, NET, AND SAFETY PADS. PROVIDE STEEL SUPPORTS AND MOUNTING BRACKETS
1165.05	CHROME VOLLEYBALL FLOOR SLEEVE WITH HINGED CAP. SET FLUSH WITH FLOOR
1165.06	PLYWOOD BACKED WALL PADS
1165.11	PLAYGROUND EQUIPMENT
1165.22	2" COURT STRIPING - RED
1165.23	2" COURT STRIPING - BLUE
1165.24	2" COURT STRIPING - YELLOW
1165.25	2" COURT STRIPING - GREEN
1165.26	2" COURT STRIPING - BLACK
1165.27	2" COURT STRIPING - WHITE
1180.01	DUMPSTER (N.I.C.)
1200	DIVISION 12 - FURNISHINGS
1220.01	MINI-BLINDS
1220.04	CUBICLE CURTAIN / TRACK
1220.05	MOTORIZED WINDOW SHADE
1230.09	EMPLOYEE MAILBOXES
1230.19	SOLID SURFACE COUNTERTOP WITH 4" SPLASH AS SHOWN
1230.26	PLASTIC LAMINATE CLAD COUNTERTOP WITH 4" SPLASH AS SHOWN
1230.41	PLASTIC LAMINATE COUNTERTOP
1230.42	HARDWOOD VENEER BASE CABINET CASEWORK WITH ADJUSTABLE SHELVES
1230.43	HARDWOOD VENEER WALL CABINET CASEWORK WITH ADJUSTABLE SHELVES
1230.44	PLASTIC LAMINATE CLAD BASE CABINETS WITH ADJUSTABLE SHELVES
1230.45	PLASTIC LAMINATE CLAD WALL CABINETS WITH ADJUSTABLE SHELVES
1230.46	PLASTIC LAMINATE CLAD TALL CABINET
1230.47	ADJUSTABLE SHELF REST AND PRE-DRILLED HOLES AT 1" O.C. TYP.
1230.48	WIRE GROMMET
1230.49	CABINET PULLS
1230.50	1/4" CLEAR TEMPERED GLASS SHELVES
1230.51	SHELF BRACKET
1230.52	1/2" PLASTIC LAMINATE CLAD PLYWOOD
1230.53	3/4" PLASTIC LAMINATE CLAD PARTICLEBOARD DRAWER WITH 1/2" HIGH DENSITY PARTICLEBOARD BOTTOM
1230.54	3/4" PLASTIC LAMINATE CLAD PARTICLEBOARD CABINET DOOR
1230.55	COAT OR BACKPACK HOOK
1230.56	3/4" PLASTIC LAMINATE CLAD PLYWOOD
1230.57	3/4" PLASTIC LAMINATE CLAD MEDIUM DENSITY PARTICLEBOARD
1230.58	1/4" PLASTIC LAMINATE CLAD CABINET BACK
1230.59	3/4" PLASTIC LAMINATE CLAD PARTICLEBOARD ADJUSTABLE SHELF
1230.60	FIXED 3/4" PLASTIC LAMINATE CLAD PLYWOOD SHELF
1230.61	SHELF STANDARDS: REEVE T-STANDARD #7408 FULL HT
1230.62	FRAMLESS HINGED 1/2" TEMP. GLASS DOOR W/ LOCK & HD PUSH LATCHES TOP & BOTTOM
1230.63	PLASTIC LAMINATE ON 3/4" CORE ON ALL EXPOSED SURFACES
1230.64	LIGHT W/ PLASTIC LAMINATE ON 3/4" PLYWOOD SHIELD
1230.65	FINISHED WOOD BOLTED THRU WALL TO 2 X 6
1230.67	METAL NAME PLATE
1230.68	3/16" FACE FLUSH W/ VERTICAL SUPPORTS
1230.69	CLOTHES ROD
1230.71	3/4" AWP GLUED TO 3/4" PLYWOOD BACKER
1230.72	1 1/2" X 3/4" END TO MATCH WD. VEENER, TYP. TOP, BOT., & SIDES
1230.73	ADA BAR
1230.74	KEYBOARD TRAY
1230.75	PLASTIC LAMINATE ON 3/4" BACKER
1230.76	PLASTIC LAMINATE CLAD BASE AND WALL CABINETS WITH ADJUSTABLE SHELVES RE: INTERIOR ELEVATION
1250.12	CLINIC BED (N.I.C)
1290.01	BICYCLE RACK
1290.05	CAN WASH
1290.06	REMOVABLE BOLLARD
1290.07	FIXED BOLLARD
1290.08	9 LOOP BICYCLE RACK "KAY PARK" MODEL HW238-11-IG
1300	DIVISION 13 - SPECIAL CONSTRUCTION
1400	DIVISION 14 - CONVEYING EQUIPMENT
2100	DIVISION 21 - FIRE SUPPRESSION (RE: PLUMBING)
2200	DIVISION 22 - PLUMBING (RE: PLUMBING)
2210.01	PLUMBING VENT
2210.06	FLOOR DRAIN
2210.10	GREASE INTERCEPTOR
2210.13	ROOF DRAIN
2210.14	ROOF DRAIN PIPING
2210.15	OVERFLOW ROOF DRAIN
2210.21	CONDENSATE PIPING
2230.03	BOILER
2240.01	WATER CLOSET. ORIENT FLUSH VALVE TOWARDS ACCESSIBLE SPACE AT ACCESSIBLE STALLS / RESTROOMS
2240.02	URINAL
2240.03	WALL-HUNG LAVATORY WITH CARRIER
2240.04	PORCELAIN LAVATORY
2240.06	STAINLESS STEEL SINK
2240.08	PRE-MANUFACTURED SHOWER BASE
2240.11	MOP SINK
2240.19	BI-LEVEL DRINKING FOUNTAINS WITH BOTTLE FILLING STATION
2240.25	LAVATORY STATION
2300	DIVISION 23 - HEATING, VENTILATING, & AIR-CONDITIONING (HVAC) (RE: MECHANICAL)
2310.01	GAS PIPING (PAINT WHERE EXPOSED)
2320.03	REFRIGERANT PIPING
2330.04	EXHAUST FAN
2330.06	OUTSIDE AIR INTAKE HOOD
2330.29	EXHAUST AIR HOOD
2330.30	SUPPLY FAN
2330.31	DRYER EXHAUST VENT
2350.07	HOT FLUE VENT WITH BASE AND COLLAR
2360.02	HVAC CONDENSING UNIT
2360.03	CHILLER
2370.01	AIR HANDLING UNIT
2600	DIVISION 26 - ELECTRICAL (RE: ELECTRICAL)
2620.01	CONDUIT
2620.06	ELECTRICAL FLOOR BOX. MOUNT FLUSH WITH ADJACENT FLOOR FINISH
2620.08	ELECTRICAL METER
2620.10	ELECTRICAL MAIN DISCONNECT
2620.12	ELECTRICAL PANEL
2620.20	WALL OUTLET
2620.21	CARD ACCESS CONDUIT & J-BOX TO BE INSTALLED ON SECURE SIDE @ GATES W/ CARD ACCESS
2630.01	EMERGENCY GENERATOR
2650.10	WALL-MOUNTED EXIT SIGN
2650.11	CEILING-MOUNTED EXIT SIGN
2650.15	HOUSELIGHT TRACK
2650.17	LIGHT POLE AND FIXTURE ON CONCRETE BASE
2650.22	WALL PACK
2650.23	CANOPY LIGHT FIXTURE
2650.24	DISPLAY CASE LIGHT FIXTURE
2700	DIVISION 27 - COMMUNICATIONS
2740.12	SOUND EQUIP. (RE: TECH DWGS)
2740.13	SOUND RACK
2740.14	SOUND CABINET
2800	DIVISION 28 - ELECTRONIC SAFETY & SECURITY
2810.03	CARD READER
2810.08	PANIC DEVICE ON 12"H 12GA STL C-SHAPED RECEIVER FULL LENGTH OF GATE
2810.09	ELECTRONIC STRIKE @ CARD ACCESS LOCATION ONLY
2820.03	CCTV CAMERA DOME HOUSING
3100	DIVISION 31 - EARTHWORK
3120.01	GRADE
3120.02	COMPACTED SELECT FILL
3120.03	COMPACTED SUBGRADE
3120.05	TOP OF PAV'G/ GRADE
3200	DIVISION 32 - EXTERIOR IMPROVEMENTS
3210	Bases, Ballasts & Paving
3210.06	PERMEABLE GRAVEL PAVING SYSTEM
3210.09	CONCRETE SIDEWALK (RE: CIVIL)
3210.10	CONCRETE CURB RAMP
3210.11	ACCESSIBLE CONCRETE CURB RAMP WITH INTEGRAL COLOR CONCRETE AND TACTILE WARNING SURFACE
3210.14	CONCRETE PAVING (RE: CIVIL)
3210.15	CONCRETE APPROACH
3210.22	PAVING EXPANSION JOINT - FILL WITH JOINT SEALER 1/4" BELOW SURFACE
3210.30	6" CONCRETE CURB (WITH GUTTER AS REQUIRED) (RE: CIVIL)
3210.32	CONCRETE MOW STRIP
3210.33	4" PAVEMENT MARKING (DIAGONAL STRIPING AT 2'-0" O.C. TYPICAL)
3210.34	H.C. PAVEMENT MARKING
3210.35	FIRE LANE STRIPING
3210.36	DIRECTIONAL PAVEMENT MARKING
3210.37	WHEEL STOP (6'-0" LONG). DRILL AND DOWEL INTO PAVING
3210.39	4" LANE DIVIDER STRIPE- WHITE
3210.40	4" LANE DIVIDER STRIPE- YELLOW
3210.41	12" WHITE LIMIT LINE
3230.02	8'-0" HIGH NOM. CHAIN-LINK FENCE
3230.05	CHAIN-LINK GATE
3230.07	CHAIN-LINK FABRIC (GALVANIZED)
3230.09	2" MIN. DIAMETER SCHEDULE 40 STEEL PIPE (GALVANIZED)
3230.11	6 5/8" MIN. DIAMETER STEEL PIPE (GALVANIZED)
3230.12	1 5/8" X 1 1/4" MIN. STEEL BRACE RAIL (GALVANIZED) AT CORNER PANELS ONLY
3230.27	OFFSET HINGES
3230.28	METAL HINGES
3230.29	PLUNGER CATCH
3230.30	1" PLUNGER ROD AND GUIDE
3230.32	LOCK KEEPER
3230.35	POST CAP
3230.38	DECORATIVE METAL FENCE
3230.39	DECORATIVE METAL GATE
3230.40	4" X 4" STEEL TUBE POST
3230.53	MONUMENT SIGN
3230.63	SELF CLOSING HYDRAULIC HINGE
3230.64	18 GA S.S. KICK PLATE FULL WIDTH OF GATE @ EGRESS EXITS
3230.65	12 GA GALV, EXPANDED MTL. INFILL, MIN. 36" WIDE
3230.68	INTERNALLY LIGHTED MARQUEE SIGN
3230.69	LED DISPLAY
3230.70	4'-0" HIGH NOM. CHAIN-LINK FENCE
3300	DIVISION 33 - UTILITIES (RE: CIVIL & MEP)
3310.01	FIRE HYDRANT (RE: CIVIL / PLUMBING)
3330.05	SANITARY SEWER MANHOLE AND COVER (RE: CIVIL)
3340.04	AREA DRAIN INLET (RE: CIVIL)
3370.04	TRANSFORMER (BY POWER COMPANY) WITH CONCRETE PAD PER POWER COMPANY REQUIREMENTS
3370.08	BARE COPPER GROUND
3370.11	ELECTRICAL BOX
3400	DIVISION 34 - TRANSPORTATION
Division 02	Existing Conditions (To Remain, U.N.O.) & Demolition

REGISTERED ARCHITECT
JEFFREY S. CHOATE
16762
STATE OF TEXAS
9/9/24

BROWN REYNOLDS WATFORD ARCHITECTS
4501 MAGNOLIA COVE DRIVE
SUITE 250
HOUSTON, TEXAS 77345
281-361-3800
WWW.BRWARCH.COM
BRW

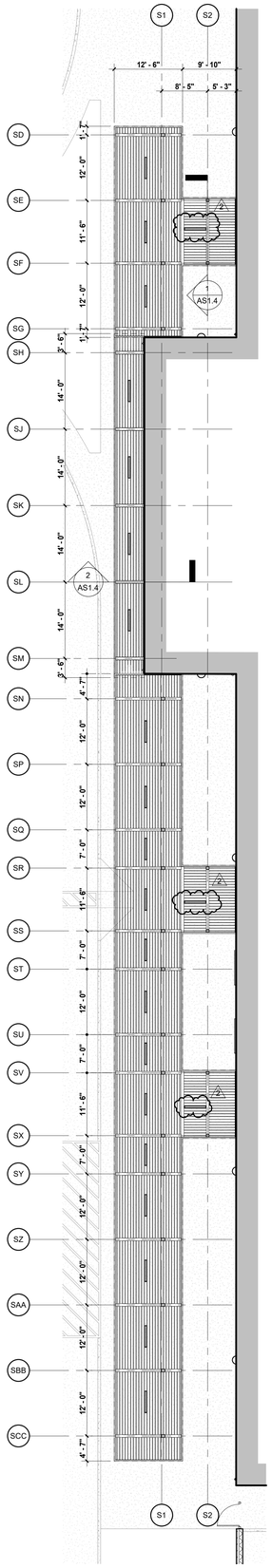
DATE	SEPTEMBER 9, 2024
DRAWN BY	HN, AH
CHECKED BY	JSC
BRW PROJECT NUMBER	223117.00

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

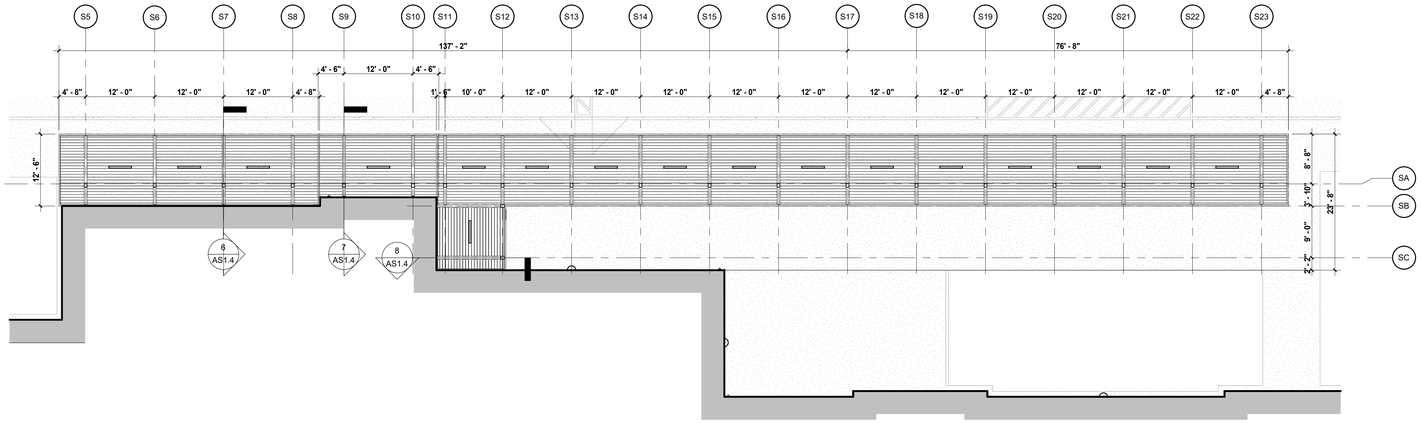
NO.	REVISION	DATE
1	ADDENDUM NO.1	09/23/24
2	ADDENDUM NO.2	10/22/24

G1.2

MASTER KEYNOTE LIST



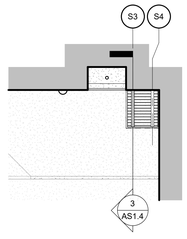
5 CANOPY PLAN
3/32" = 1'-0"



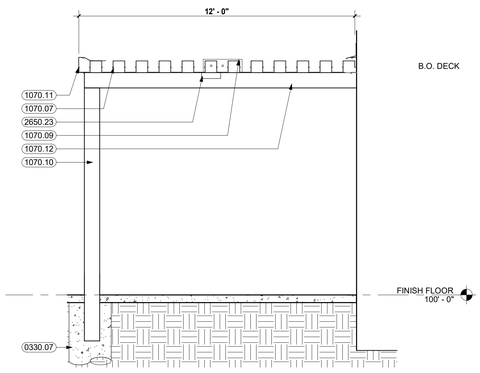
9 CANOPY PLAN
3/32" = 1'-0"

KEYNOTES

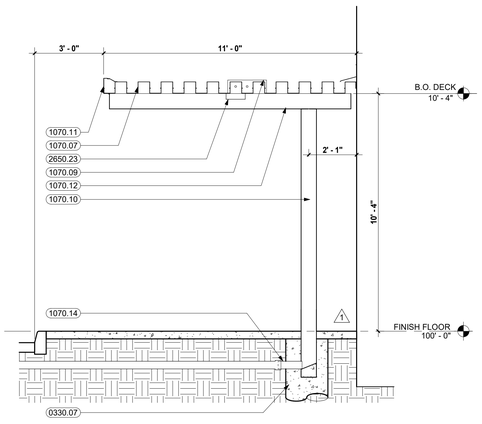
0330.07	CONCRETE FOOTING
1070.07	ALUMINUM CANOPY DECK
1070.09	ALUMINUM FLASHING CAP
1070.10	ALUMINUM CANOPY COLUMN
1070.11	ALUMINUM FASCIA
1070.12	ALUMINUM GUTTER BEAM
1070.14	UNDERGROUND CANOPY DRAINAGE
2650.23	CANOPY LIGHT FIXTURE



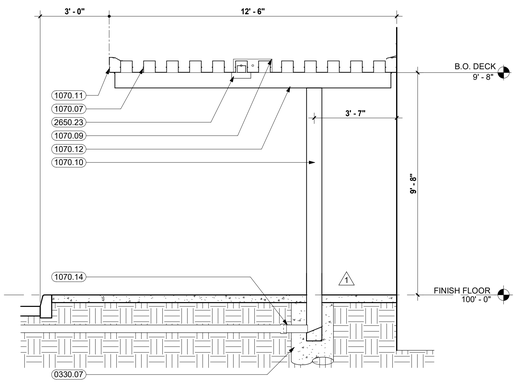
4 CANOPY PLAN
3/32" = 1'-0"



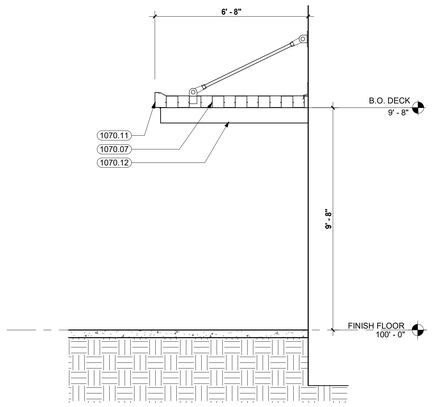
8 CANOPY SECTION 06
3/8" = 1'-0"



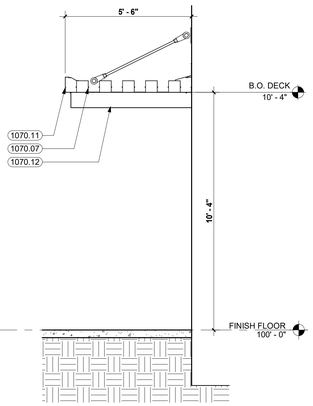
7 CANOPY SECTION 05
3/8" = 1'-0"



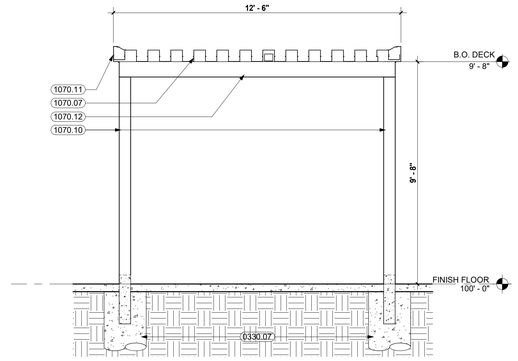
6 CANOPY SECTION 04
3/8" = 1'-0"



3 CANOPY SECTION 03
3/8" = 1'-0"



2 CANOPY SECTION 02
3/8" = 1'-0"



1 CANOPY SECTION 01
3/8" = 1'-0"

JEFFREY S. CHOATE
76762
REGISTERED ARCHITECT
STATE OF TEXAS
9/9/24

BROWN REYNOLDS WATFORD ARCHITECTS
4301 MAGNOLIA COVE DRIVE
SUITE 250
MISSOURI CITY, TEXAS 77345
281.343.3800
WWW.BRWARCH.COM

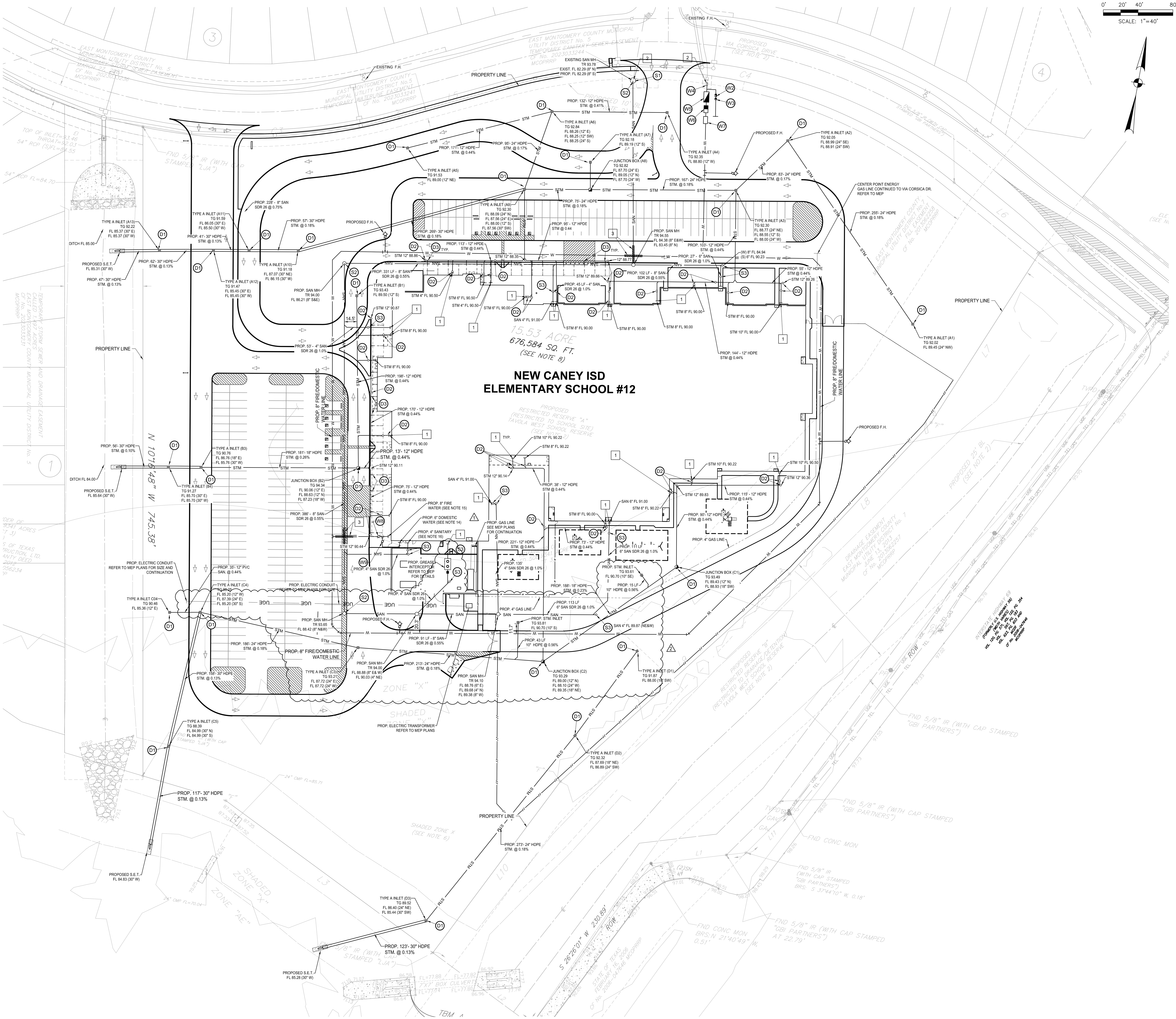
DATE SEPTEMBER 9, 2024
DRAWN BY QN, AH, LB
CHECKED BY JSC
BRW PROJECT NUMBER 223117.00

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

NO.	REVISION	DATE
1	ADDENDUM NO.1	09/23/24
2	ADDENDUM NO.2	10/22/2024

AS1.4

CANOPY PLANS AND DETAILS



GENERAL CONSTRUCTION NOTES :

1. ALL UNDERGROUND UTILITIES SHOWN ARE NOT GUARANTEED TO BE COMPLETE OR DEFINITE, BUT WERE OBTAINED FROM THE BEST INFORMATION AVAILABLE.
2. CONTRACTOR TO VERIFY ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER IF DISCREPANCIES OCCUR.
3. THE LOCATION OF ALL UTILITIES PRESENTED ON THESE DRAWINGS IS SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
4. CAUTION!!! THERE ARE OVERHEAD POWER LINES IN THE WORK AREA. CONTRACTOR SHALL FOLLOW CITY, STATE AND FEDERAL GUIDELINES WHEN WORKING AROUND EXISTING POWER LINES.
5. CONTRACTOR TO OBTAIN ALL PERMITS AND APPROVALS REQUIRED PRIOR TO STARTING CONSTRUCTION.
6. SIDEWALKS SHALL HAVE A RUN SLOPE NO GREATER THAN 5% AND A CROSS SLOPE NO GREATER THAN 2%, UNLESS OTHERWISE NOTED.
7. ALL DIMENSIONS ARE TO FACE OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
8. ALL DIMENSIONS ARE PERPENDICULAR OR PARALLEL TO THEIR RESPECTIVE PROPERTY LINES UNLESS OTHERWISE NOTED.
9. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR BUILDING DIMENSIONS.
10. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE STAGING AND TRAFFIC CONTROL PLANS WITH OWNER.
11. ALL DISTURBED AREAS NOT TO BE PAVED OR LANDSCAPED SHALL BE SODDED UPON COMPLETION.
12. WATER AND SEWER MAINS SHALL BE CONSTRUCTED AND TESTED IN ACCORDANCE WITH TCEQ RULES AND REGULATIONS.
13. CONTRACTOR PERFORMING THE WORK SHALL BE RESPONSIBLE FOR SECURING ALL UTILITY PERMITS, PRIOR TO INSTALLATION OF ANY UTILITIES INCLUDING WATER, SEWER, ELECTRIC, CABLE TELEVISION AND GAS.
14. DOMESTIC WATER LINES LESS THAN 4" IN DIAMETER SHALL BE SCH 40 PVC AND HAVE A MINIMUM COVER OF 2 FEET. DOMESTIC WATER LINES 4" DIAMETER AND LARGER SHALL BE AWWA C-900 DR 14 PVC AND HAVE A MINIMUM COVER OF 4 FEET.
15. FIRE WATER SERVICE SHALL BE C-900 SELF-EXTINGUISHING PVC PIPE THAT BEARS UNDERWRITERS' LABORATORIES MARK OF APPROVAL AND IS ACCEPTABLE WITHOUT PENALTY TO TEXAS STATE FIRE INSURANCE COMMITTEE AND HAVE A MINIMUM COVER OF 4 FEET.
16. SANITARY SEWER PIPE SIZES 6 INCHES AND SMALLER SHALL BE PVC SCHEDULE 40, AND PIPE SIZES 8 INCHES OR LARGER MAY BE SDR 35.
17. ALL STORM AND SANITARY SEWER CLEANOUTS SHALL HAVE TRAFFIC-RATED LIDS. CLEANOUTS LOCATED OUTSIDE OF PAVED AREAS SHALL HAVE 18" DIAMETER X 6" THICK REINFORCED CONCRETE PAD WITH TOP OF PAD MATCHING FINISHED GRADE.
18. PROVIDE BENTONITE PLUG AT ALL POINTS WHERE UTILITIES EXTEND UNDER BUILDING FOUNDATION. REFER TO STRUCTURAL FOR DETAIL.

△1

GENERAL UTILITY KEY NOTES:

- 1 — REFER TO MEP PLANS FOR SIZE AND CONTINUATION.
- 2 — FIELD VERIFY EXISTING UTILITY LOCATION, SIZE AND DEPTH BEFORE CONSTRUCTION.
- 3 — 1 FULL LENGTH OF PIPE WITH RESTRAINT JOINTS CENTER ABOVE/BELOW SANITARY/WATER PIPE

DRAINAGE KEY NOTES:

- D1 — PROPOSED STORM SEWER STRUCTURE
- D2 — PROPOSED STORM SEWER CLEANOUT
- D3 — PROPOSED 6" HDPE DOWNSPOUT

SANITARY SEWER KEY NOTES:

- S1 — FIELD LOCATE EXISTING SANITARY SEWER AND CONNECTED PROPOSED SANITARY SEWER TO EXISTING SANITARY SEWER.
- S2 — PROPOSED SANITARY MANHOLE.
- S3 — PROPOSED SANITARY CLEANOUT.

WATER KEY NOTES:

- W1 — NOT USED.
- W2 — PROPOSED DOMESTIC 2" IRRIGATION METER.
- W3 — PROPOSED IRRIGATION 2" BACKFLOW PREVENTOR
- W4 — FIELD LOCATED EXISTING WATER LINE AND CONNECT PROPOSED FIRE WATER LINE.
- W5 — PROPOSED 8" FIRE/DOMESTIC COMPOUND WATER METER.
- W6 — PROPOSED 8" FIRE WATER BACKFLOW PREVENTOR.
- W7 — PROPOSED CHECK VALVE ASSEMBLY WITH 4" FDC & PIV VAULT.
- W8 — 8" GATE VALVE W/BOX
- W9 — 6" GATE VALVE W/BOX △1

WATER AND SANITARY SERVICE CONNECTIONS TO BE COORDINATED WITH EAST MONTGOMERY COUNTY M.U.D. No. 5.

BROWN REYNOLDS WATFORD ARCHITECTS
4501 MAGNOLIA COVE DRIVE
SUITE 250 BUILDING 6
HOUSTON, TEXAS 77345
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BRW

STATE OF TEXAS
FRED DALLY
90904
LICENSED PROFESSIONAL ENGINEER
10/02/2024

Dally + ASSOCIATES STRUCTURAL | CIVIL
9800 Richmond Avenue, Suite 460
Houston, Texas 77042 t 713 337 8881
TEXAS REGISTERED ENGINEERING FIRM F-3426
D + A PROJECT No. C23-066-00

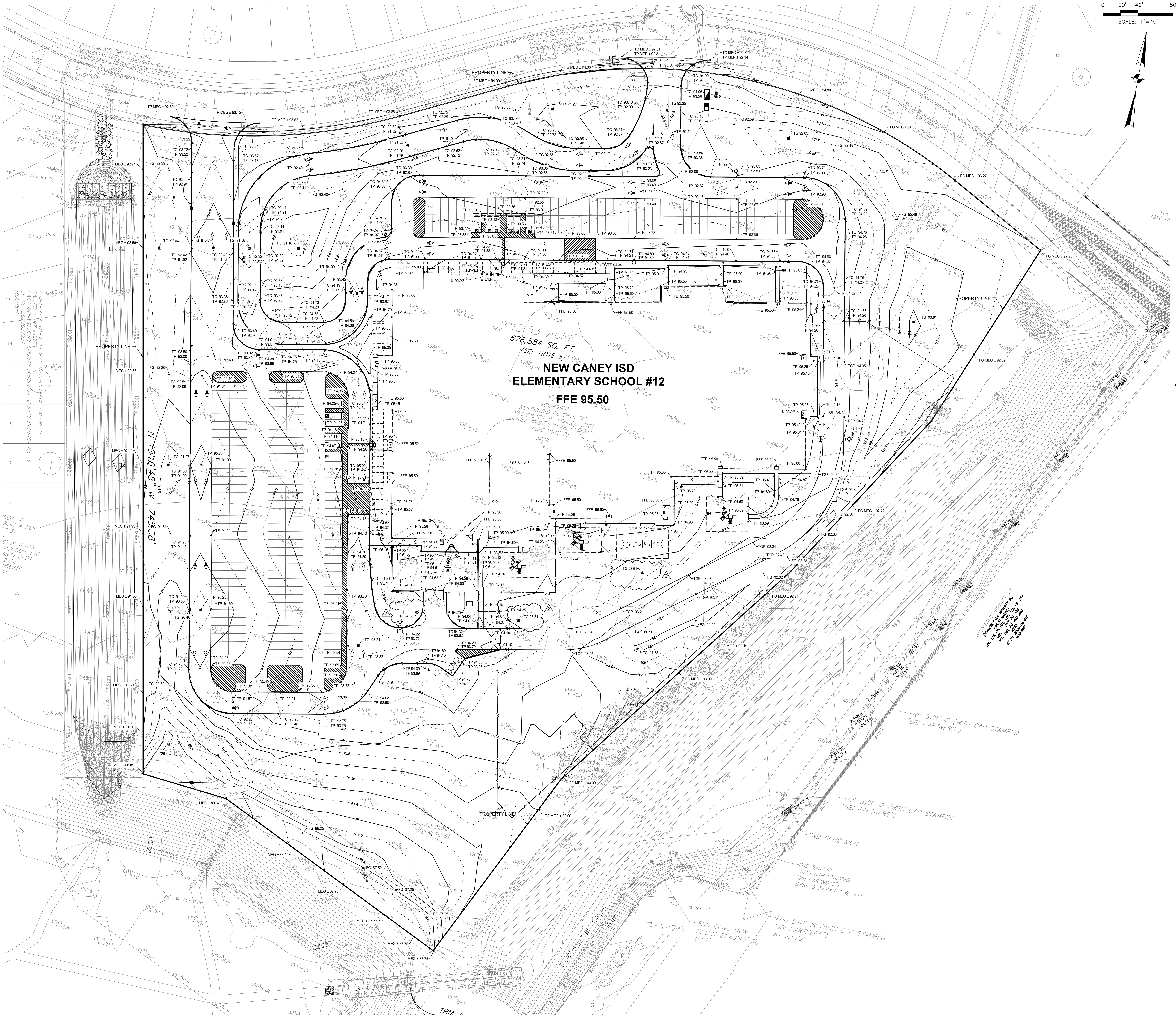
DATE	SEPTEMBER 9, 2024
DRAWN BY	AG
CHECKED BY	JG
BRW PROJECT NUMBER	223117.00

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

NO.	REVISION	DATE
1	ADDENDUM No. 1	9/23/2024
2	ADDENDUM No. 2	10/02/2024

C6.0

UTILITY PLAN



LEGEND

PROPOSED BUILDING LIMITS

FFE	FINISHED FLOOR ELEVATION
FL	FLOW LINE
FG	FINISHED GRADE
MEC	MATCH EXISTING CURB
MEG	MATCH EXISTING GRADE
MEP	MATCH EXISTING PAVEMENT
TC	TOP OF CURB
TG	TOP OF GRATE
TP	TOP OF PAVEMENT
NG	NATURAL GROUND
——►	DRAINAGE PATTERN
	EXISTING CONTOURS
	PROPOSED COUNTOURS
— - - —	500 YR BASE FLOOD ELEVATION
TGP	TOP OF GRAVEL PAVEMENT

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7. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR BUILDING DIMENSIONS.
8. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE STAGING AND TRAFFIC CONTROL PLANS WITH OWNER.
9. (△1) ALL DISTURBED AREAS NOT TO BE PAVED OR LANDSCAPED SHALL BE SODDED OR HYDROMULCHED UPON COMPLETION. RE: LANDSCAPE

ACCORDING TO THE FEDERAL MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 48339C600G, MAP REVISED AUGUST 18, 2014, THE SUBJECT PROPERTY LIES WITHIN ZONES "X" AND SHADED ZONE "X" IS DEFINED AS A SPECIAL FLOOD HAZARD AREA SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD WITH BASE FLOOD ELEVATION DETERMINED. AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS OF LESS THAN 1 SQUARE MILE; AND ARES PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD AS SHOWN ON THE FEMA MAP REFERENCED ABOVE.

500 YR BFE = 92.00'

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NO.	REVISION	DATE
1	ADDENDUM No. 1	9/23/2024
2	ADDENDUM No. 2	10/02/2024

C7.0

GRADING PLAN

DRILLED SPREAD FOOTING SCHEDULE / ALTERNATE UNDERREAMED PIER OPTION

SHAFT DIAMETER	DIMENSIONS		REINFORCING	ALT SHAFT/ BELL DIA.	VERTICAL REINFORCING		TIES		
	THICKNESS		BOTTOM		NUMBER	SIZE	SIZE	SPACING (IN.)	
36	24"		#7 EW @ 12" O.C.	24/36	6	#6	#4	12	
48	24"		#7 EW @ 12" O.C.	24/36	6	#8	#4	12	
60	24"		#8 EW @ 12" O.C.	24/42	6	#8	#4	12	
84	24"		#8 EW @ 10" O.C.	30/60	6	#8	#4	12	
108	24"		#9 EW @ 12" O.C.	36/72	8	#8	#4	12	
120	24"		#9 EW @ 12" O.C.	42/84	10	#8	#4	12	

DRILLED SHAFT PIER GENERAL NOTES

1. A GEOTECHNICAL REPORT IS AVAILABLE FOR REVIEW **RE: 6 / S0.2**

2. THE INDEPENDENT TESTING LABORATORY SHALL CONFIRM THE ALLOWABLE SOIL BEARING CAPACITY IN THE FIELD AT THE ELEVATION DESIGNATED AS THE PLANE OF BEARING FOR THE DRILLED PIER.

   a. ALLOWABLE BEARING PRESSURE: -FOOTINGS (BISCUITS) = 3000 PSF
   -BELLED PIERS = 4500 PSF

3. THE INDEPENDENT TESTING LABORATORY SHALL INSPECT THE BOTTOM AND SIDES OF THE DRILLED PIER PRIOR TO PLACING REINFORCING AND CONCRETE.

4. CENTER ALL DRILLED PIERS UNDER THEIR COLUMNS, UON.

5. MAINTAIN CLOSE AND ACCURATE DRILLING PRACTICES TO ACHIEVE CLOSE TOLERANCES WITH THE REINFORCING STEEL AND THE ANCHOR ROD TEMPLATE.

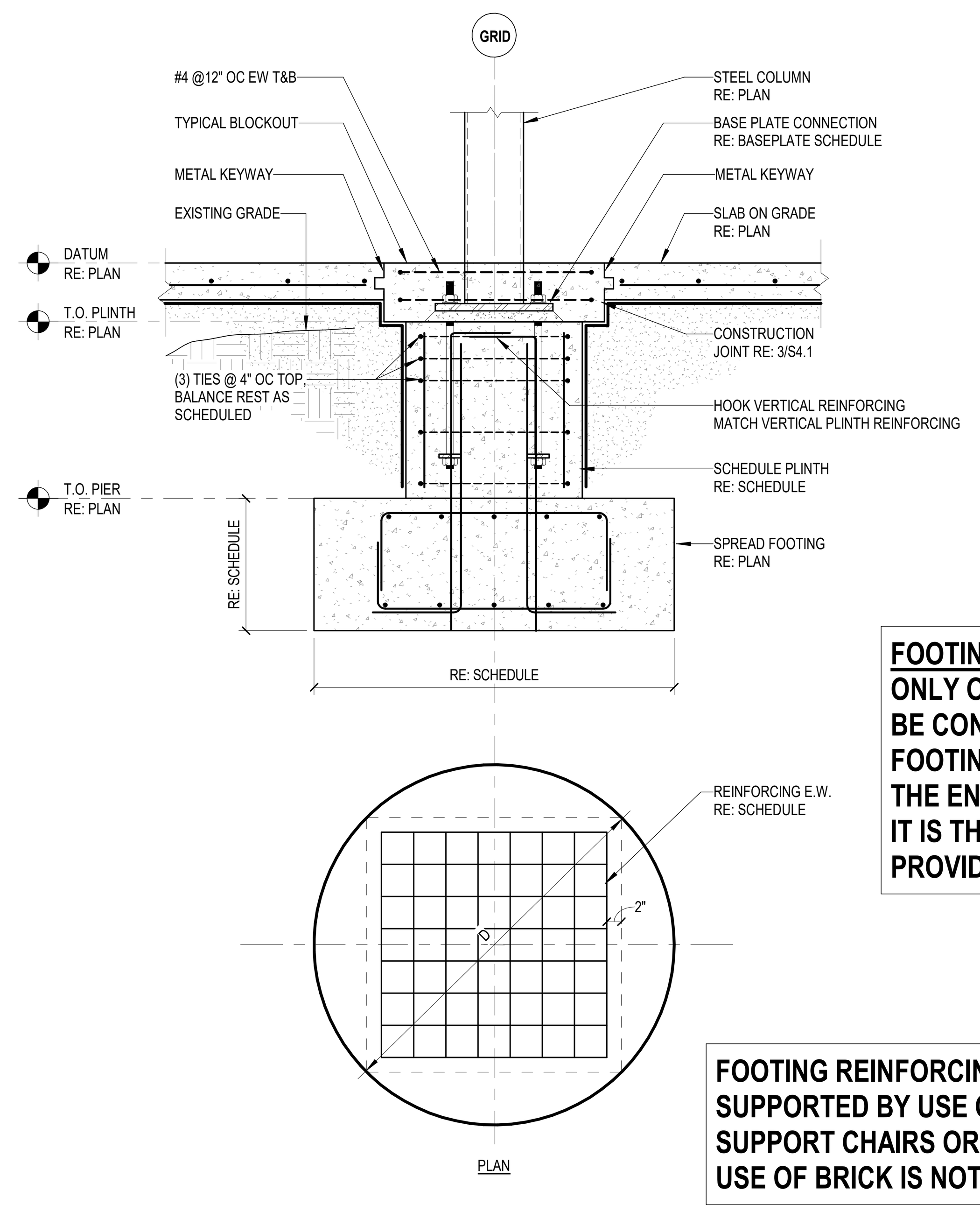
6. ALL REINFORCING STEEL FOR DRILLED PIERS SHALL BE DEFORMED NEW BILLET STEEL CONFORMING TO ASTM A615, GRADE 60.

7. ALL SCHEDULED REINFORCEMENT SHALL BE UNIFORMLY DISTRIBUTED.

8. DEPOSIT CONCRETE TO ITS FINAL POSITION BY THE USE OF A TREMIE.

9. CONSOLIDATE CONCRETE IN ITS FINAL POSITION BY VIBRATING.

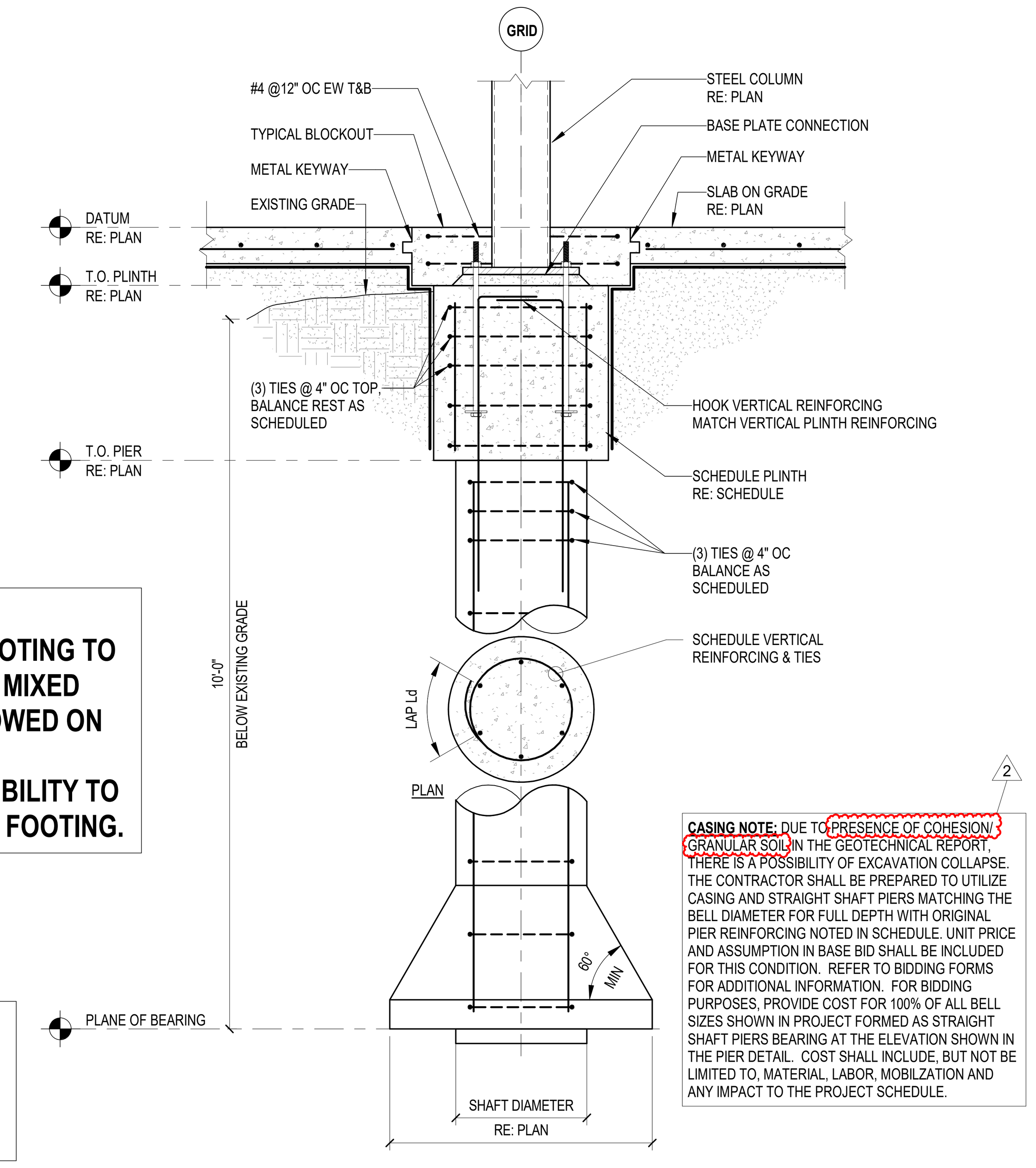
DRILLED SPREAD FOOTING DETAILS



FOOTING NOTE:
ONLY ONE TYPE OF FOOTING TO BE CONSTRUCTED. NO MIXED FOOTING TYPE IS ALLOWED ON THE ENTIRE PROJECT.
IT IS THE GC RESPONSIBILITY TO PROVIDE ONE TYPE OF FOOTING.

FOOTING REINFORCING SHALL BE SUPPORTED BY USE OF APPROVED SUPPORT CHAIRS OR SUSPENDED. USE OF BRICK IS NOT ACCEPTABLE

1B. DRILLED ALTERNATE UNDERREAMED PIER DETAILS



CASING NOTE: DUE TO PRESENCE OF COHESION/ GRANULAR SOIL IN THE GEOTECHNICAL REPORT, THERE IS A POSSIBILITY OF EXCAVATION COLLAPSE. THE CONTRACTOR SHALL BE PREPARED TO UTILIZE CASING AND STRAIGHT SHAFT PIERS MATCHING THE BELL DIAMETER FOR FULL DEPTH WITH ORIGINAL PIER REINFORCING NOTED IN SCHEDULE. UNIT PRICE AND ASSUMPTION IN BASE BID SHALL BE INCLUDED FOR THIS CONDITION. REFER TO BIDDING FORMS FOR ADDITIONAL INFORMATION. FOR BIDDING PURPOSES, PROVIDE COST FOR 100% OF ALL BELL SIZES SHOWN IN PROJECT FORMED AS STRAIGHT SHAFT PIERS BEARING AT THE ELEVATION SHOWN IN THE PIER DETAIL. COST SHALL INCLUDE, BUT NOT BE LIMITED TO, MATERIAL, LABOR, MOBILZATION AND ANY IMPACT TO THE PROJECT SCHEDULE. (2)

PLINTH SCHEDULE

MARK	PLINTH TYPE	REINFORCING		REMARKS
		VERTICAL	TIES	
P1	TYPE 1	(12) #7	#4 @ 10" OC	
P2	TYPE 2	(12) #7	#4 @ 10" OC	
P3	TYPE 3	(12) #7	#4 @ 10" OC	
P4	TYPE 4	(12) #7	#4 @ 10" OC	TYPICAL AT RE-ENTRANT CORNERS
P5	TYPE 5	(X) #X	#4 @ 10" OC	TYPICAL AT BRACE COLUMNS
P6	TYPE 6	(X) #X	#4 @ 10" OC	

PLINTH GENERAL NOTES

1. FOR PLINTH TYPE, LOCATION AND ORIENTATION REFER TO FOUNDATION PLAN VIEWS.

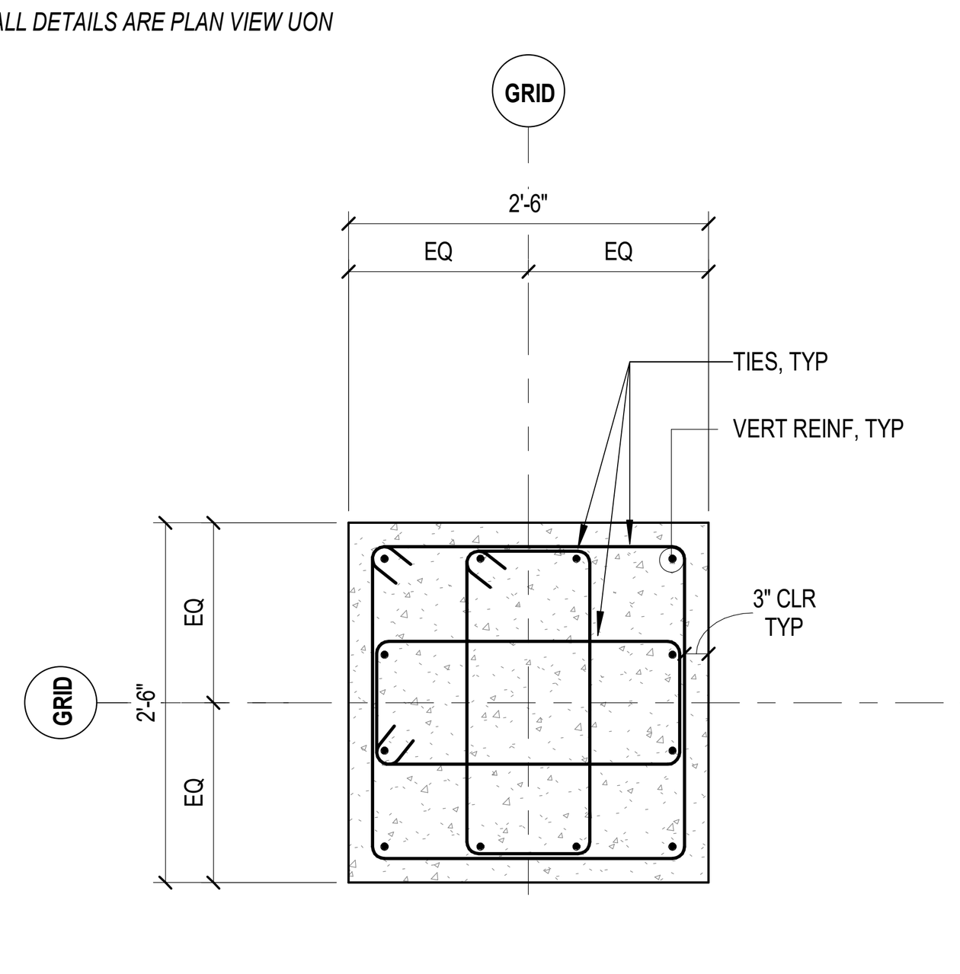
2. WHERE A PLINTH IS INTEGRAL WITH A BEAM, EXTEND THE HORIZONTAL REINFORCING THROUGH THE PLINTH.

3. PROVIDE (3) TIES @ 4" OC TO MATCH THE SCHEDULED TIES REINFORCING AT THE TOP OF EACH PLINTH, TYPICAL.

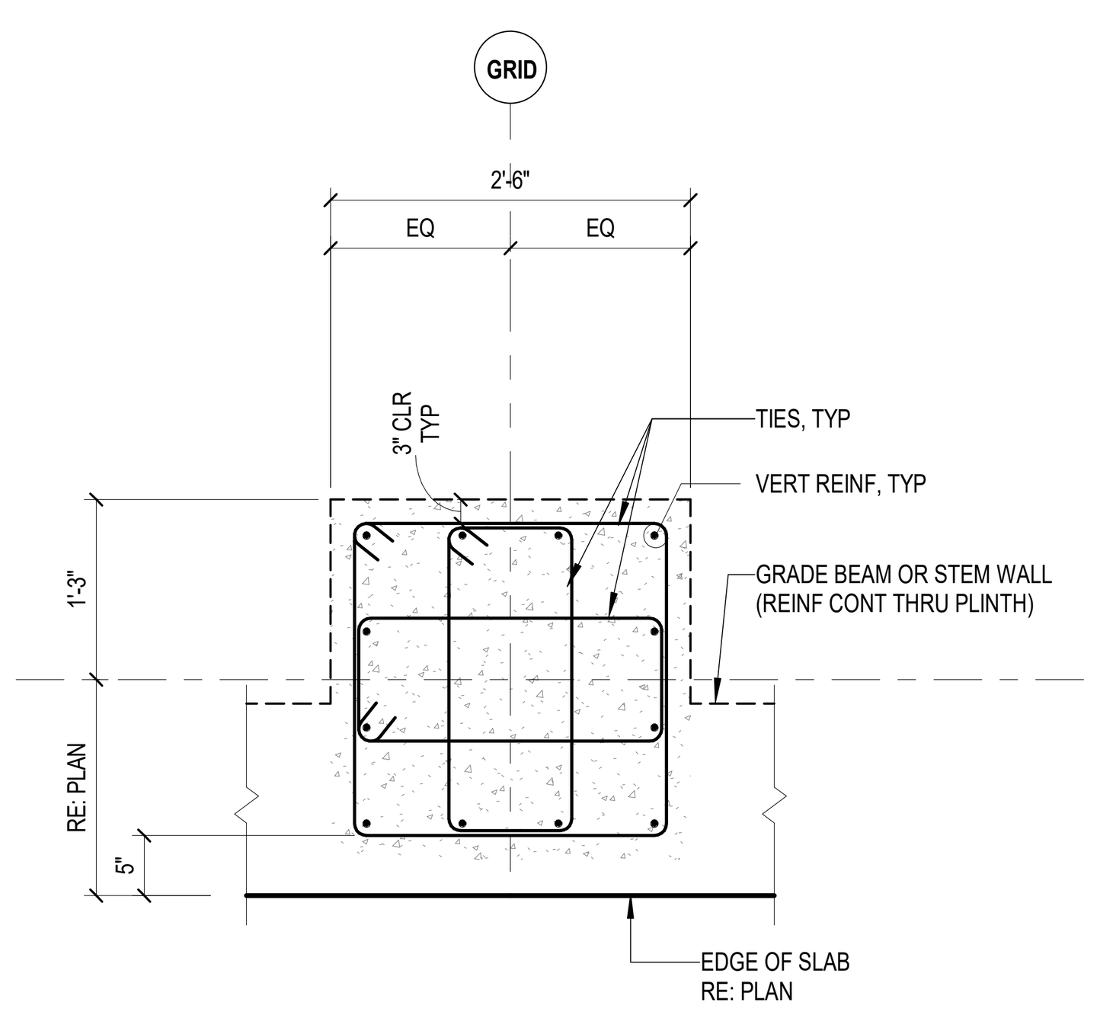
4. THE PLINTH DIMENSIONS SHOWN ARE MINIMUM. GENERAL CONTRACTOR TO COORDINATE WITH FINAL METAL BUILDING MANUFACTURER DRAWINGS AND INCREASE PLINTH DIMENSIONS AS NECESSARY TO SATISFY BASE PLATE & ANCHOR BOLT REQUIREMENTS. ALL PEMB ANCHOR BOLTS ARE TO BE CONFINED BY THE PLINTH REINFORCING WITH 4" MINIMUM CONCRETE COVER, TYPICAL.

PLINTH DETAILS

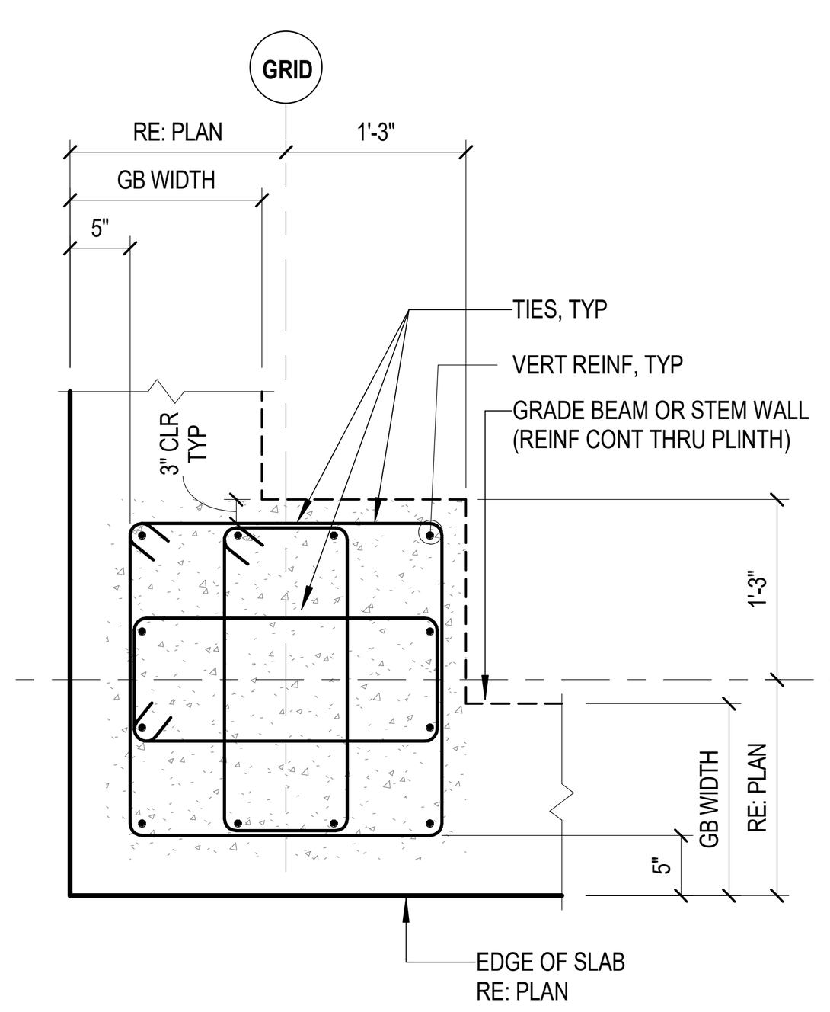
ALL DETAILS ARE PLAN VIEW UON



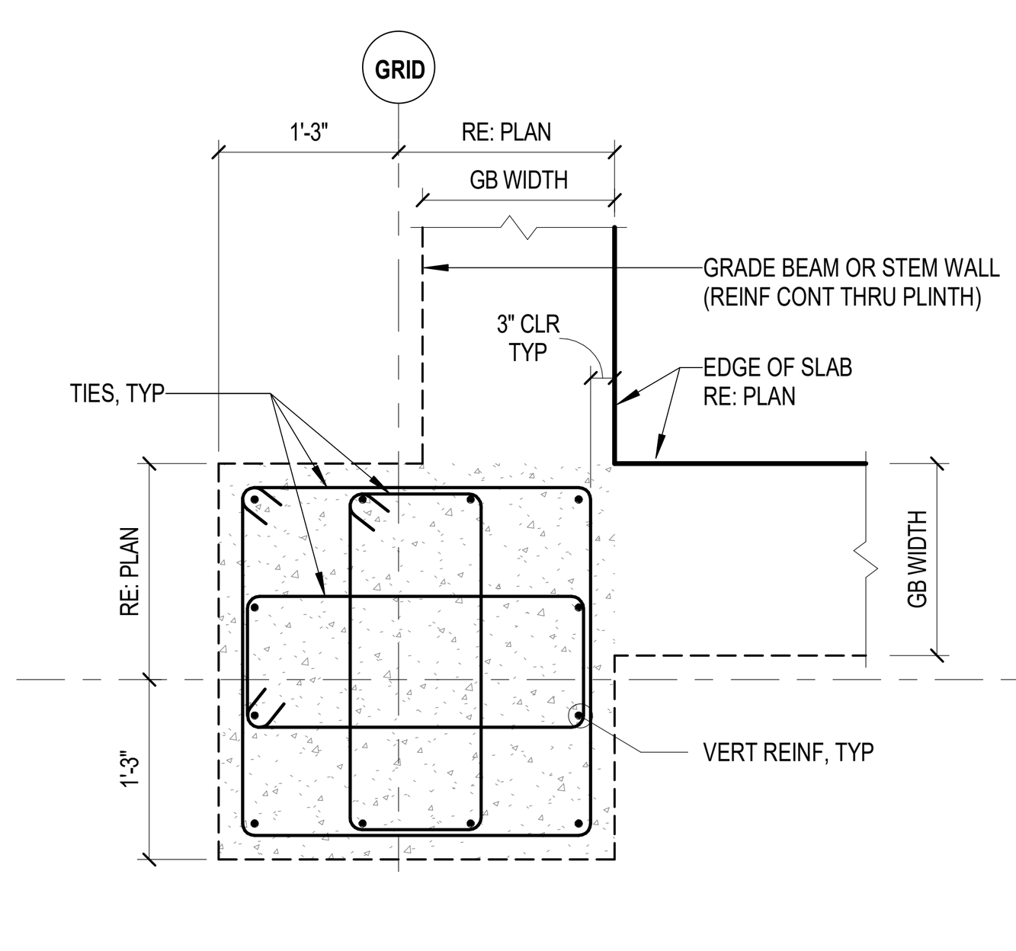
TYPE P1



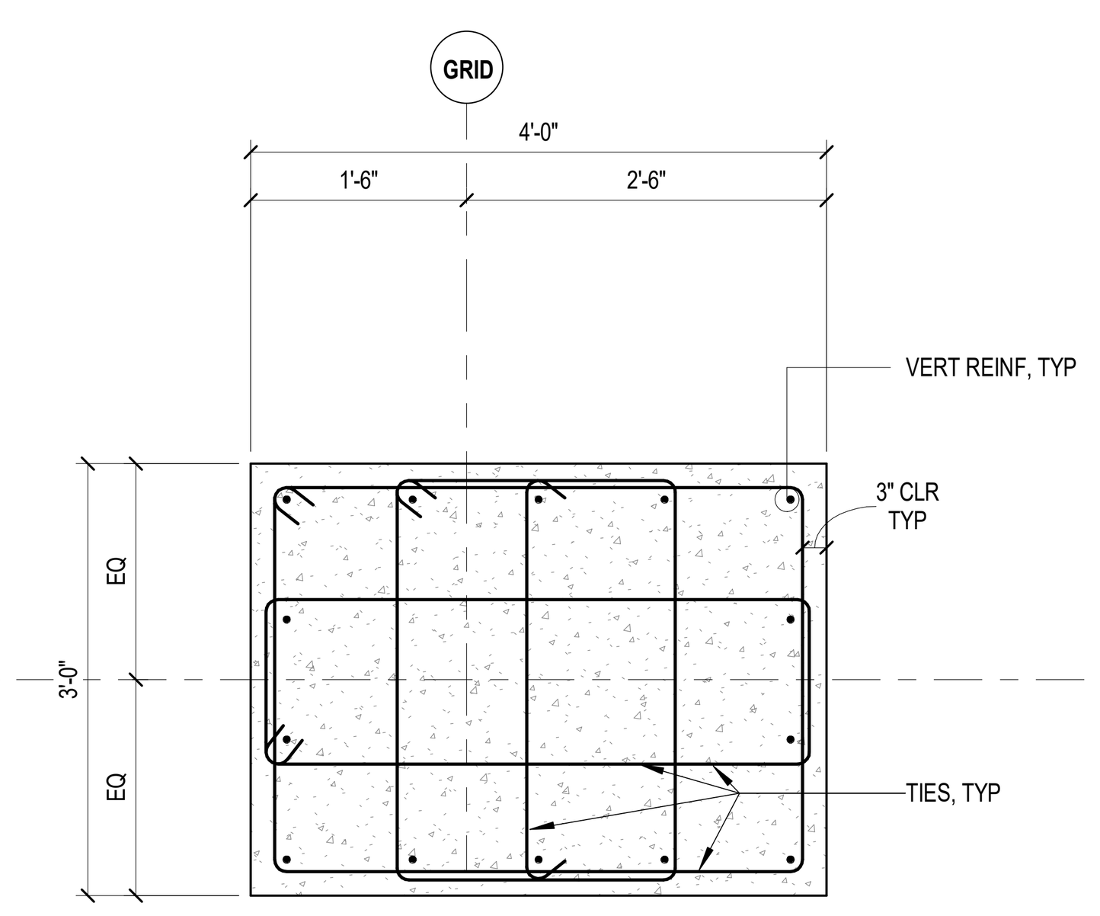
TYPE P2



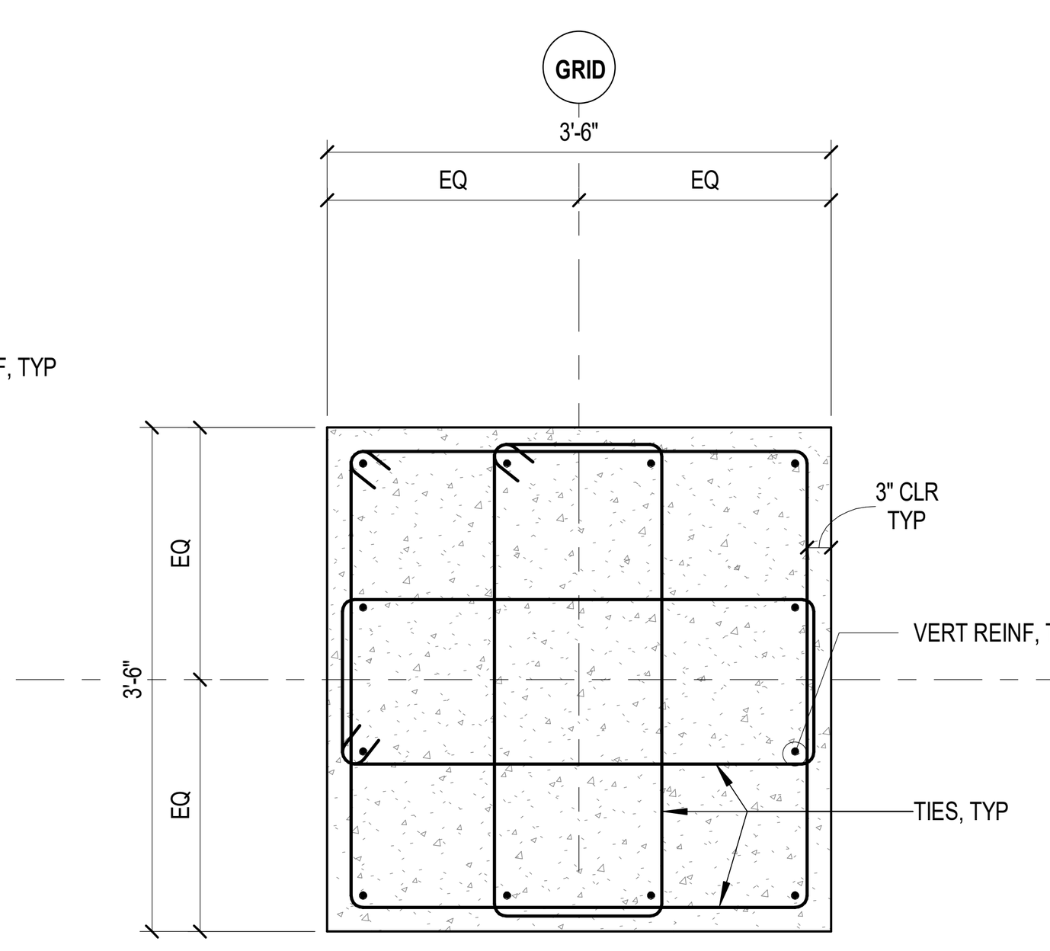
TYPE P3



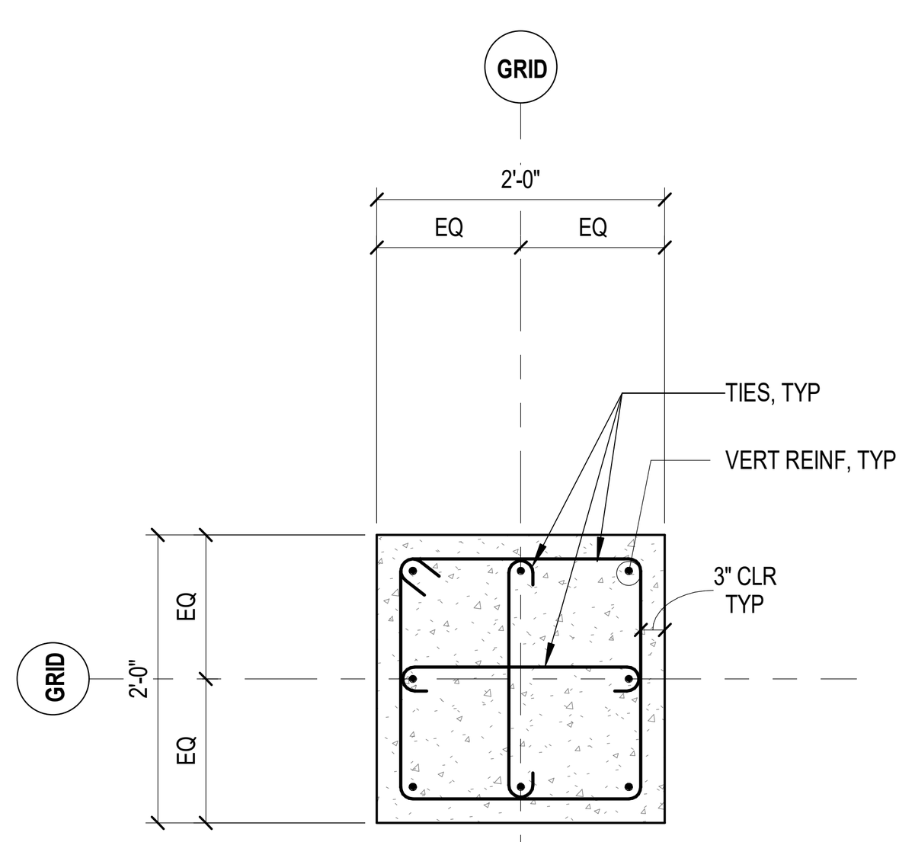
TYPE P4
(RE-ENTRANT CORNER)



TYPE P5
(BRACES)



TYPE P6



TYPE P7

BROWN REYNOLDS WATFORD ARCHITECTS
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WWW.BRWARCH.COM

STATE OF TEXAS — FRED DALLY — 90904 — LICENSED PROFESSIONAL ENGINEER
09-26-2024

Dally + ASSOCIATES
STRUCTURAL | CIVIL
9800 Richmond Avenue, Suite 460
Houston, Texas 77042
t 713 337 8881
Texas Registered Engineering Firm
F-003426

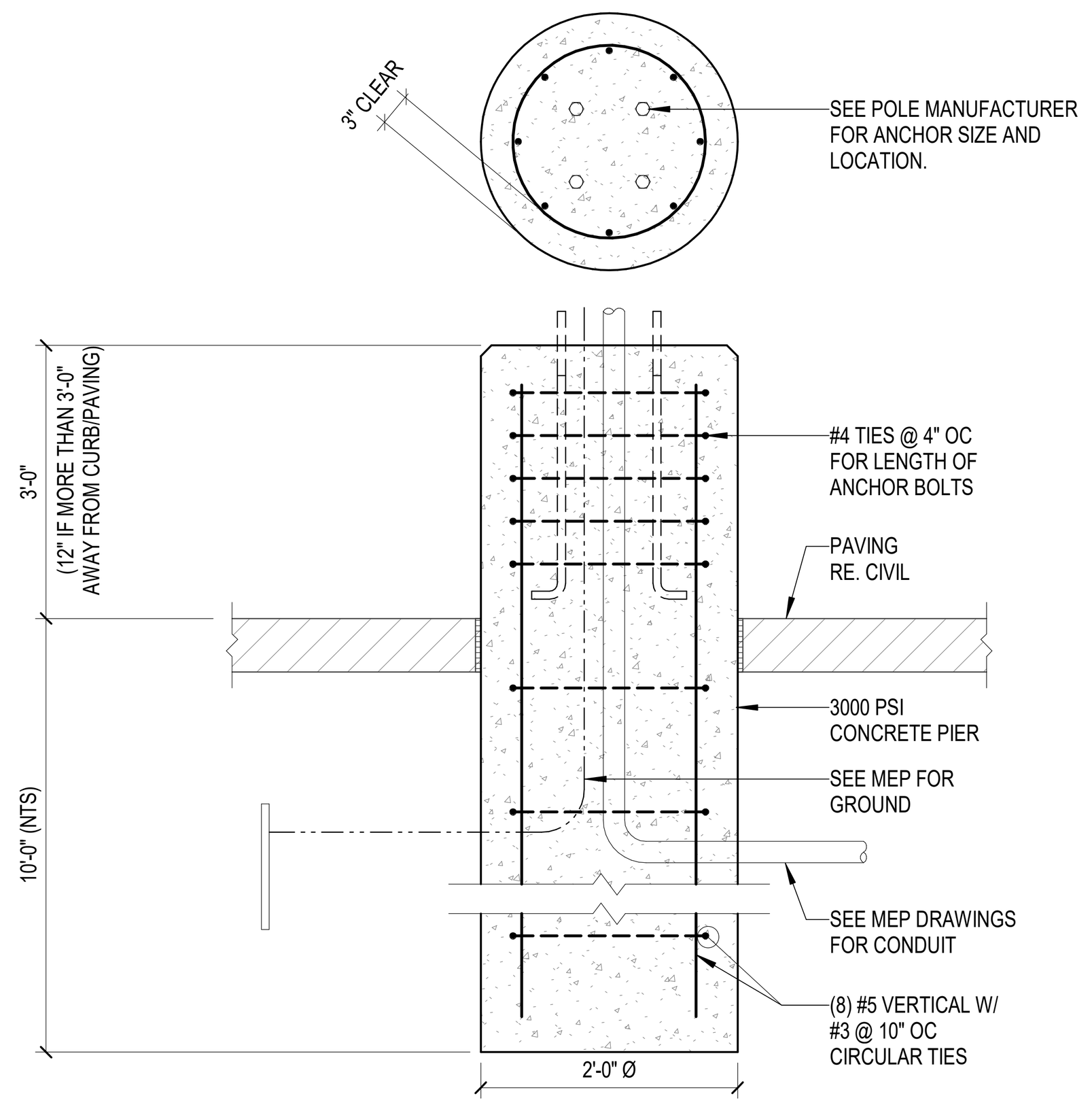
DATE	09/26/2024
DRAWN BY	RT
CHECKED BY	SI
BRW PROJECT NUMBER	223117.00

NEW CANEY ISD ELEMENTARY SCHOOL NUMBER 12
HIGHWAY 59 AND FUTURE VIA CORSICA DRIVE

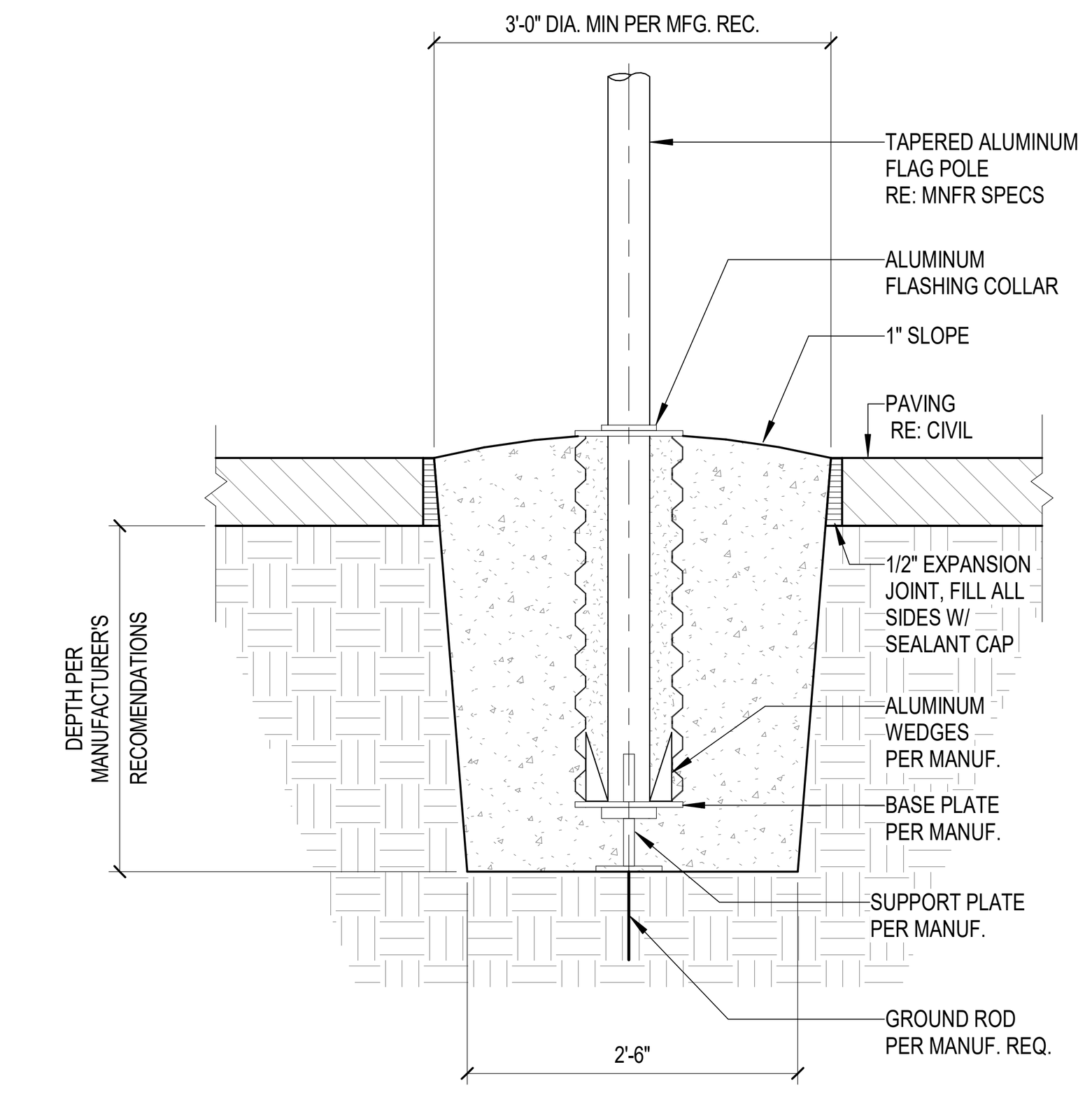
NO.	REVISION	DATE
1	ADDENDUM #1	09/23/2024
2	ADDENDUM #2	09/26/2024

S4.1

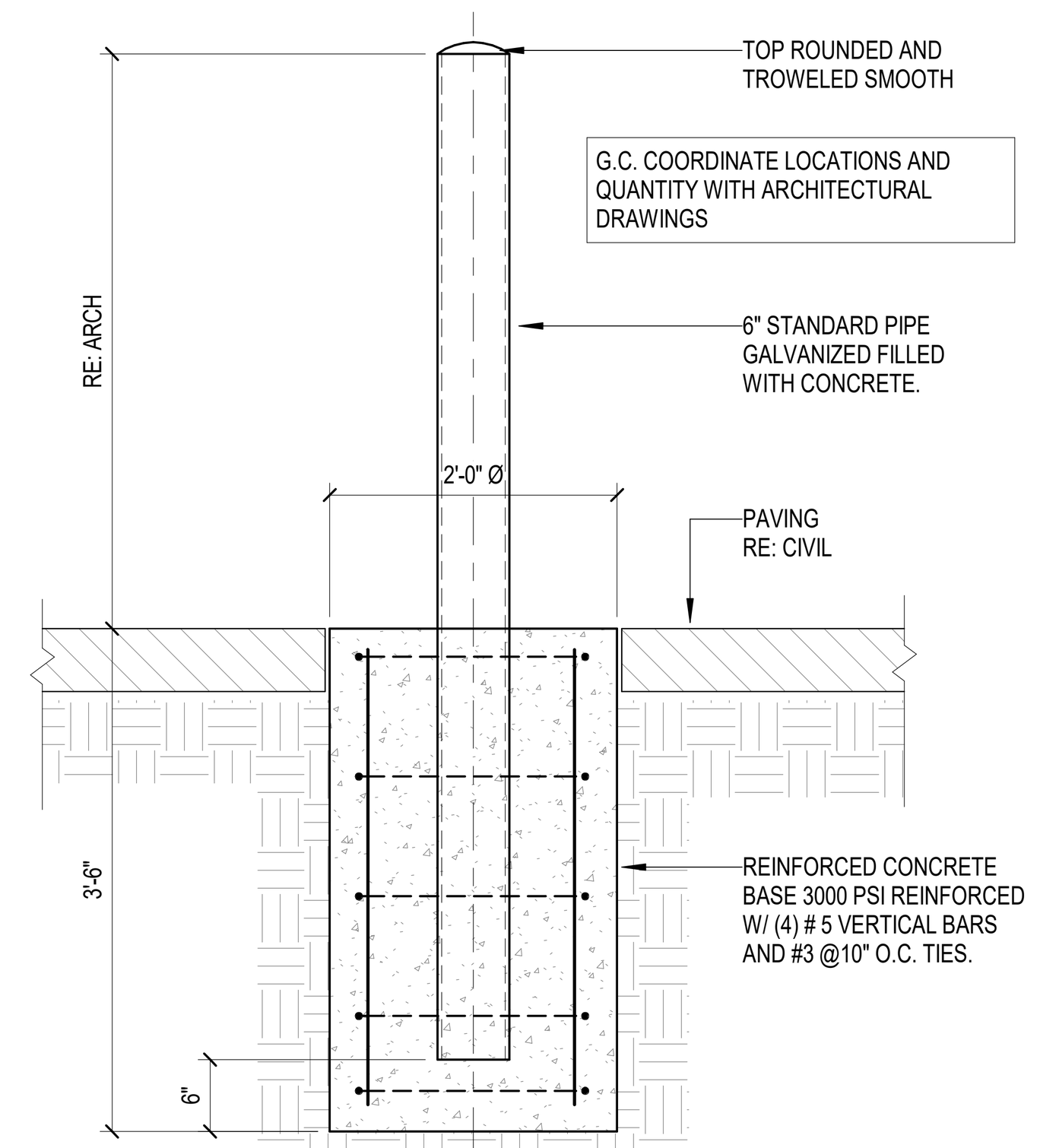
DRILLED PIER & PLINTH SCHEDULE & DETAILS



1 TYPICAL LIGHT POLE DETAIL (30'-0" TALL MAX)
3/4" = 1'-0"



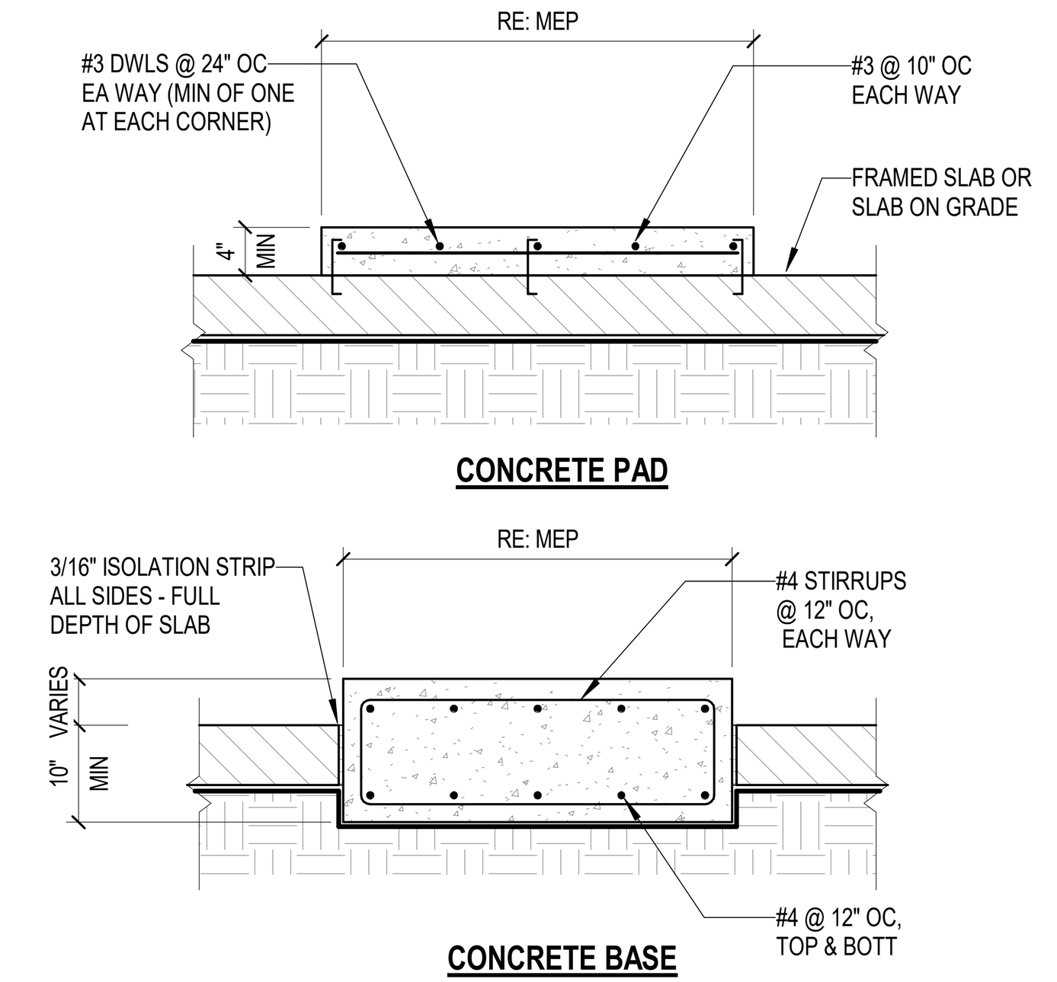
2 TYPICAL FLAG POLE DETAIL
3/4" = 1'-0"



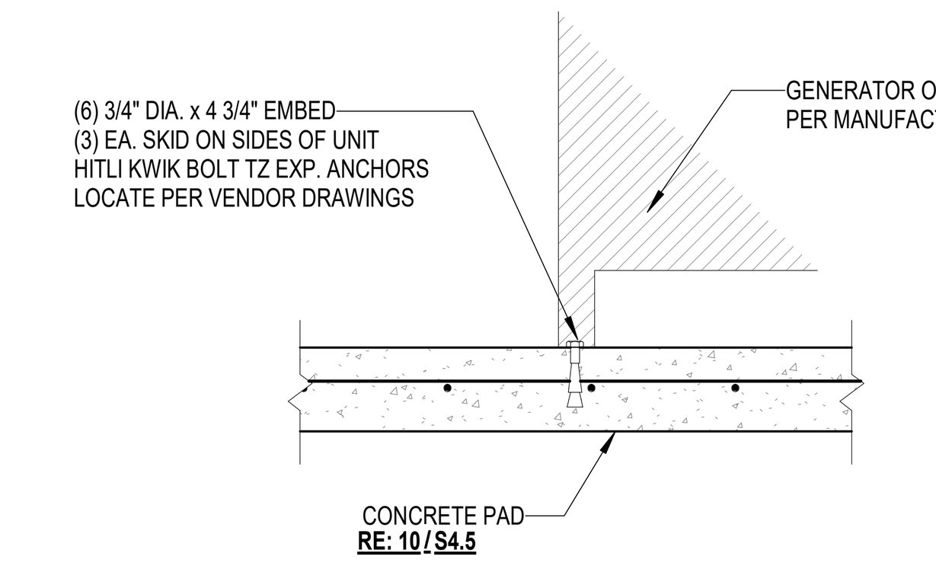
3 TYPICAL BOLLARD DETAIL
3/4" = 1'-0"

1. GENERAL CONTRACTOR TO COORDINATE WITH THE MECHANICAL DRAWINGS AND SPECIFICATIONS TO DETERMINE LOCATIONS OF HOUSEKEEPING PADS, AND TO PROVIDE WHERE REQUIRED, IF NON ARE SHOWN ON THE STRUCTURAL DRAWINGS.

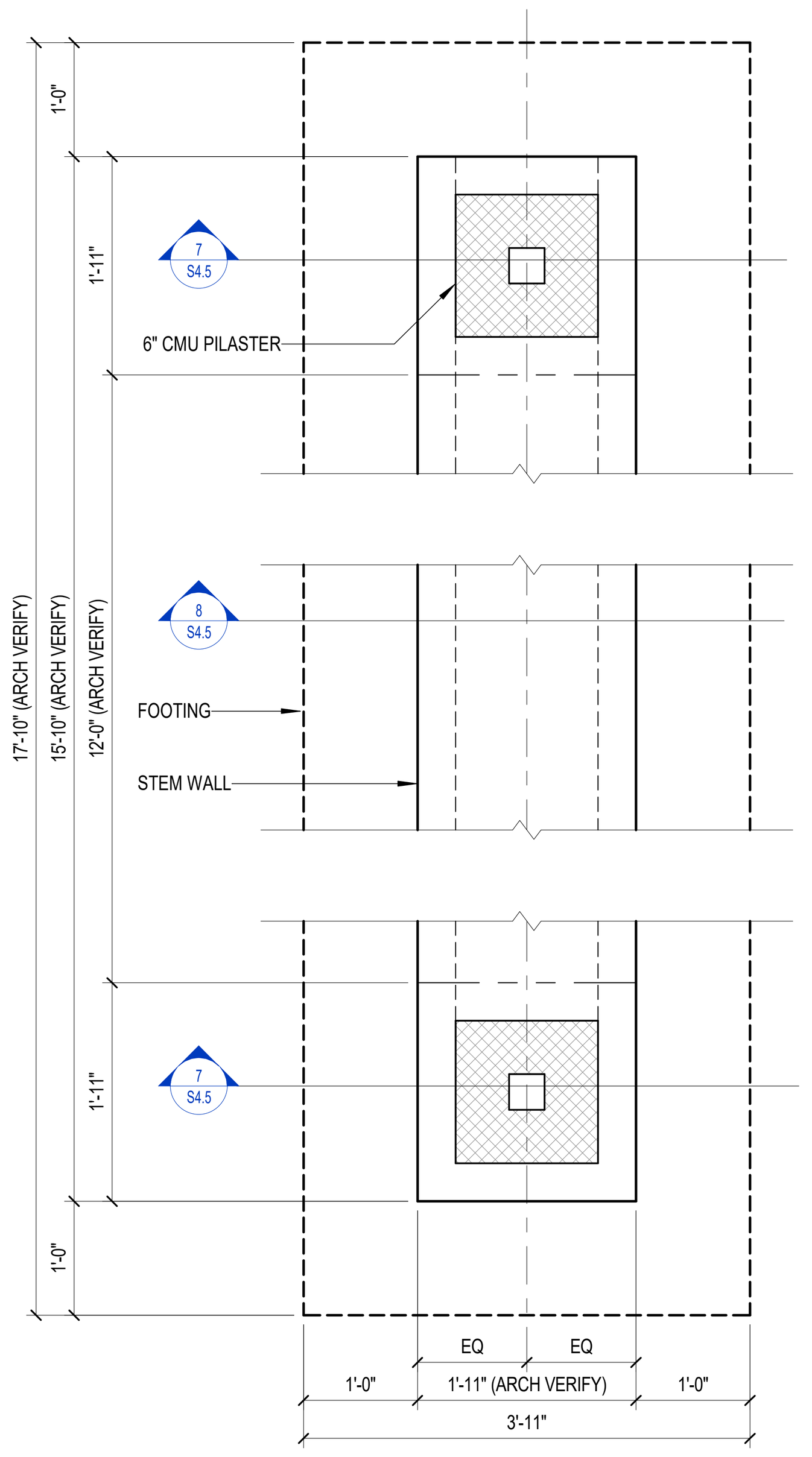
2. COORDINATE ALL PAD DIMENSIONS, AND VERIFY ADEQUACY WITH THE MECHANICAL ENGINEER AND THE EQUIPMENT REQUIREMENTS.



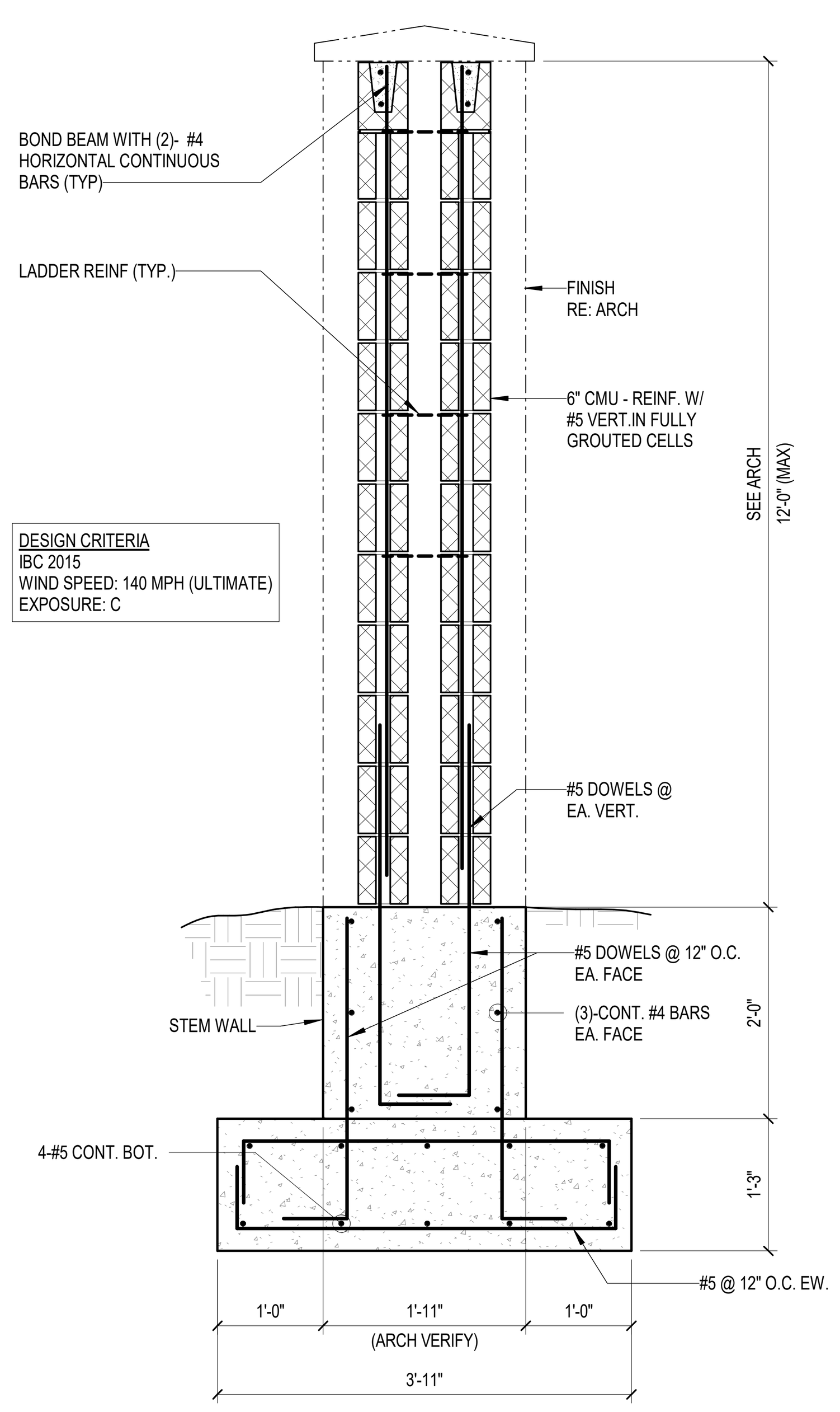
4 TYPICAL PAD BASE DETAIL
3/4" = 1'-0"



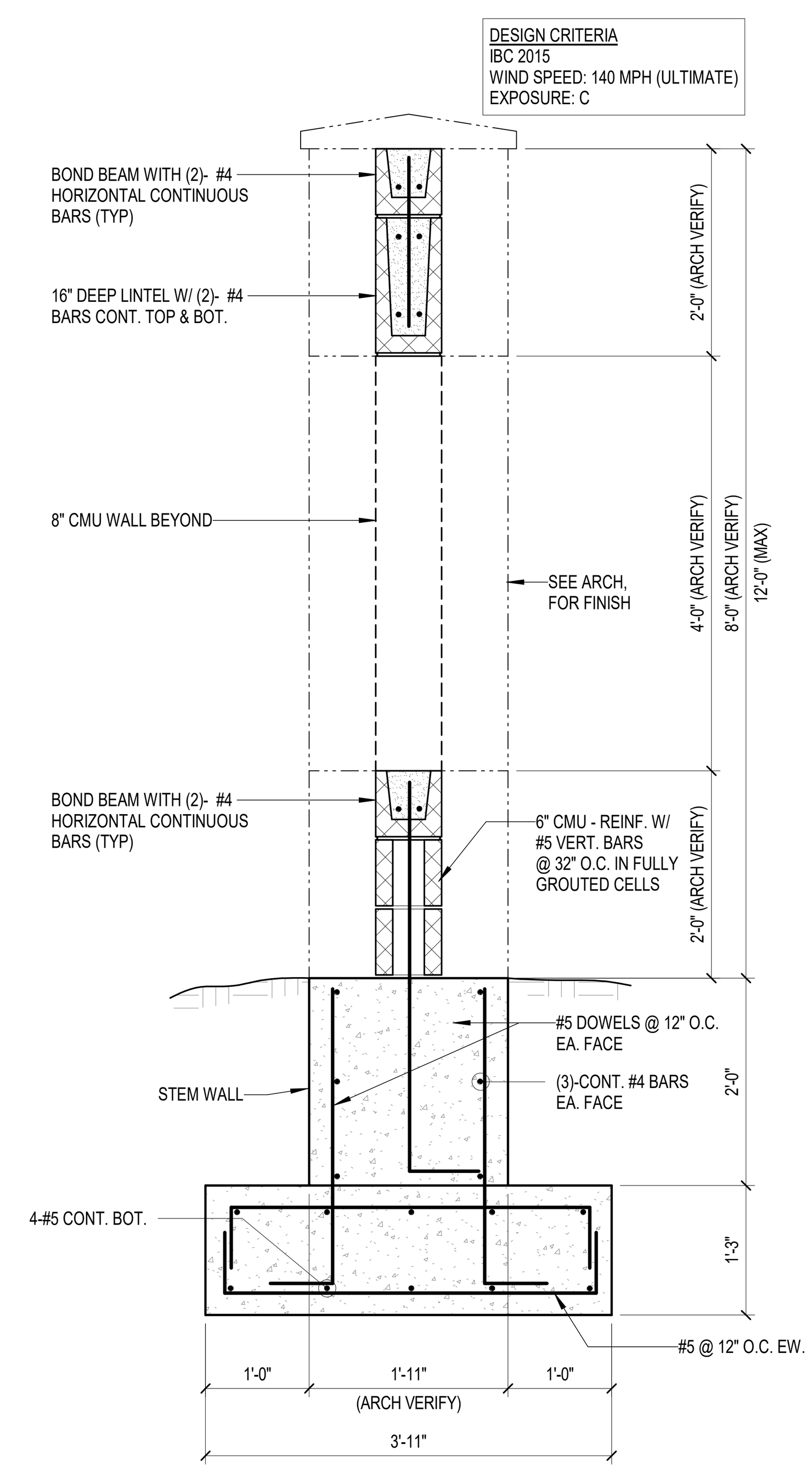
5 GENERATOR ANCHORAGE DETAIL
3/4" = 1'-0"



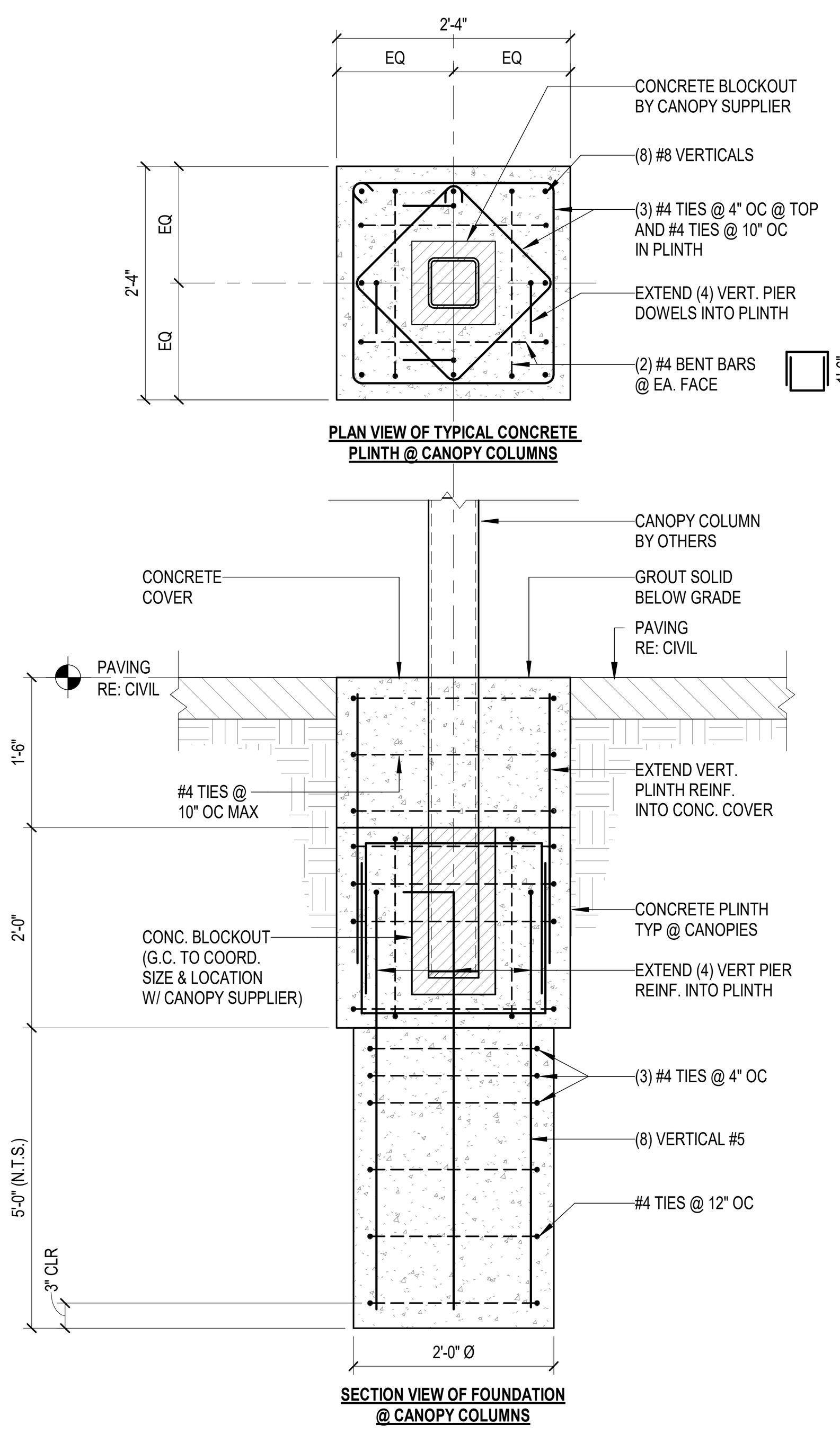
6 MONUMENT SIGN - PLAN
3/4" = 1'-0"



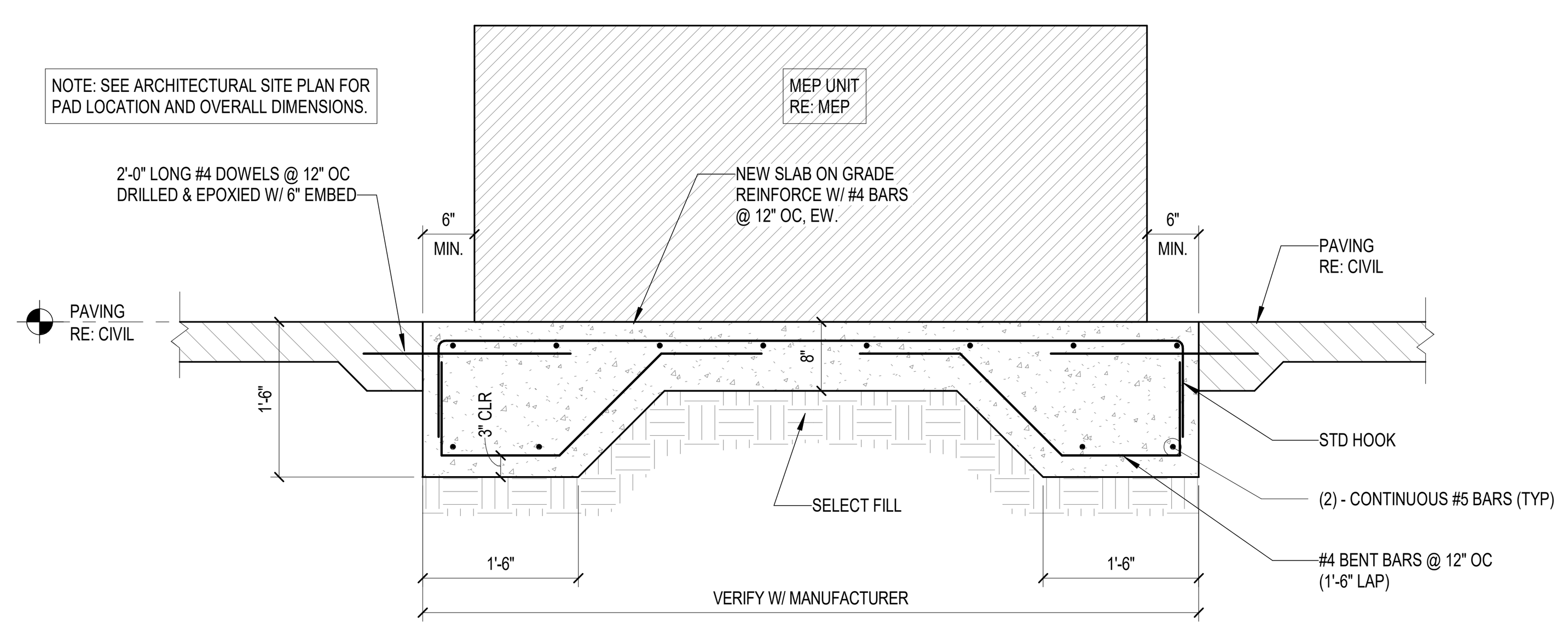
7 MONUMENT SIGN
3/4" = 1'-0"



8 MONUMENT SIGN
3/4" = 1'-0"



9 TYPICAL CANOPY FOUNDATION SECTION
3/4" = 1'-0"



10 FOUNDATION AT GENERATOR
3/4" = 1'-0"

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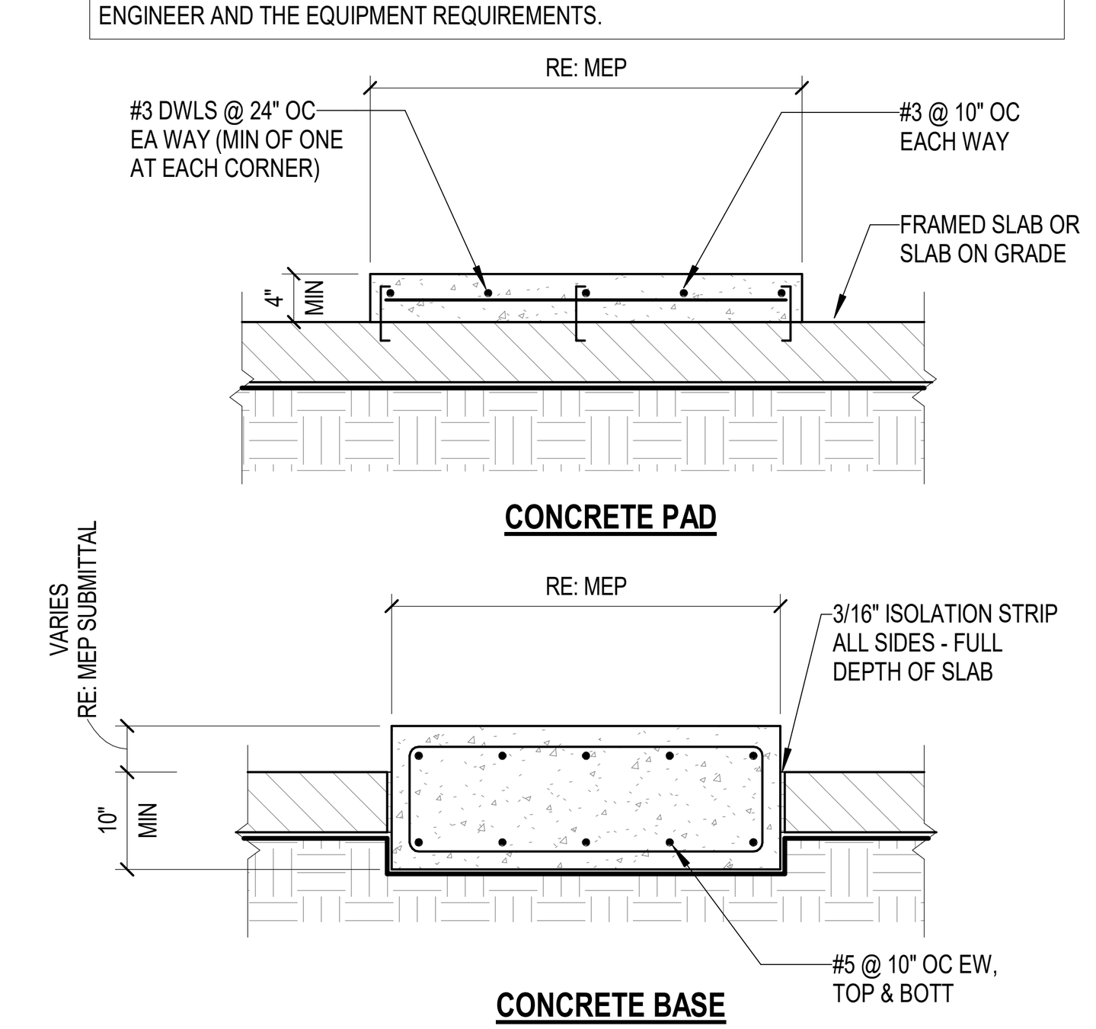

11 TYPICAL CHILLER PAD BASE DETAIL
3/4" = 1'-0"

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Dally + ASSOCIATES
Texas Registered Engineering Firm F-00426

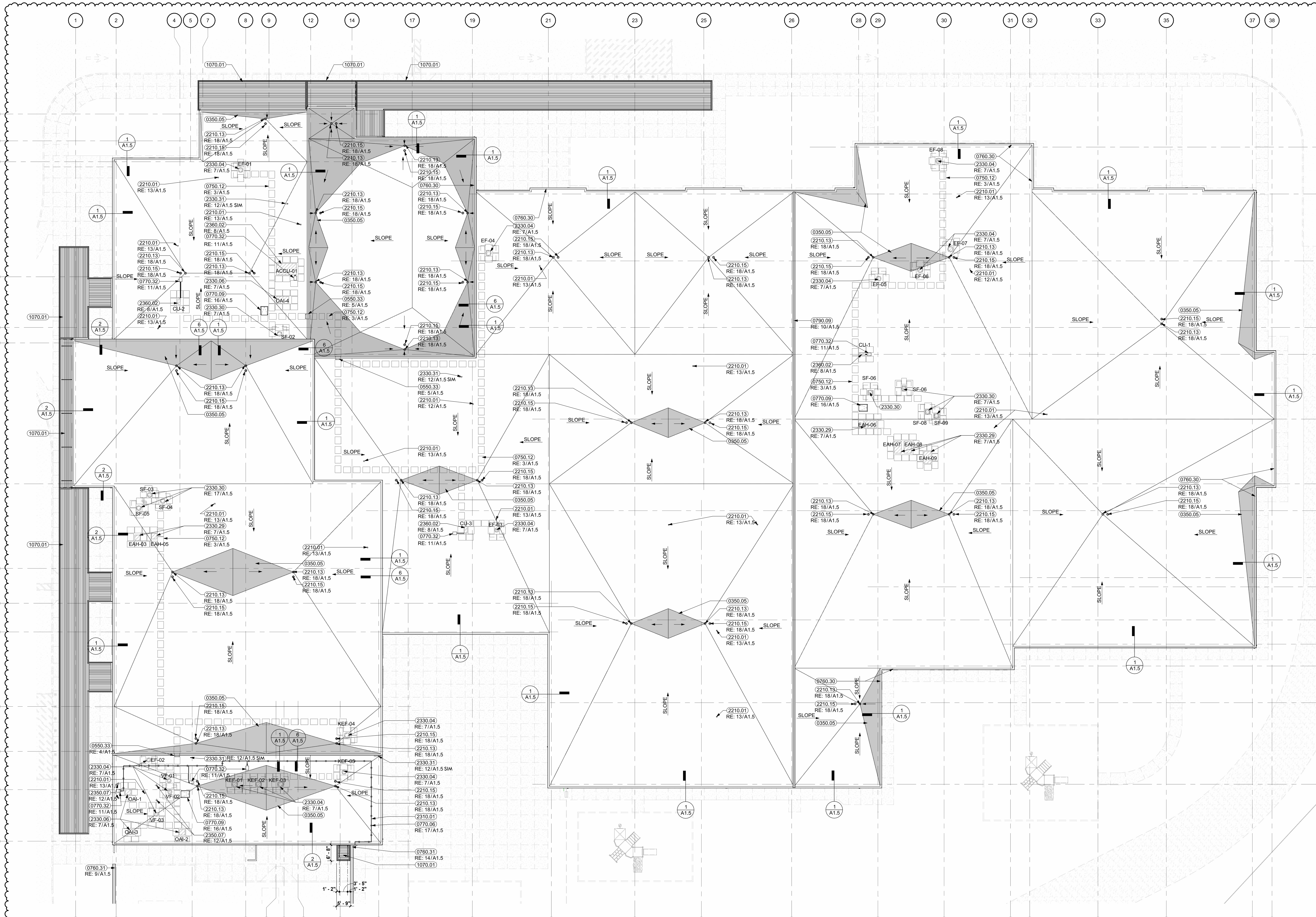
DATE	09/26/2024
DRAWN BY	RT
CHECKED BY	SI
BRW PROJECT NUMBER	223117.00

NEW CANEY ISD ELEMENTARY SCHOOL NUMBER 12
HIGHWAY 59 AND FUTURE VIA CORSICA DRIVE

NO.	REVISION	DATE
1	ADDENDUM #1	09/23/2024
2	ADDENDUM #2	09/26/2024

S4.5

TYPICAL SITE FOUNDATION DETAILS



1 ROOF PLAN

1/16" = 1'-0"

PLAN NORTH · TRUE NORTH

KEYNOTES

0350.05	TAPERED (STAIR-STEPPED) INSULATION BOARD AS REQUIRED TO PROVIDE SLOPE
0550.33	METAL LADDER
0750.12	WALKWAY PAD
0760.30	PREFINISHED EDGE TRIM
0760.31	PREFINISHED METAL COPING SYSTEM
0770.06	PREFABRICATED PIPE PEDESTAL
0770.09	ROOF HATCH WITH INTEGRAL CURB AND COUNTERFLASHING
0770.32	REMOVABLE 16 GA. STAINLESS STEEL HOOD, CROSS-BREAK OR SLOPE FOR DRAINAGE
0790.09	ROOF EXPANSION JOINT SYSTEM
1070.01	PRE-MANUFACTURED EXTERIOR ALUMINUM CANOPY SYSTEM
2210.01	PLUMBING VENT
2210.13	ROOF DRAIN
2210.15	OVERFLOW ROOF DRAIN
2310.01	GAS PIPING (PAINT WHERE EXPOSED)
2330.04	EXHAUST FAN
2330.06	OUTSIDE AIR INTAKE HOOD
2330.29	EXHAUST AIR HOOD
2330.30	SUPPLY FAN
2330.31	DRYER EXHAUST VENT
2350.07	HOT FLUE VENT WITH BASE AND COLLAR
2360.02	HVAC CONDENSING UNIT

REGISTERED ARCHITECT · JEFFREY S. CHOYCE · 16762 · STATE OF TEXAS · 9/9/24

BROWN REYNOLDS WATFORD ARCHITECTS
4501 MAGNOLIA COVE DRIVE
SUITE 250
HOUSTON, TEXAS 77345
281-361-3800
WWW.BRWARCH.COM

DATE	SEPTEMBER 9, 2024
DRAWN BY	HN, AH, LB
CHECKED BY	JSC
BRW PROJECT NUMBER	223117.00

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

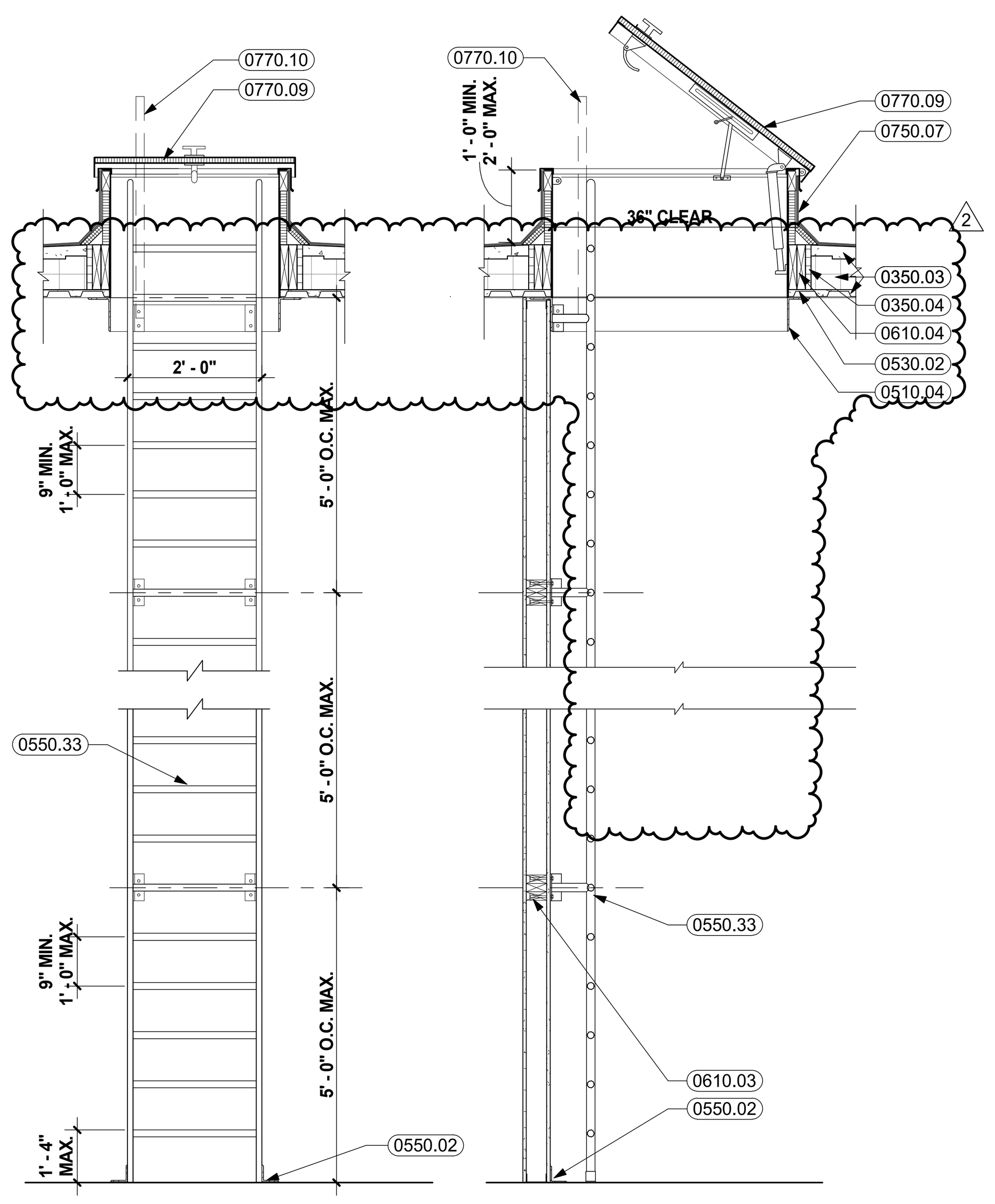
NO.	REVISION	DATE
2	ADDENDUM NO.2	10/2/2024

A1.4

ROOF PLAN

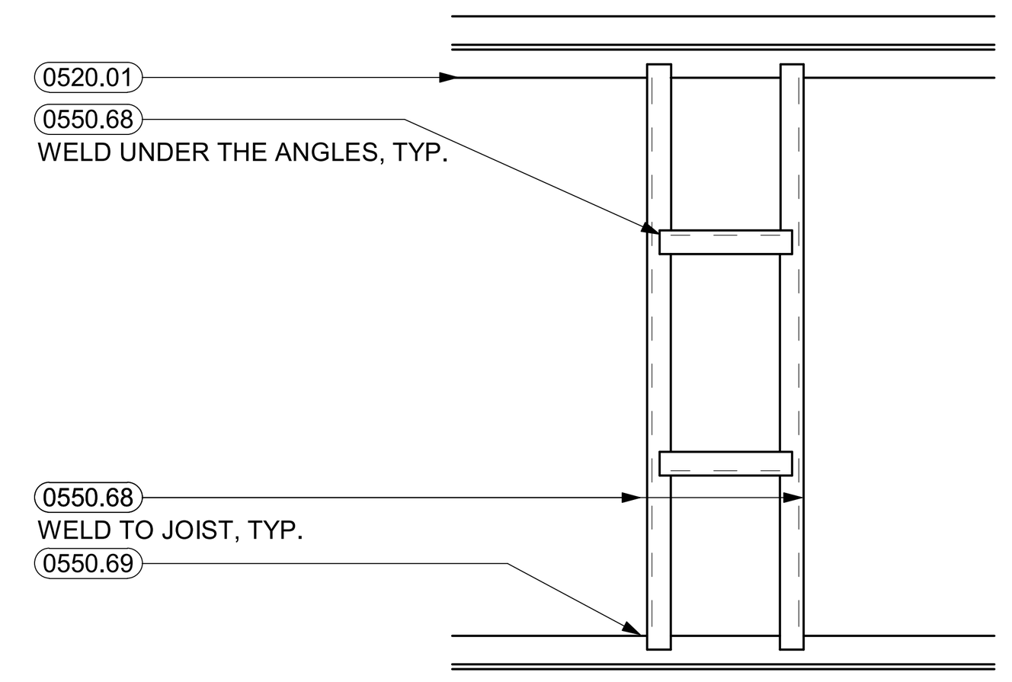
KEYNOTES

0350.03	LIGHTWEIGHT INSULATING CONCRETE ROOF WITH 6" EXPANDED POLYSTYRENE INSULATION BOARD (EPS)
0350.04	COMPRESSIBLE FILLER
0350.05	TAPERED (STAIR-STEPPED) INSULATION BOARD AS REQUIRED TO PROVIDE SLOPE
0405.01	FLASHING END DAM
0420.03	FACE BRICK
0420.10	4" CONCRETE MASONRY UNITS
0420.14	8" CONCRETE MASONRY UNITS
0420.23	CONCRETE MASONRY BOND BEAM
0440.07	STONE VENEER
0510.01	STEEL STRUCTURE (RE: STRUCTURAL)
0510.04	STEEL ANGLE (RE: STRUCTURAL)
0510.05	STEEL CHANNEL (RE: STRUCTURAL)
0510.08	STEEL BENT PLATE (RE: STRUCTURAL)
0520.01	STEEL JOIST (RE: STRUCTURAL)
0530.02	METAL ROOF DECK (RE: STRUCTURAL)
0540.02	6" METAL STUDS (C.F.M.F.) AT 16" O.C. MAXIMUM
0550.02	3" X 3" X 1/4" STEEL ANGLE
0550.05	2" X 2" X 5/16" STEEL ANGLE
0550.06	3/4" DIAMETER STEEL ROD
0550.13	4" X 4" X 1/2" STEEL "T" PLATE
0550.14	5" X 6" X 1/2" STEEL STAINLESS PLATE, TYPICAL BOTH SIDE WITH (4) 3/8" S.S. BOLTS
0550.33	METAL LADDER
0550.66	LADDER BRACKET
0550.67	2" X 2" X 1/4" ANGLE
0550.68	3" X 3" X 1/4" ANGLE OR PER STRUC. FOR LARGER OPENINGS
0550.69	WELD AT UNDERSIDE OF BAR JOIST, TYP
0610.03	2X WOOD BLOCKING
0610.04	2X PRESSURE TREATED WOOD BLOCKING
0610.08	2 LAYERS 3/4" EXTERIOR GRADE PLYWOOD BLOCKING
0720.02	6 1/4" BATT INSULATION
0720.04	1 1/2" CONTINUOUS RIGID INSULATION
0720.16	SEMI-RIGID MINERAL WOOL INSULATION FILLER / BACKER MATERIAL
0725.04	FLUID-APPLIED MEMBRANE AIR BARRIER SYSTEM
0725.07	FLUID-APPLIED MEMBRANE AIR BARRIER DETAIL TRANSITION SYSTEM
0750.01	ROOFING BASE FLASHING SYSTEM
0750.03	4" CANT STRIP
0750.06	WRAP HIGH TEMPERATURE SELF-SEALING UNDERLAYMENT MEMBRANE TO OUTSIDE FACE OF BLOCKING
0750.07	MODIFIED BITUMEN MEMBRANE ROOFING SYSTEM
0750.12	WALKWAY PAD
0750.14	1/2" ROOF COVER BOARD
0750.21	HOT AIR-WELD
0760.01	THROUGH-WALL FLASHING WITH WEEPS AT 2'-0" O.C. AND MORTAR NET
0760.10	GALVANIZED STRAP
0760.14	METAL CLEAT
0760.30	PREFINISHED EDGE TRIM
0760.31	PREFINISHED METAL COPING SYSTEM
0760.32	CONTINUOUS CLEAT
0760.37	CONTINUOUS STEEL STRAP ATTACHED TO EACH STUD
0760.40	TERMINATION BAR AND PREFINISHED FLASHING CAP
0760.49	THERMOPLASTIC SPLIT PIPE SEAL
0760.50	HOOK SEAM
0760.51	2 PC, PREFINISHED METAL END PLATE, SOLDER ALL JOINTS WATERTIGHT
0760.52	6" PREFINISHED METAL BACKER & COVER PLATES @ ALL JOINTS
0770.04	PREFINISHED METAL REGLET WITH SEALANT AND COUNTERFLASHING
0770.06	PREFABRICATED PIPE PEDESTAL
0770.07	PREFABRICATED EQUIPMENT SUPPORT
0770.08	EQUIPMENT CURB WITH GALVANIZED COUNTERFLASHING
0770.09	ROOF HATCH WITH INTEGRAL CURB AND COUNTERFLASHING
0770.10	LADDER-UP SAFETY POST
0770.13	24 GAUGE GALVANIZED CAP. MITER, RIVET AND SOLDER ENDS WATERTIGHT. ANCHOR 12" O.C. (ONE MIN. PER SIDE)
0770.14	PRESSURE BAR WITH MECHANICAL FASTENERS
0770.15	REMOVABLE STAINLESS STEEL COUNTERFLASHING
0770.16	4 LB. LEAD FLASHING. SET IN PLASTIC CEMENT AND EXTEND 2'-0" FROM DRAIN
0770.31	STAINLESS STEEL CAP WITH STAINLESS STEEL CLAMPING RING
0770.32	REMOVABLE 16 GA. STAINLESS STEEL HOOD, CROSS-BREAK OR SLOPE FOR DRAINAGE
0770.33	SHEET METAL OT FLEX TUBE COLLAR
0770.34	BIRD SCREEN
0790.01	SEALANT WITH BACKER ROD AS REQUIRED
0790.05	METAL ROOF EXPANSION JOINT COVER
0790.07	SET IN BED OF SEALANT
0790.12	WATER CUT-OFF MASTIC
0790.13	SEALANT
0790.14	STAINLESS STEEL DRIVE- CLEAT COVER JOINT
0790.15	STAINLESS STEEL EXP. JT. COVER, TAPER END DOWN
0790.16	STAINLESS STEEL SCREWS WITH NEOPRENE WASHERS @ 12" O.C.
0920.27	1/2" EXTERIOR GYPSUM SHEATHING
0920.28	5/8" GYPSUM BOARD (TYPE X)
2210.01	PLUMBING VENT
2210.13	ROOF DRAIN
2210.14	ROOF DRAIN PIPING
2210.15	OVERFLOW ROOF DRAIN
2210.21	CONDENSATE PIPING
2310.01	GAS PIPING (PAINT WHERE EXPOSED)
2320.03	REFRIGERANT PIPING
2350.07	HOT FLUE VENT WITH BASE AND COLLAR
2620.01	CONDUIT



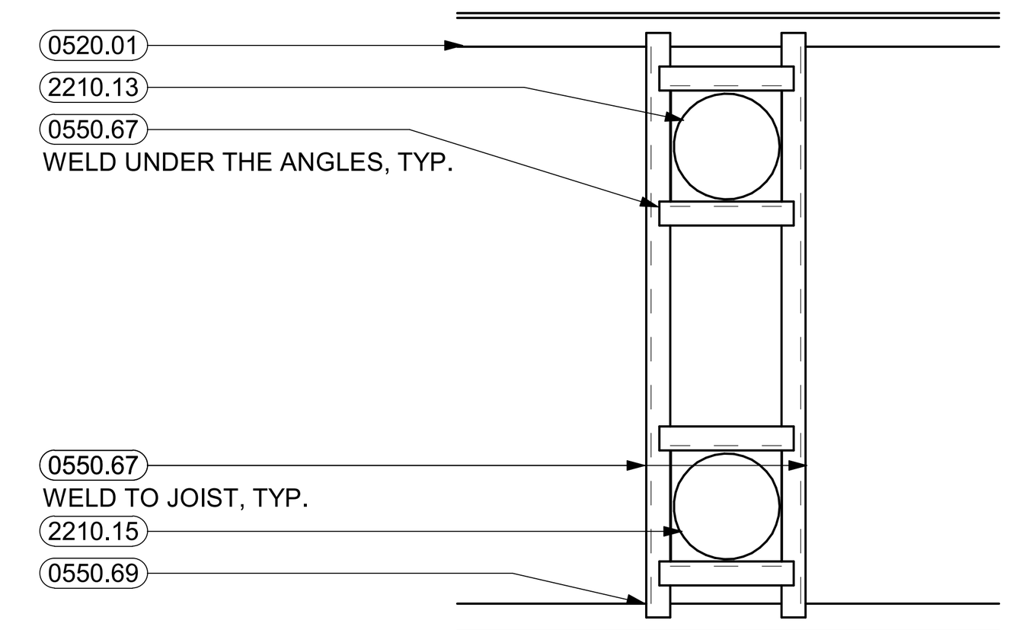
16 ROOF HATCH & LADDER
1/2" = 1'-0"

NOTES:
1. INSTALL BRACING PRIOR TO INSTALLATION OF CURBS
2. CONTRACTOR TO VERIFY ALL DIMENSIONS

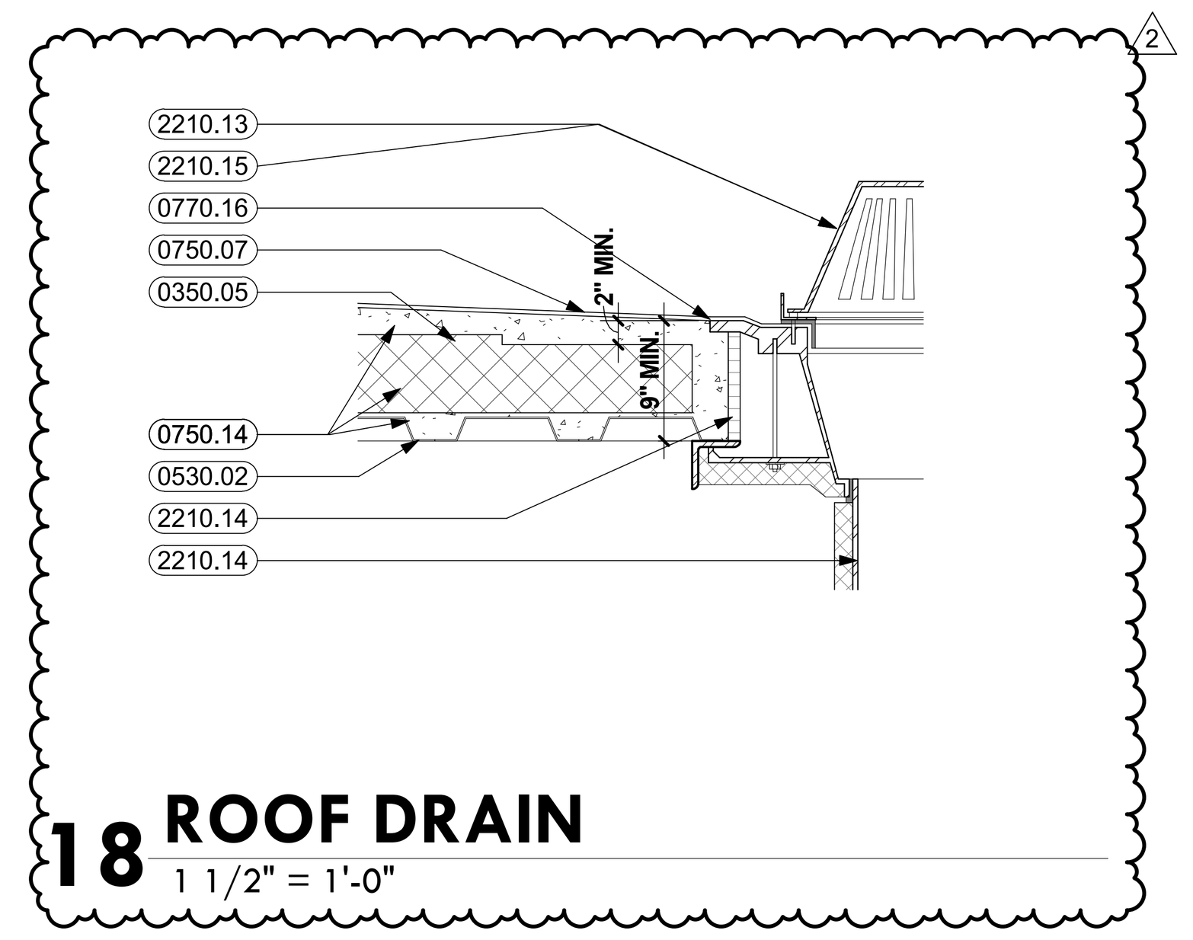


20 CURB SUPPORT
3/4" = 1'-0"

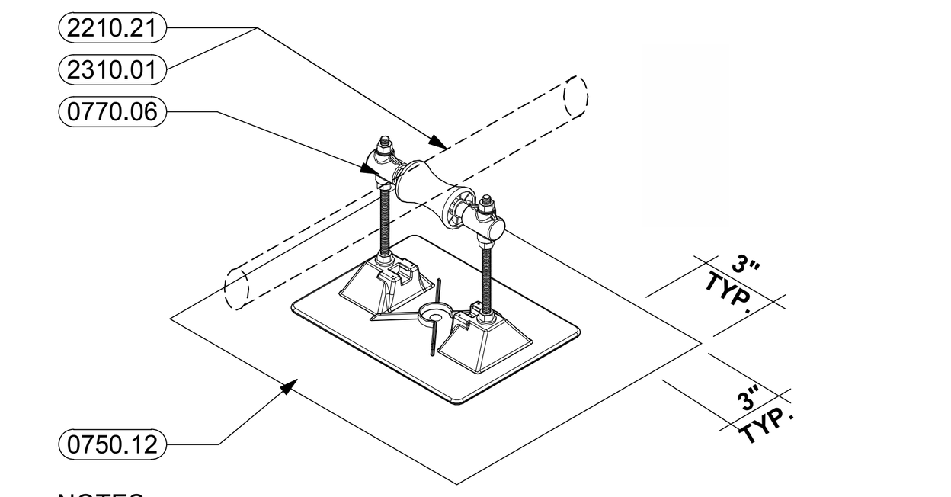
NOTES:
1. INSTALL BRACING PRIOR TO INSTALLATION OF ROOF & OVERFLOW DRAINS
2. CONTRACTOR TO VERIFY DIMENSIONS WITH PLUMBER
3. PROVIDE SIMILAR FRAME @ ALL MECHANICAL OPENINGS IN ROOF, EXCEPT 3"X3"X1/4" ANGLE FRAMES OR AS NOTED ON STRUC. DWGS FOR LARGER OPENINGS



19 ROOF DRAIN SUPPORT
3/4" = 1'-0"

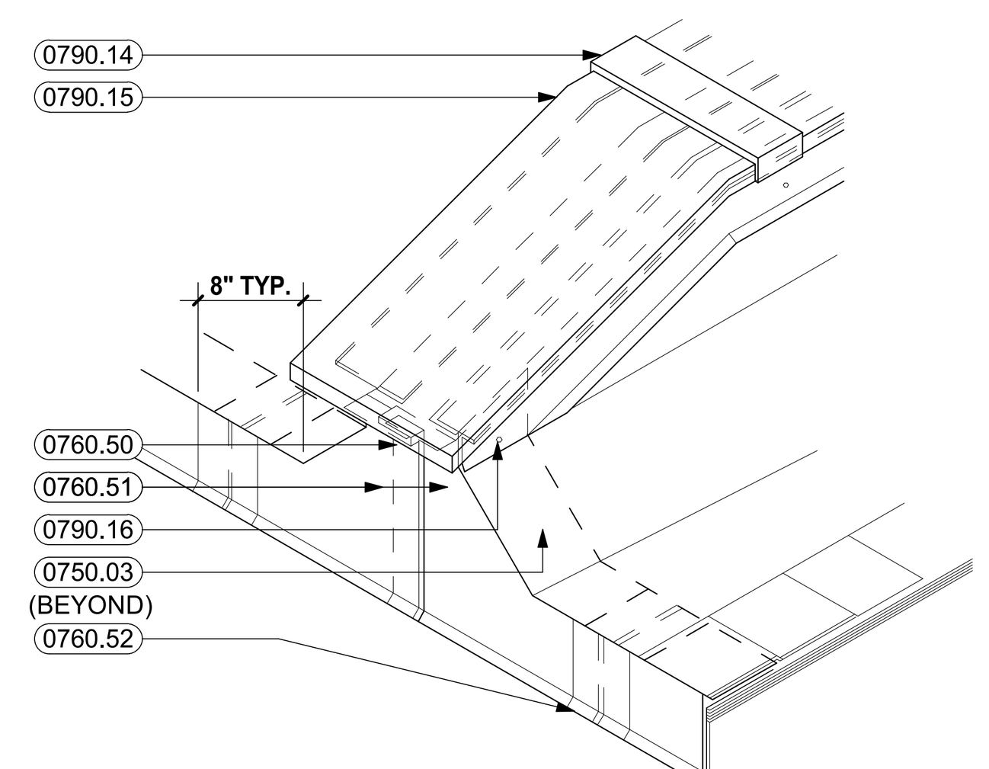


18 ROOF DRAIN
1 1/2" = 1'-0"

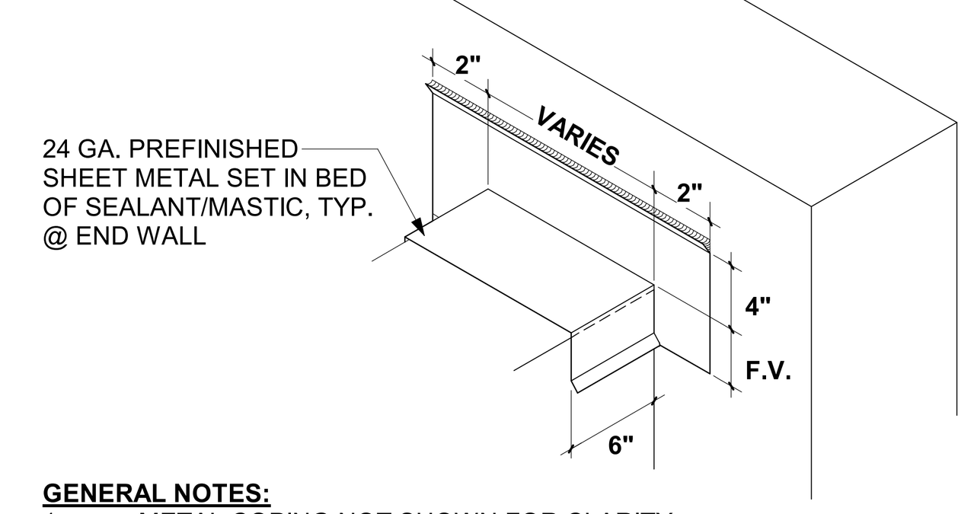


NOTES
1. GAS PIPING SUPPORT SHOW IS FOR PIPE SMALLER THAN 2 1/2" IN DIAMETER. THIS DETAIL IS FOR REFERENCE ONLY. RE: PLUMB FOR ADDITIONAL INFORMATION
2. FIELD LOCATE ROOF STRUCTURAL SUPPORTS AND PLACE CONCRETE BASE OF PIPE SUPPORT OVER ROOF SUPPORT ONLY. PROVIDE BASE OF ADEQUATE LENGTH TO SPAN ROOF JOIST TO PREVENT SUPPORTS SETTING ON ROOF DECK ONLY
3. INSTALL EVERY 6'-0" O.C. @ ALL ROOF PIPING AND CONCUIT. PROVIDE AN EXTRA SUPPORT DEACH SIDE OF CORNERS WHERE PIPE CHANGES DIRECTION
4. PROVIDE 12"X12" WALK PAD UNDER WALK PAD SUPPORT

17 PIPE SUPPORT
1 1/2" = 1'-0"

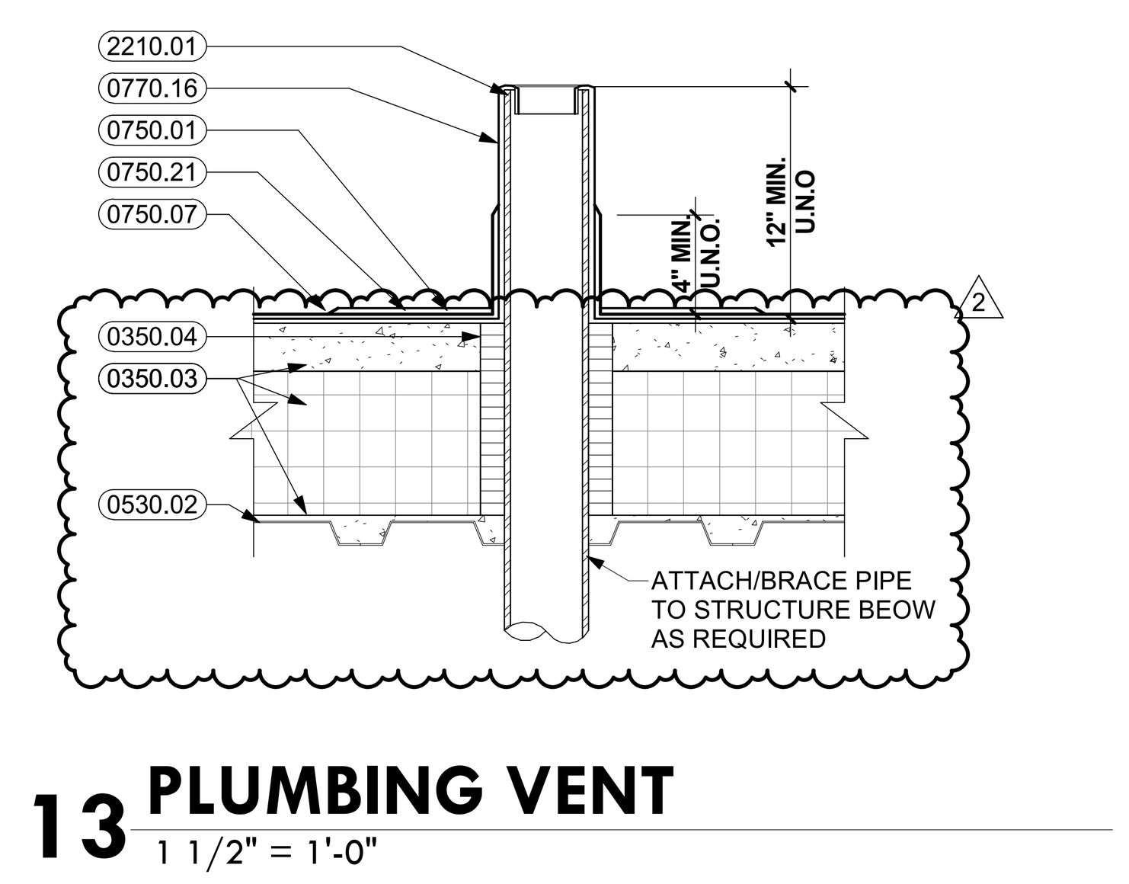


15 EXP JNY TERMINATION
1 1/2" = 1'-0"



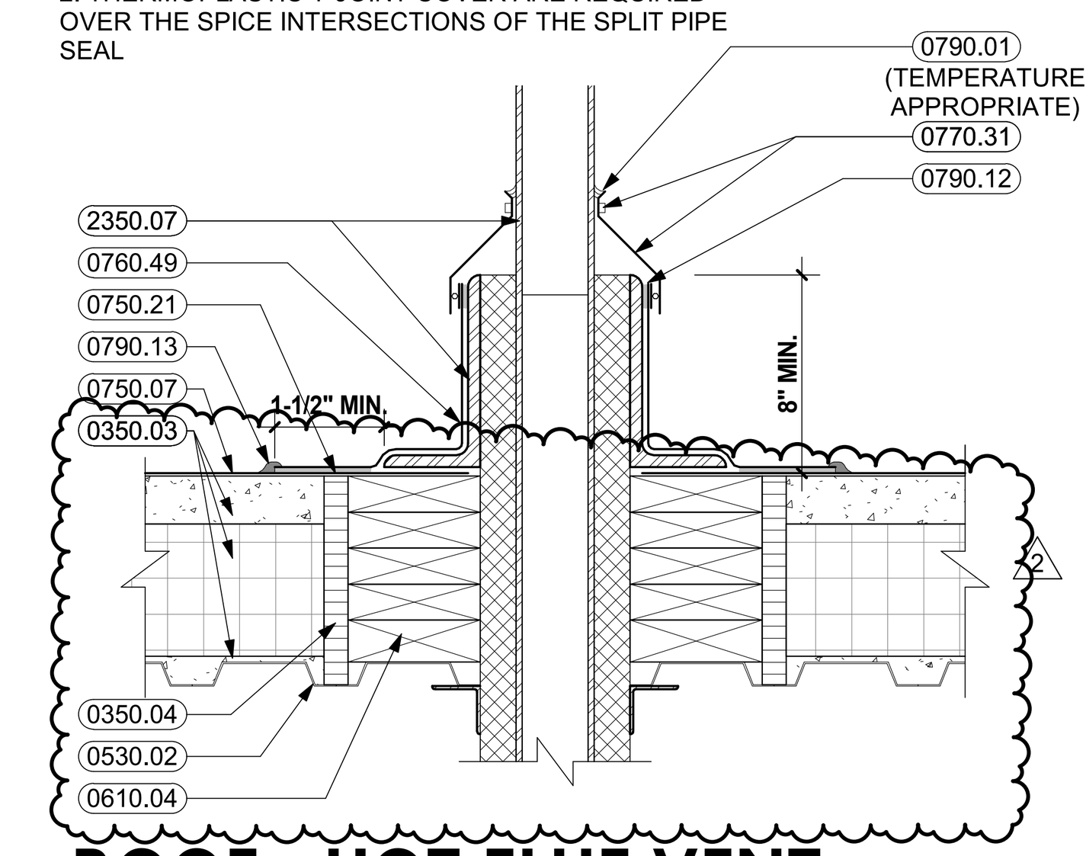
GENERAL NOTES:
1. METAL COPING NOT SHOWN FOR CLARITY
2. TURN COPING UP 4" MIN. @ WALL
3. INSTALL PREFINISHED COPING CAP FLASHING.
4. POP RIVET AND SEAL ALL JOINTS WATER TIGHT

14 COPING CAP TERMINATION
1" = 1'-0"

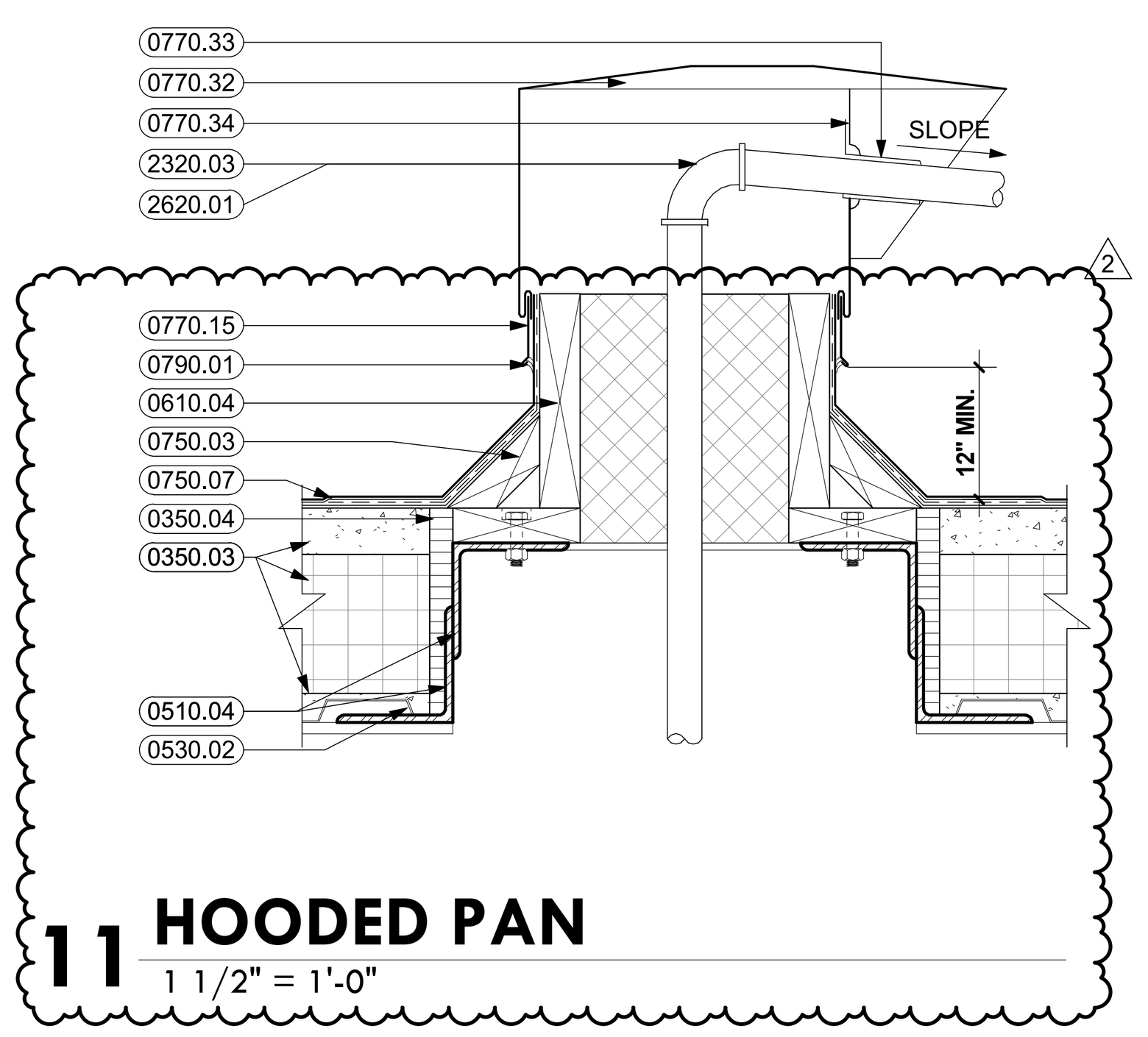


13 PLUMBING VENT
1 1/2" = 1'-0"

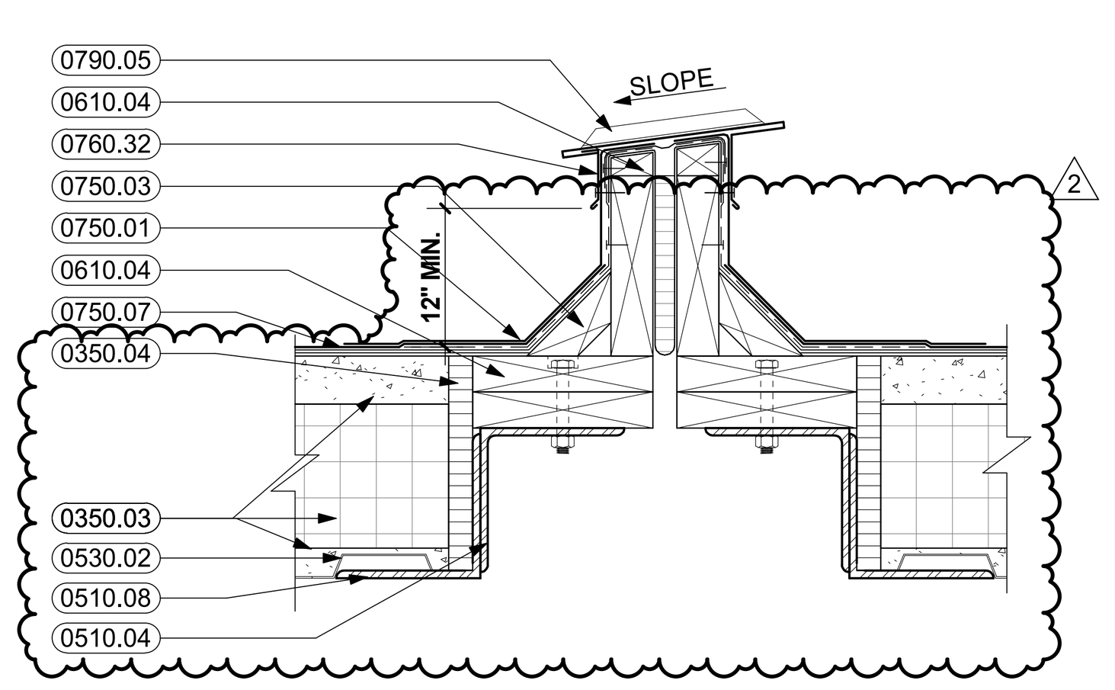
NOTES:
1. TEMPERATURE OF MTL. COLLAR MUST NOT EXCEED 160 DEGREE FAHRENHEIT
2. THERMOPLASTIC T-JOINT COVER ARE REQUIRED OVER THE SPICE INTERSECTIONS OF THE SPLIT PIPE SEAL



12 ROOF - HOT FLUE VENT
1 1/2" = 1'-0"

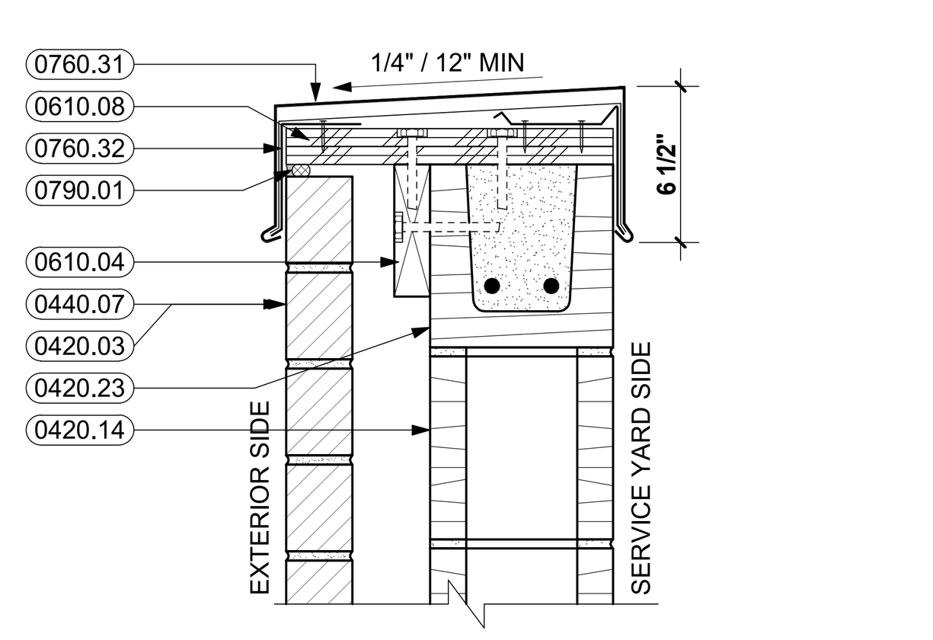


11 HOODED PAN
1 1/2" = 1'-0"

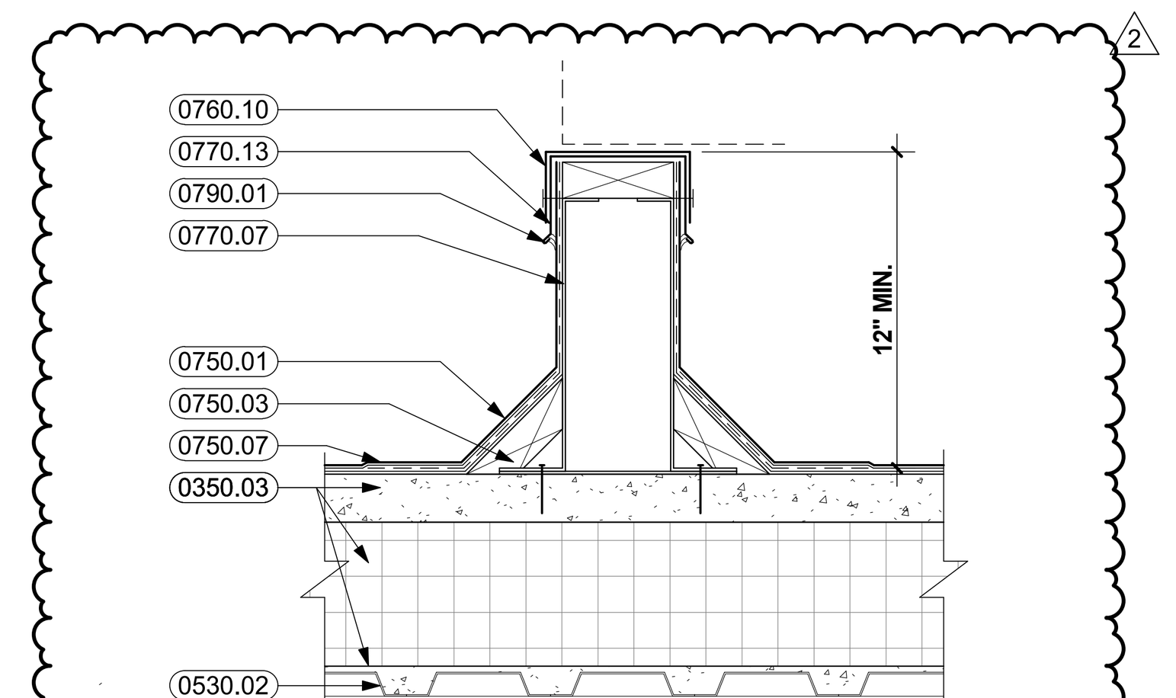


10 EXP JNY
1 1/2" = 1'-0"

NOTES:
PROVIDE EXPANSION JOINT EVERY 10' MAX, EXCEPT @ BENDS OR CORNERS WHERE EXPANSION JOINTS SHALL BE PLACED A MAX. OF 48" FROM CORNER/ BEND. ALL SEAMS & JOINTS SHALL BE SEALED. CORNERS SHALL BE FORMED WATERSIGHT, WELDED, AND SEALED.

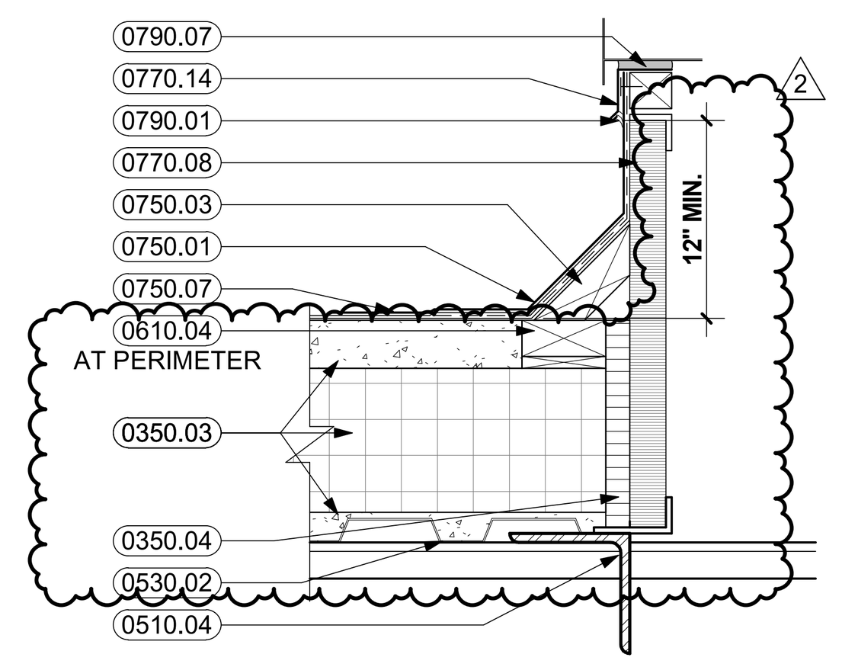


9 COPING CAP @ SCREEN WALL
1 1/2" = 1'-0"

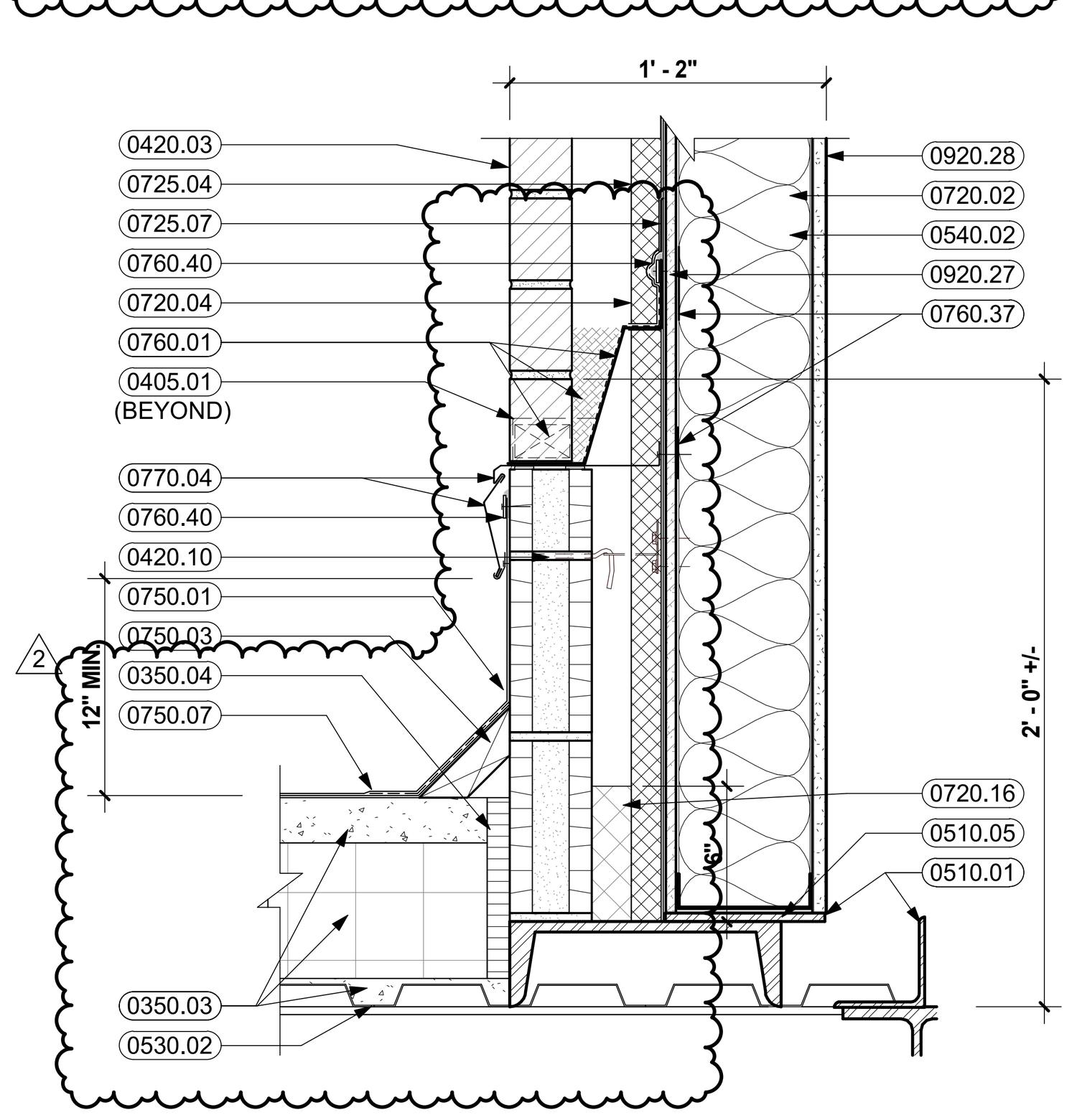


8 EQUIPMENT SUPPORT
1 1/2" = 1'-0"

NOTES:
1. RECEIVER SHOULD BE INSTALLED BEFORE UNIT ON ALL HVAC CURBS
2. BONDING ADHESIVE IS NOT REQ'D. WHEN THE FLASHING HT. IS 12" OR LESS & THE MEMBRANE IS FASTENED AS SHOWN ON TOP OF CURB. WHEN TRANSITION BAR IS USED BENEATH COUNTER FLASHING, BONDING ADHESIVE CAN BE ELIMINATED WHEN THE MEMBRANE HT. IS 18" OR LESS. RE: MANUF'R. INSTRUCTIONS.
3. WHEN MECHANICAL FASTENERS ARE USED TO PENETRATE THE MTL. COUNTER FLASHING, USE EPDM WASHERS & APPLY WATER CUT-OFF MASTIC UNDER COUNTER FLASHING
4. FRAME OUT OPENING PER ROOF CURB SUPPORT DETAIL

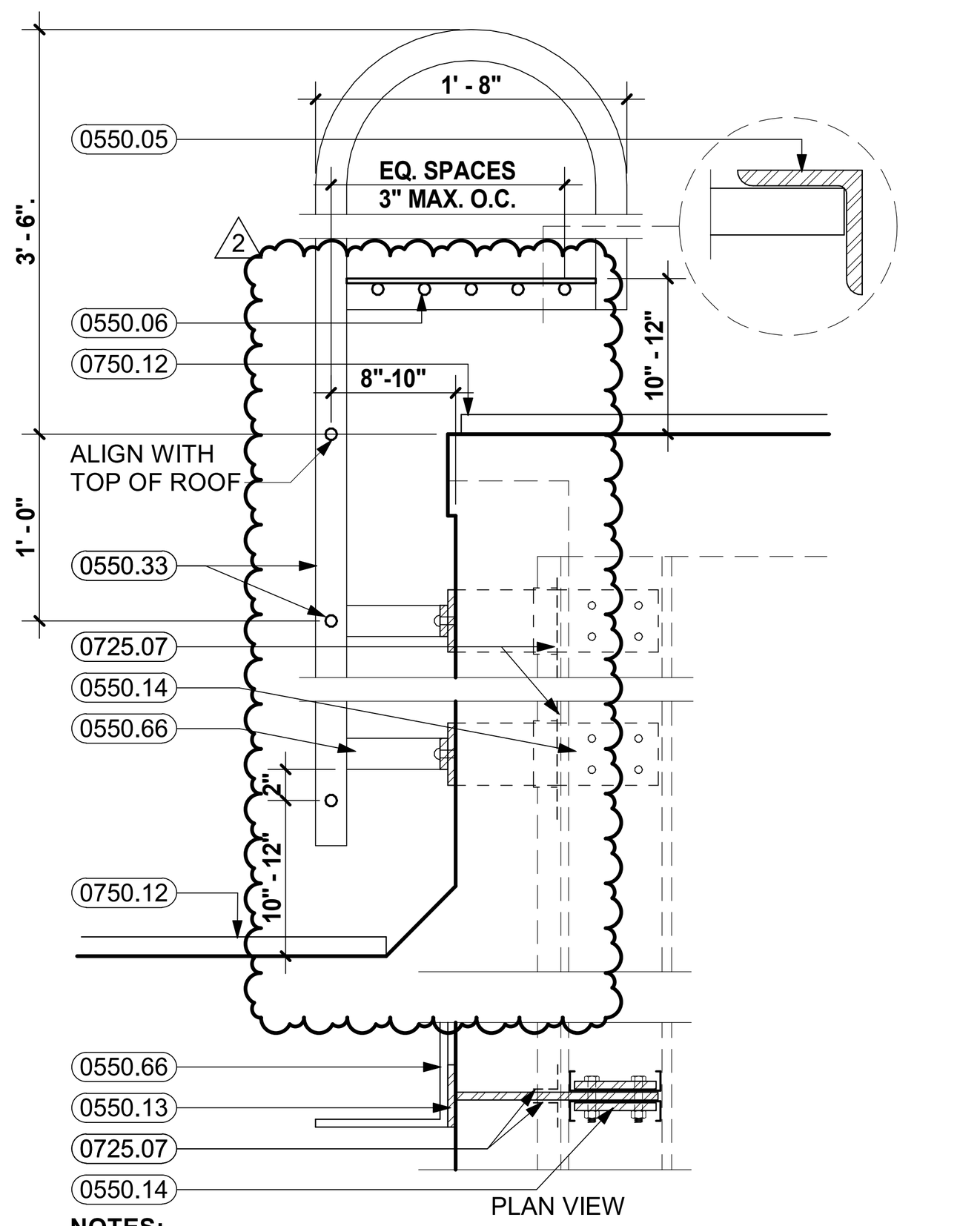


7 ROOF - CURB PREFAB
1 1/2" = 1'-0"



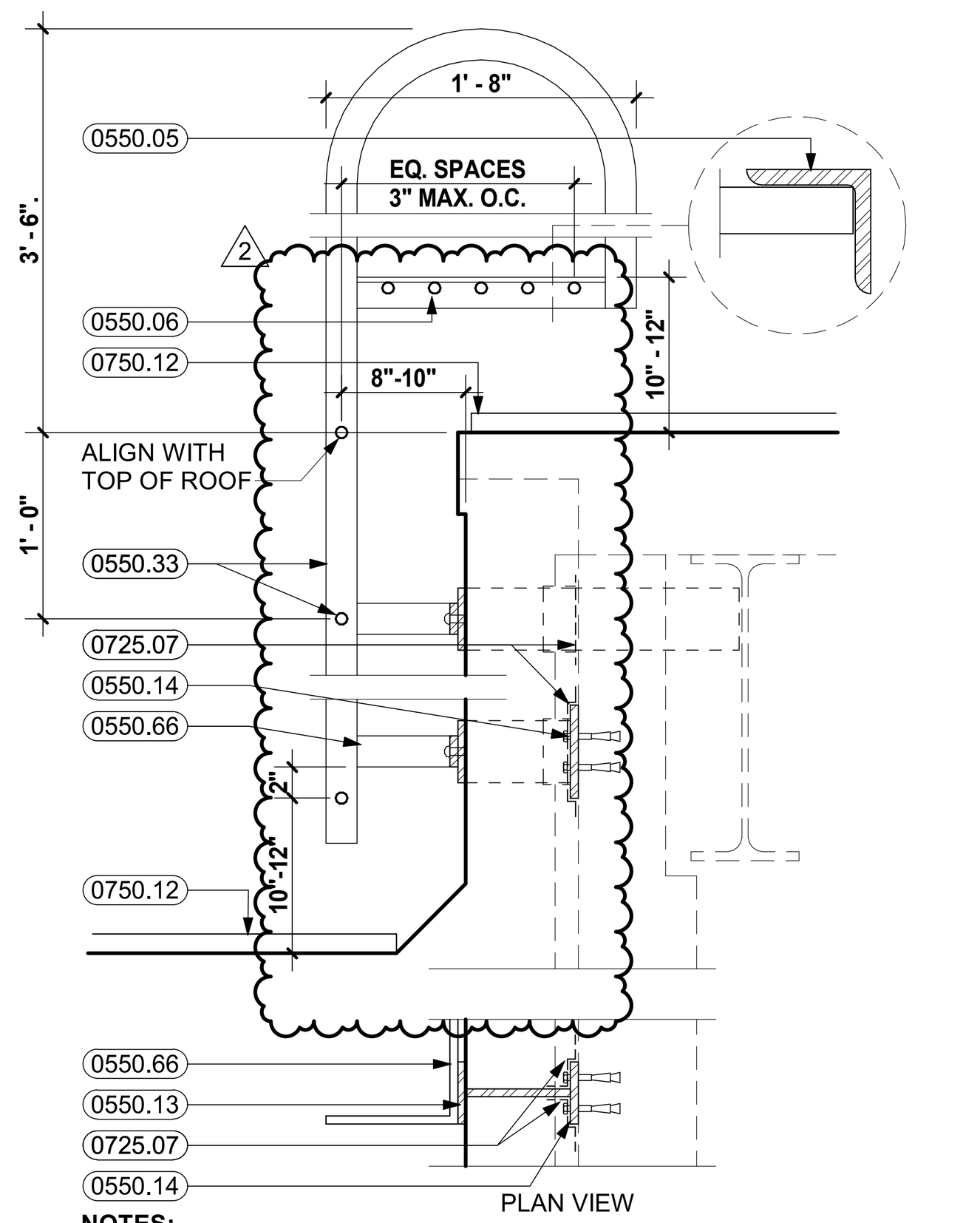
NOTES:
PROVIDE EXPANSION JOINT EVERY 10' MAX, EXCEPT @ BENDS OR CORNERS WHERE EXPANSION JOINTS SHALL BE PLACED A MAX. OF 48" FROM CORNER/ BEND. ALL SEAMS & JOINTS SHALL BE SEALED. CORNERS SHALL BE FORMED WATERSIGHT, WELDED, AND SEALED.

6 ROOF TRANSITION DETAIL
1 1/2" = 1'-0"



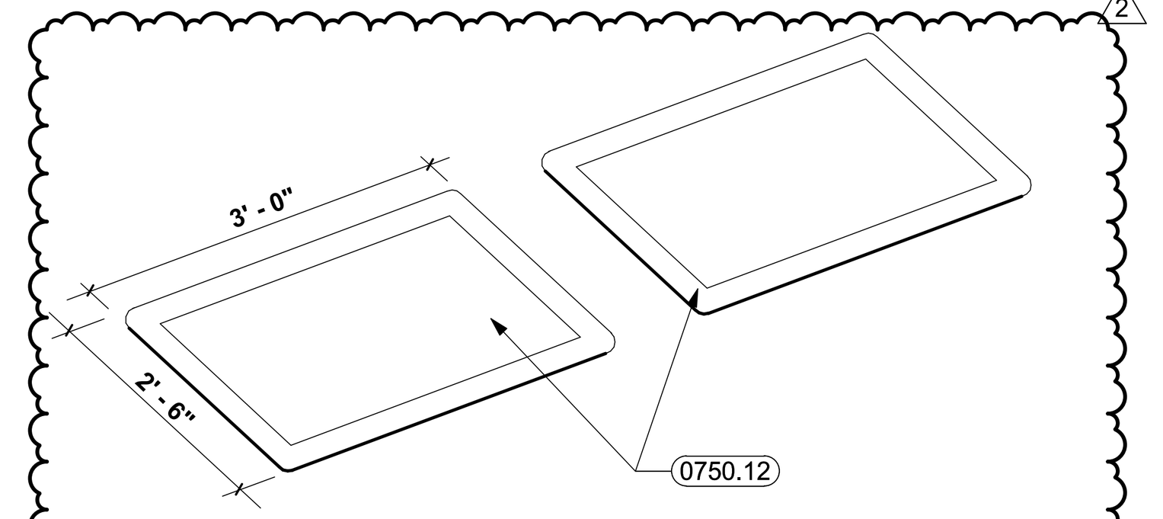
NOTES:
1. COORDINATE LADDER BRACKETS WITH LADDER SUPPORT AS REQUIRED
2. ROOF LADDER TO BE 30" WIDE, COORDINATE WITH ROOF SCUTTLE

5 LADDER W LANDING @ GYP
1" = 1'-0"



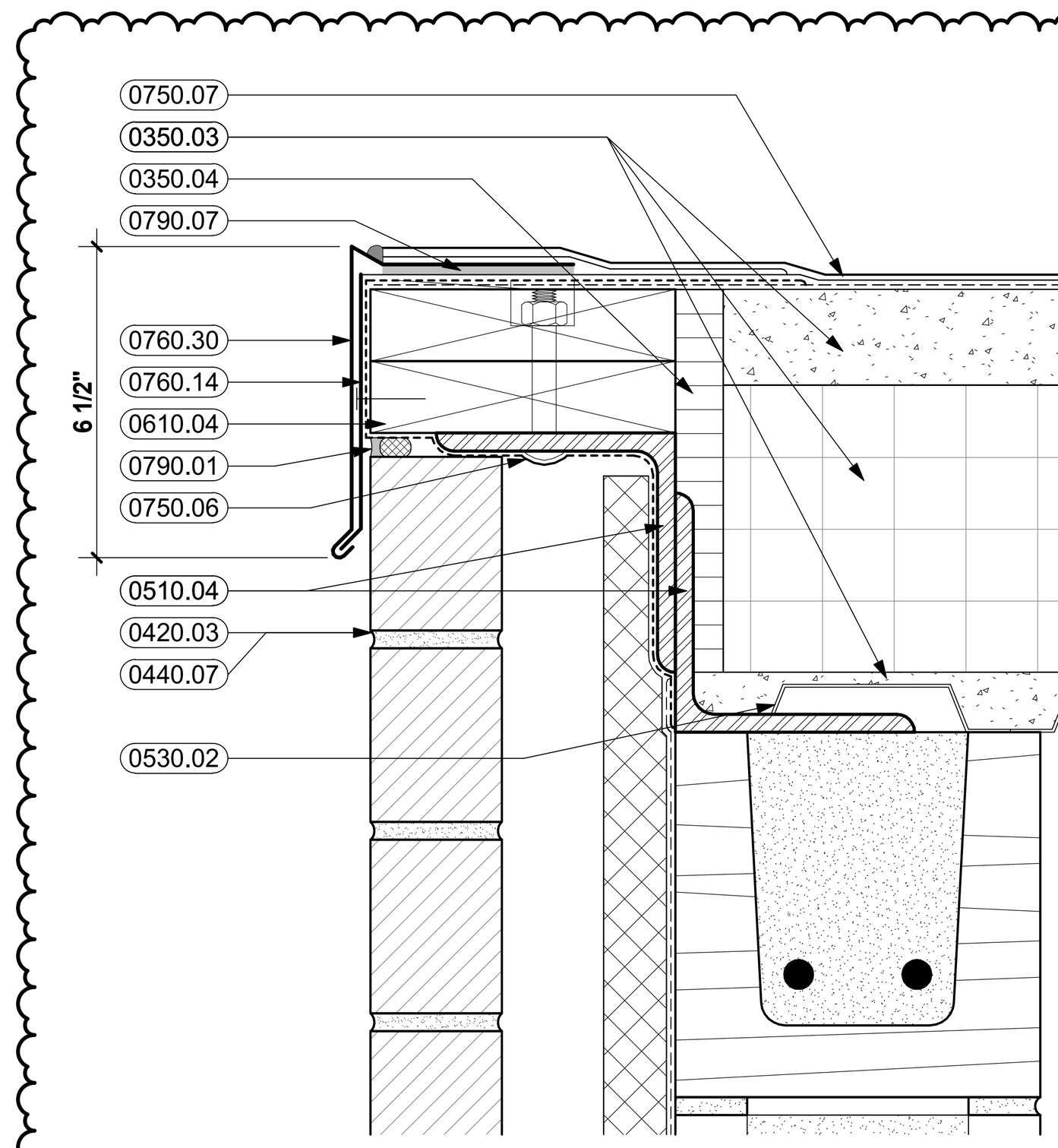
NOTES:
1. COORDINATE LADDER BRACKETS WITH LADDER SUPPORT AS REQUIRED
2. ROOF LADDER TO BE 30" WIDE, COORDINATE WITH ROOF SCUTTLE

4 LADDER W LANDING @ CMU
1" = 1'-0"

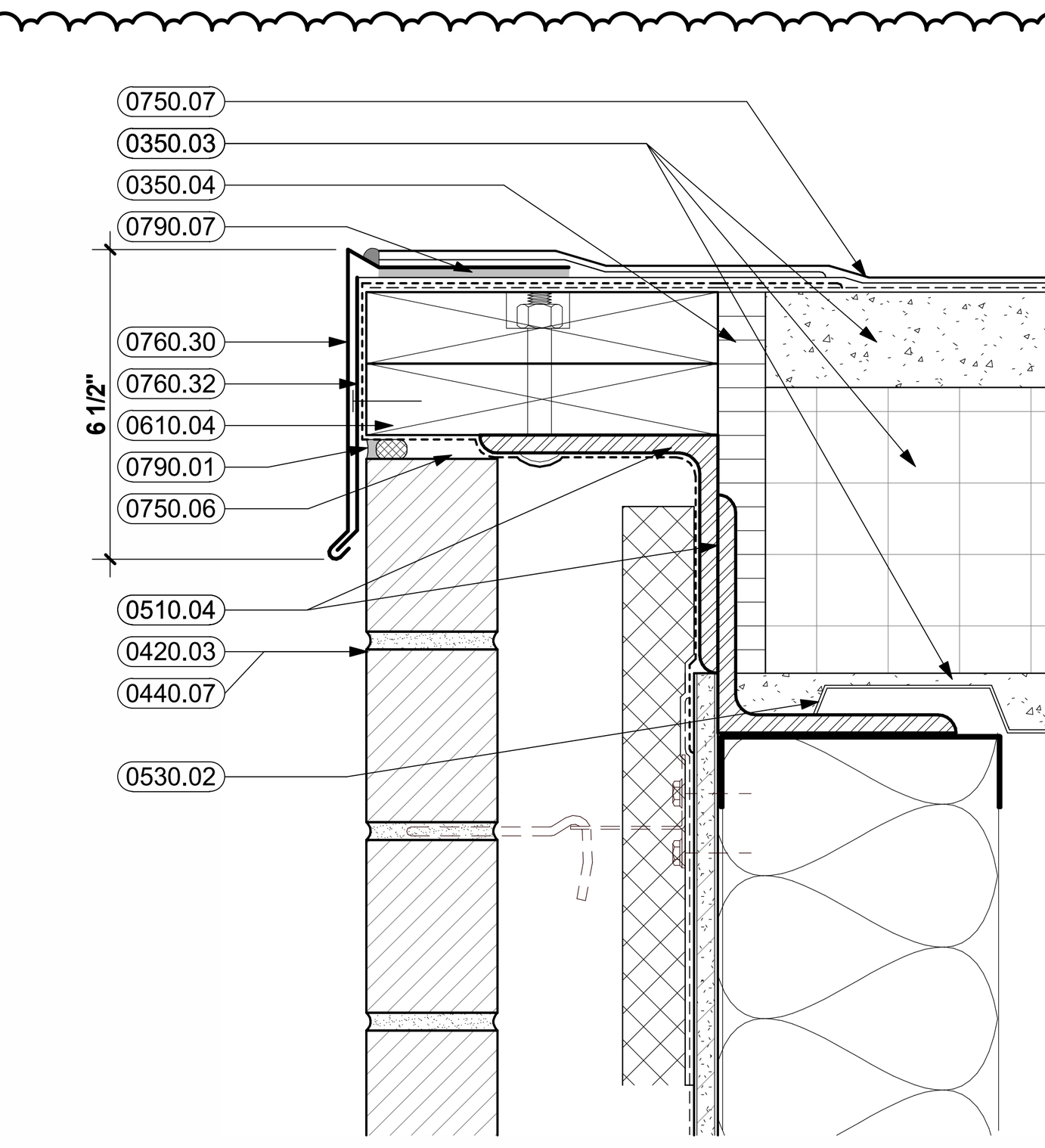


NOTES:
1. MAINTAIN A TYPICAL 12" GAP BETWEEN WALKWAY PADS
2. MAINTAIN A TYPICAL 2" GAP BETWEEN WALKWAY PADS AROUND THE EQUIPMENTS

3 WALK PAD
1 1/2" = 1'-0"



2 ROOF EDGE @ CMU
3" = 1'-0"



1 ROOF EDGE
3" = 1'-0"

BROWN REYNOLDS WATFORD ARCHITECTS
4501 MAGNOLIA COVE DRIVE
SUITE 250
HOUSTON, TEXAS 77345
281-361-3800
WWW.BRWARCH.COM

DATE	SEPTEMBER 9, 2024
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NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

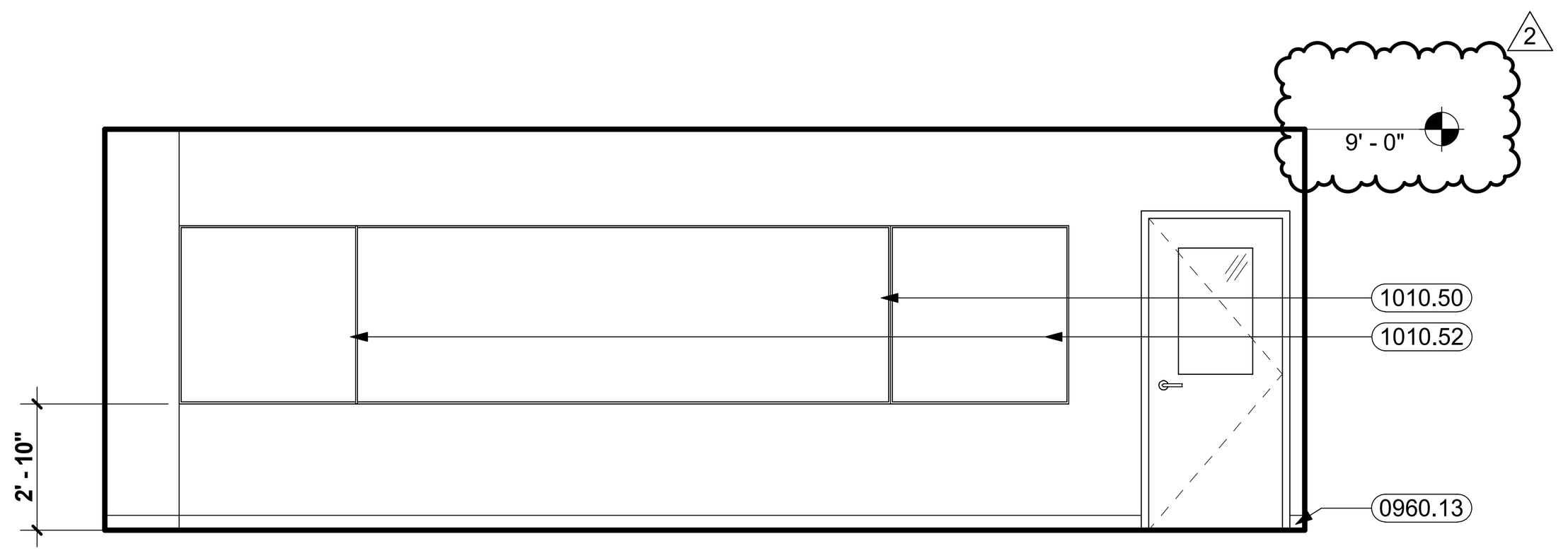
NO.	REVISION	DATE
2	ADDENDUM NO.2	10/2/2024

A1.5

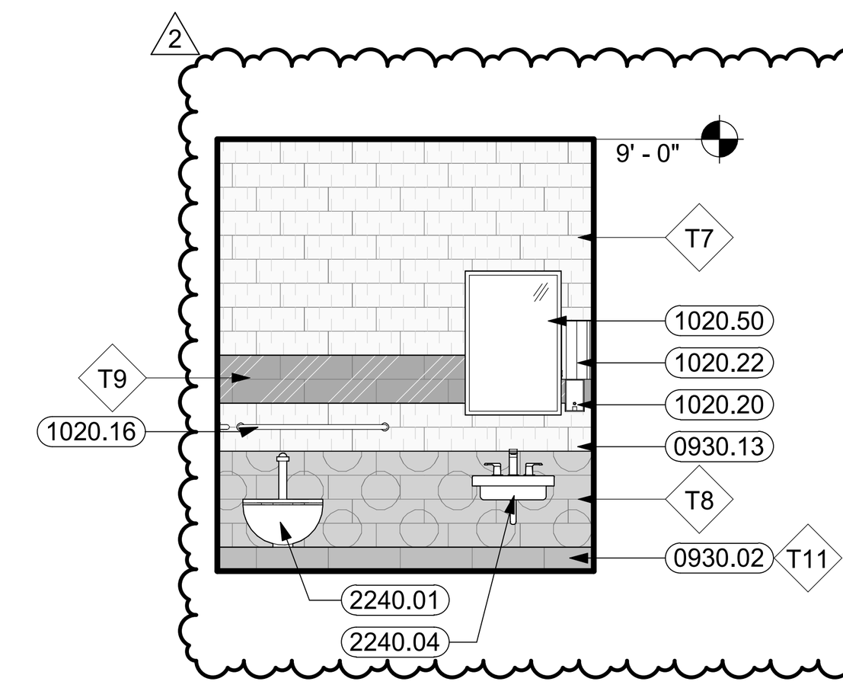
ROOF DETAILS

KEYNOTES

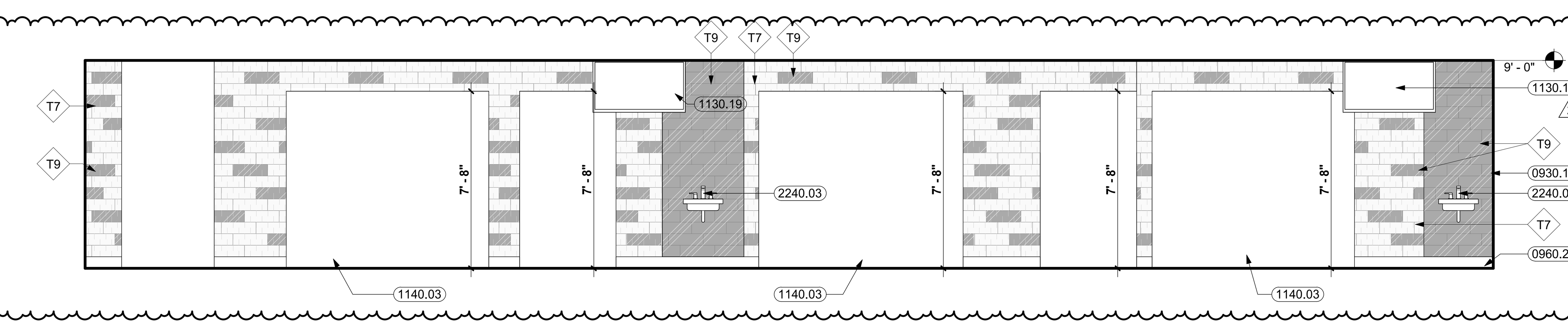
0830.07	COILING COUNTER DOOR
0930.01	CERAMIC TILE
0930.02	COVED CERAMIC TILE BASE
0930.13	WALL TILE
0960.13	4" RESILIENT BASE
0960.25	SEAMLESS EPOXY BASE
0980.03	1" THICK, FABRIC-WRAPPED ACOUSTICAL WALL PANELS
1010.50	12' MARKERBOARD
1010.52	4' TACKBOARD
1020.16	STAINLESS STEEL 1 1/2" DIAMETER GRAB BAR (36" LONG)
1020.20	SOAP DISPENSER (SURFACE-MOUNTED) (OFCI)
1020.22	PAPER TOWEL DISPENSER (SURFACE-MOUNTED) (OFCI)
1020.50	STAINLESS STEEL FRAMED MIRROR (24" x 36")
1040.03	FIRE EXTINGUISHER AND SEMI-RECESSED CABINET
1130.19	55" CEILING MOUNTED FLAT SCREEN
1140.03	KITCHEN EQUIPMENT (RE: FOOD SERVICE)
1150.27	RECESSED PROJECTION SCREEN
1160.02	THEATRICAL PROSCENIUM VALANCE CURTAIN AND SUPPORT SYSTEM
2240.01	WATER CLOSET. ORIENT FLUSH VALVE TOWARDS ACCESSIBLE SPACE AT ACCESSIBLE STALLS / RESTROOMS
2240.03	WALL-HUNG LAVATORY WITH CARRIER
2240.04	PORCELAIN LAVATORY
2240.19	BI-LEVEL DRINKING FOUNTAINS WITH BOTTLE FILLING STATION
2650.10	WALL-MOUNTED EXIT SIGN
2650.15	HOUSELIGHT TRACK



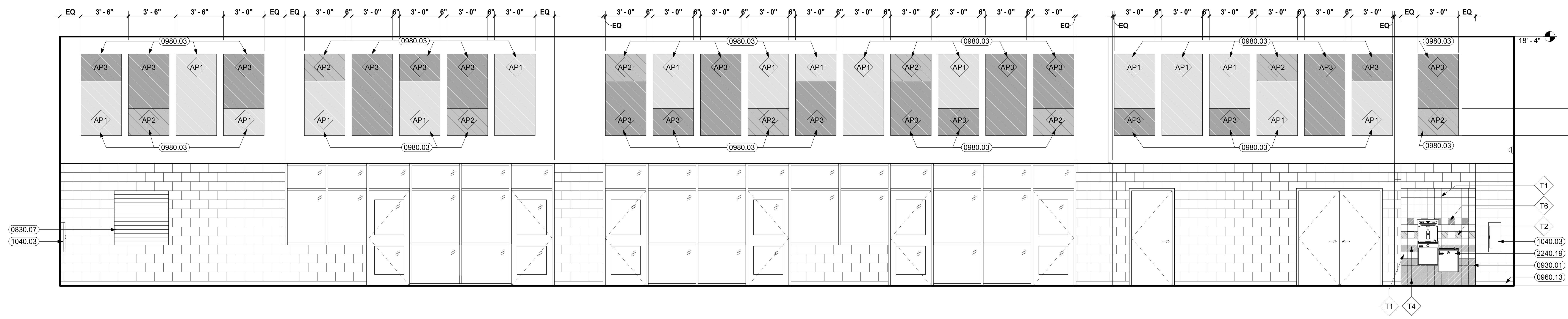
7 ELEVATION
1/4" = 1'-0"
305 LIP CLASSROOM



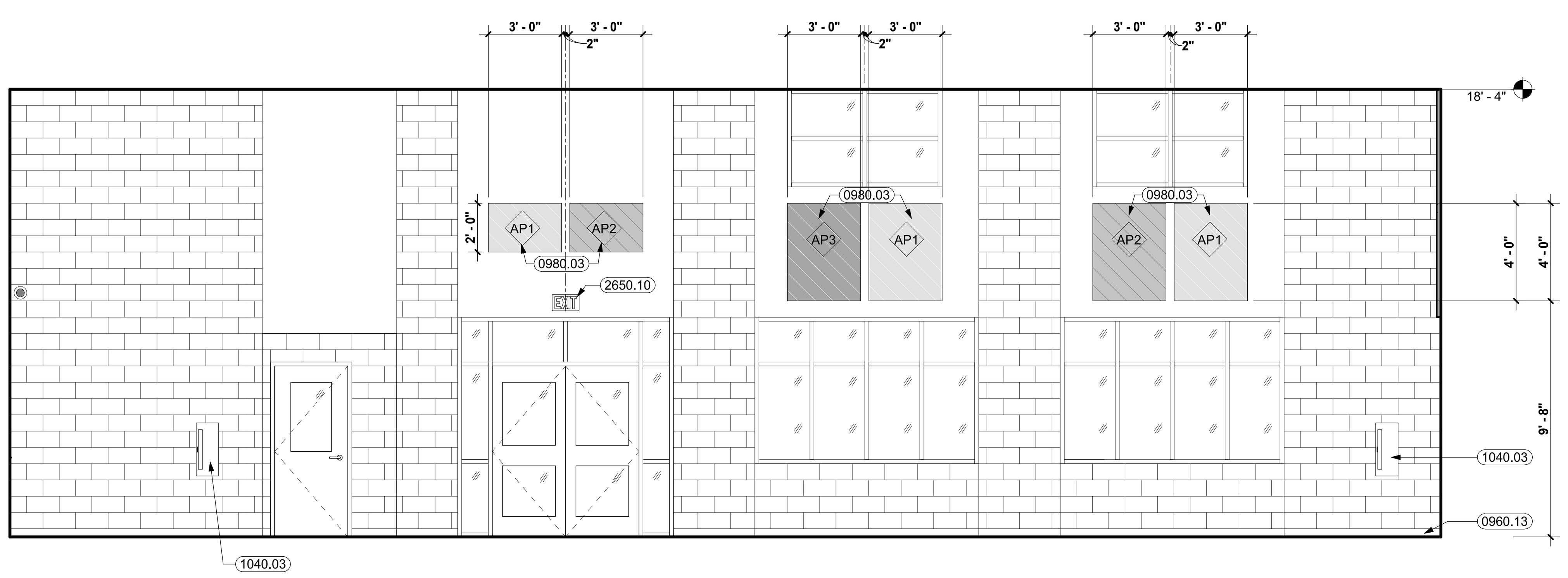
6 ELEVATION
1/4" = 1'-0"
STAFF TLT



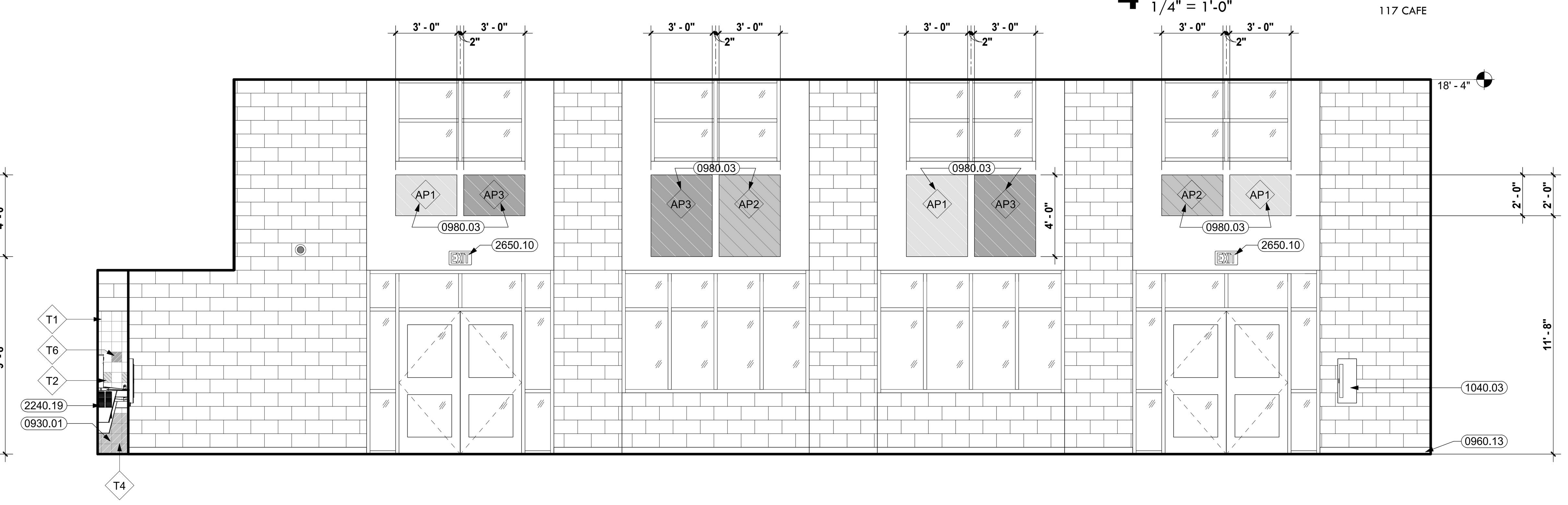
5 ELEVATION
1/4" = 1'-0"
118 SERVING WALL



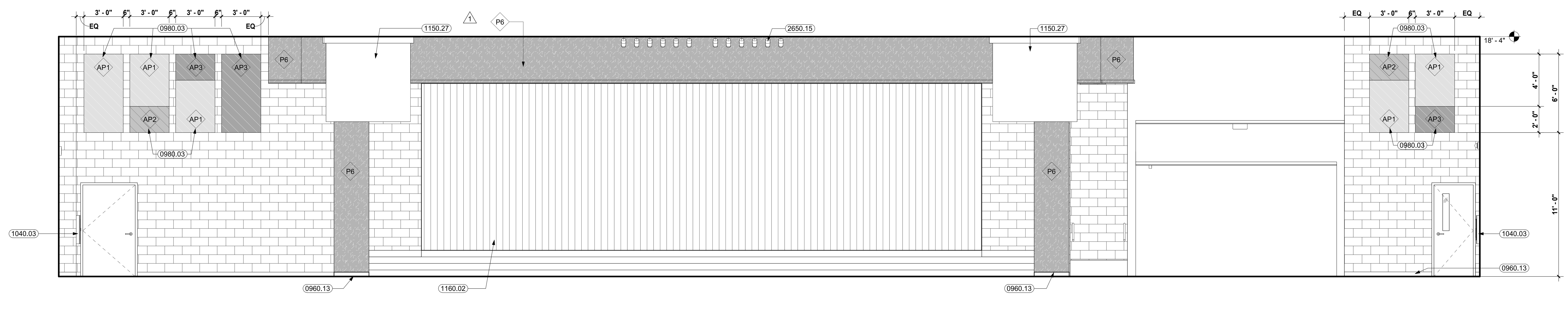
4 ELEVATION
1/4" = 1'-0"
117 CAFE



3 ELEVATION
1/4" = 1'-0"
117 CAFE



2 ELEVATION
1/4" = 1'-0"
117 CAFE



1 ELEVATION
1/4" = 1'-0"
117 CAFE

REGISTERED ARCHITECT JEFFREY S. CHOYCE 16762 STATE OF TEXAS
9/9/24

BROWN REYNOLDS WATFORD ARCHITECTS
4501 MAGNOLIA COVE DRIVE
SUITE 250
HOUSTON, TEXAS 77345
281-361-3800
WWW.BRWARCH.COM
BRW

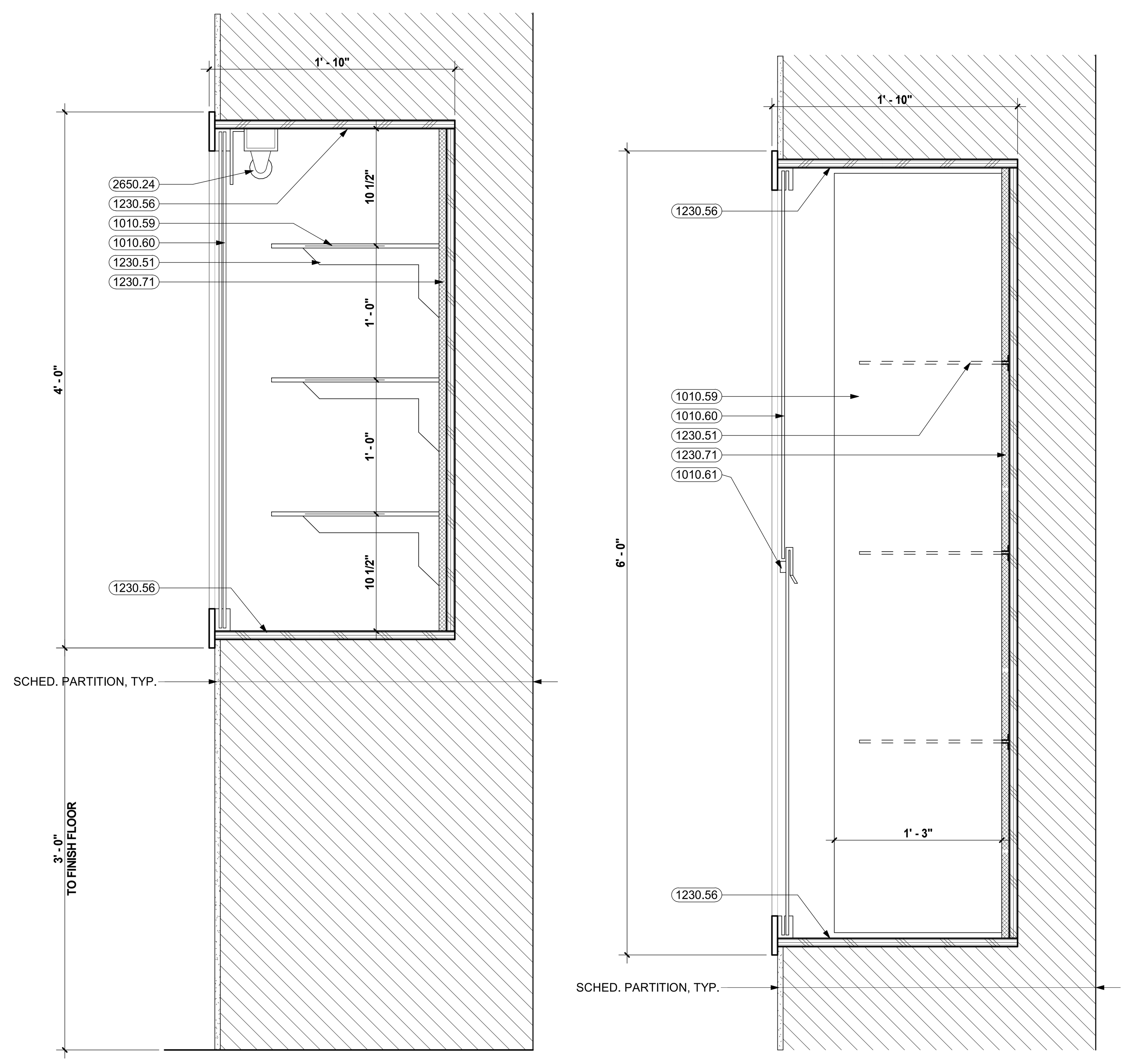
DATE	SEPTEMBER 9, 2024
DRAWN BY	AH, NL, LB
CHECKED BY	JSC
BRW PROJECT NUMBER	223117.00

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

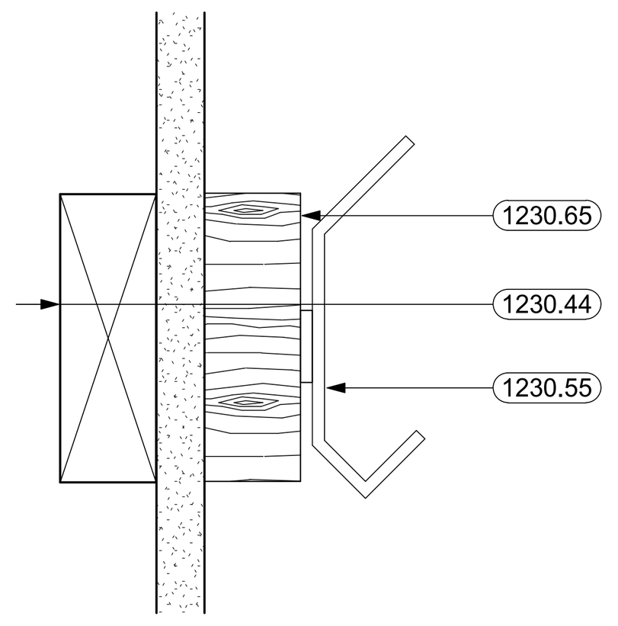
NO.	REVISION	DATE
1	ADDENDUM NO.1	09/23/24
2	ADDENDUM NO.2	10/2/2024

A5.7

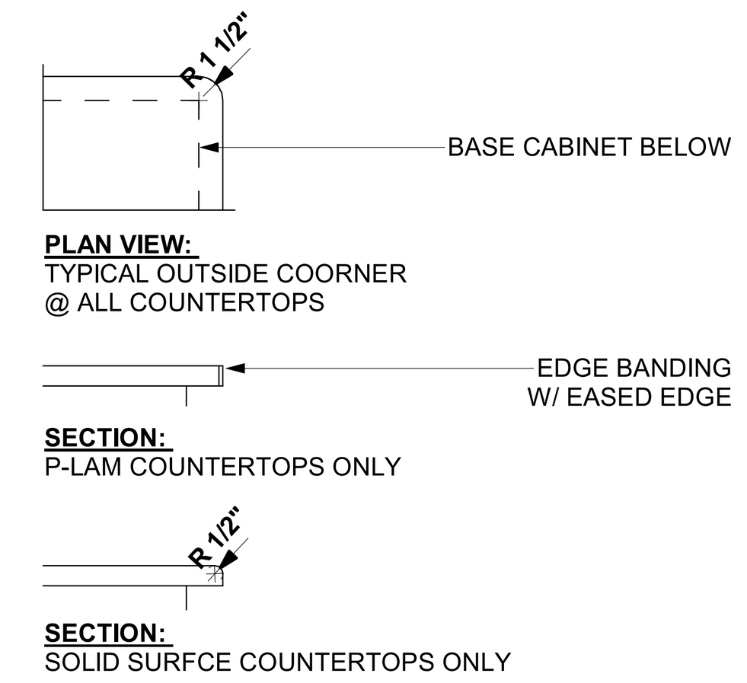
INTERIOR ELEVATIONS



10 MISC - DISPLAY CASE
1 1/2" = 1'-0"



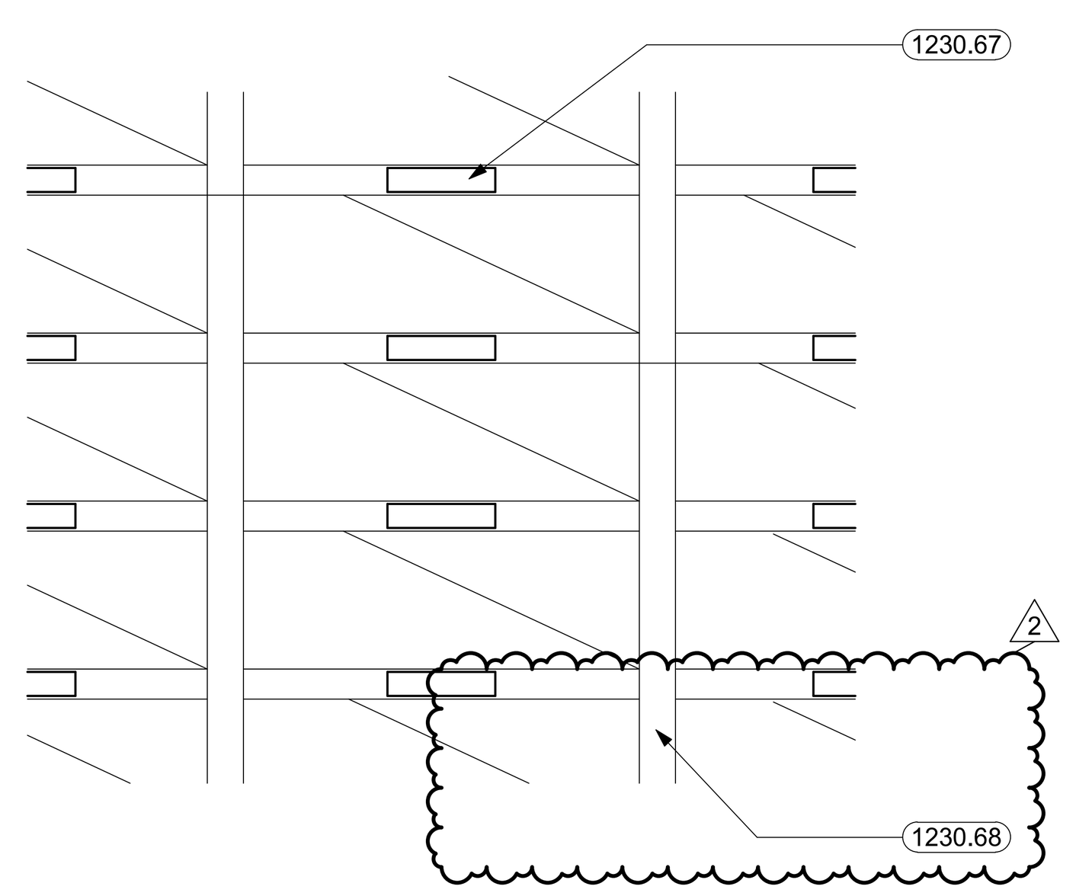
13 MISC - APRON HOOK
3" = 1'-0"



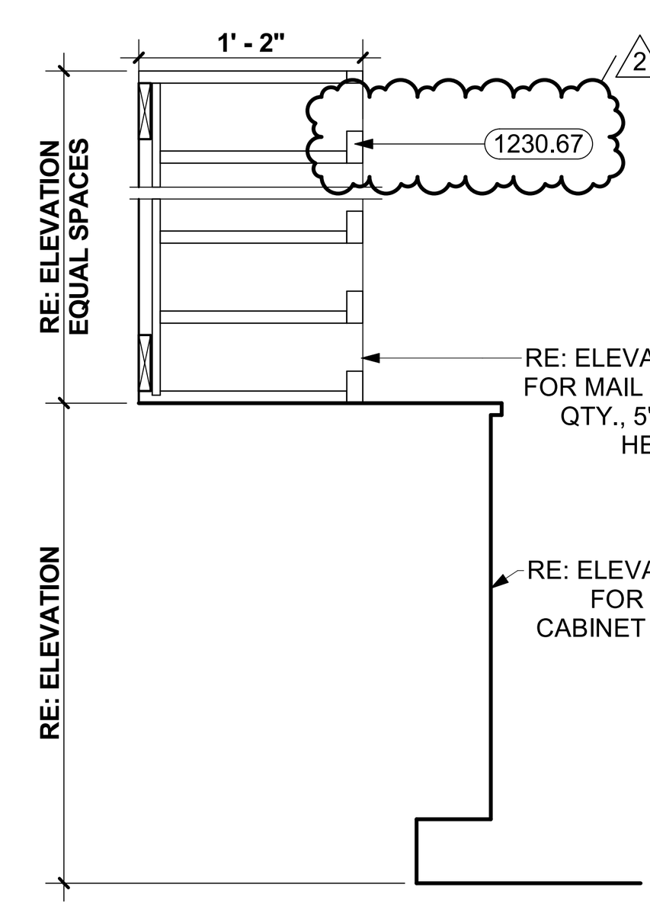
12 CSK - OUTSIDE CORNER
1" = 1'-0"

KEYNOTES

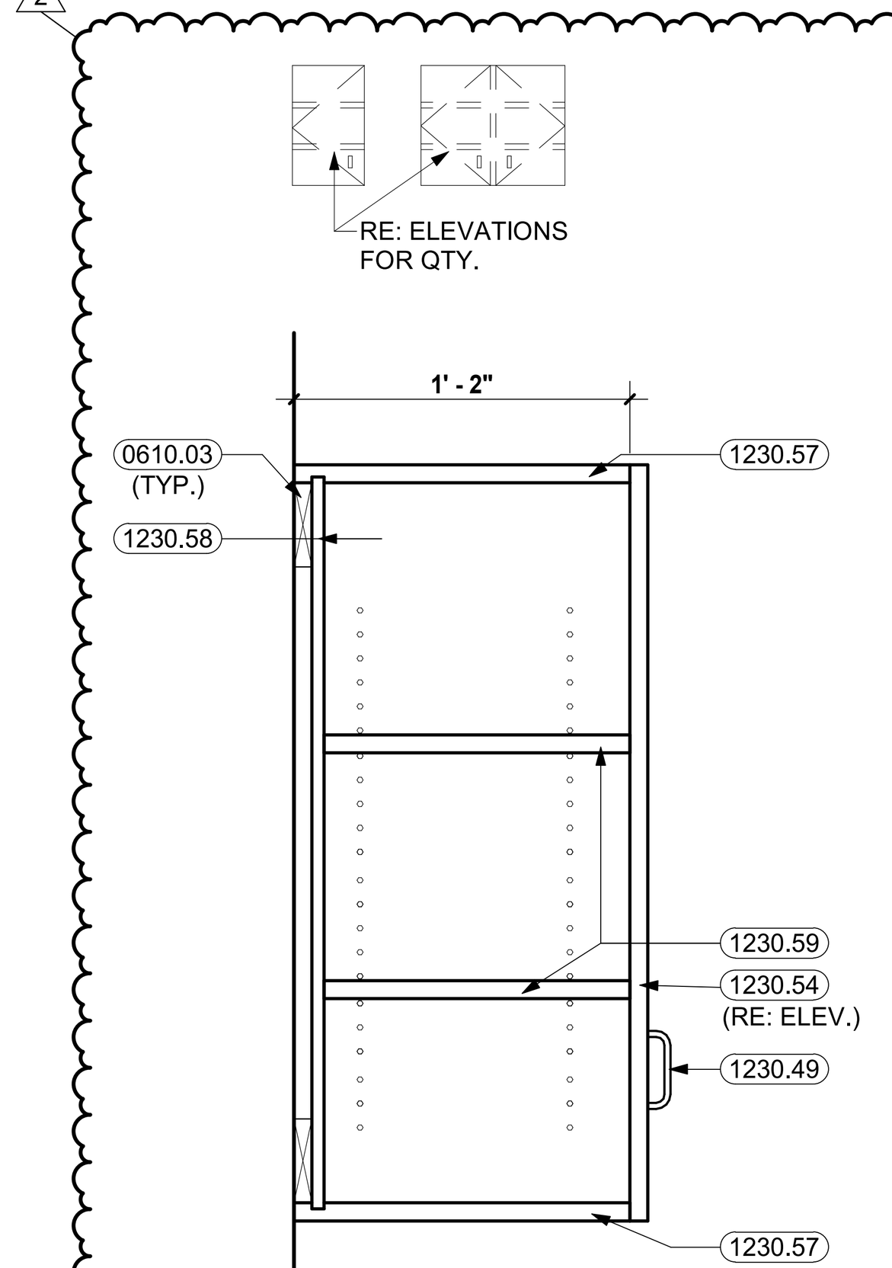
0610.02	1X WOOD BLOCKING
0610.03	2X WOOD BLOCKING
0960.13	4" RESILIENT BASE
1010.59	3/8" CLEAR TEMPERED GLASS SHELVES
1010.60	1/4" CLEAR TEMPERED GLASS BYPASS SLIDING DOORS AND ALUMINUM TRACK
1010.61	RATCHET LOCK
1230.44	PLASTIC LAMINATE CLAD BASE CABINETS WITH ADJUSTABLE SHELVES
1230.47	ADJUSTABLE SHELF REST AND PRE-DRILLED HOLES AT 1" O.C. TYP.
1230.49	CABINET PULLS
1230.51	SHELF BRACKET
1230.52	1/2" PLASTIC LAMINATE CLAD PLYWOOD
1230.53	3/4" PLASTIC LAMINATE CLAD PARTICLEBOARD DRAWER WITH 1/2" HIGH DENSITY PARTICLEBOARD BOTTOM
1230.54	3/4" PLASTIC LAMINATE CLAD PARTICLEBOARD CABINET DOOR
1230.55	COAT OR BACKPACK HOOK
1230.56	3/4" PLASTIC LAMINATE CLAD PLYWOOD
1230.57	3/4" PLASTIC LAMINATE CLAD MEDIUM DENSITY PARTICLEBOARD
1230.58	1/4" PLASTIC LAMINATE CLAD CABINET BACK
1230.59	3/4" PLASTIC LAMINATE CLAD PARTICLEBOARD ADJUSTABLE SHELF
1230.60	FIXED 3/4" PLASTIC LAMINATE CLAD PLYWOOD SHELF
1230.65	FINISHED WOOD BOLTED THRU WALL TO 2 X 6
1230.67	METAL NAME PLATE
1230.68	3/16" FACE FLUSH W/ VERTICAL SUPPORTS
1230.69	CLOTHES ROD
1230.71	3/4" AWP GLUED TO 3/4" PLYWOOD BACKER
2650.24	DISPLAY CASE LIGHT FIXTURE



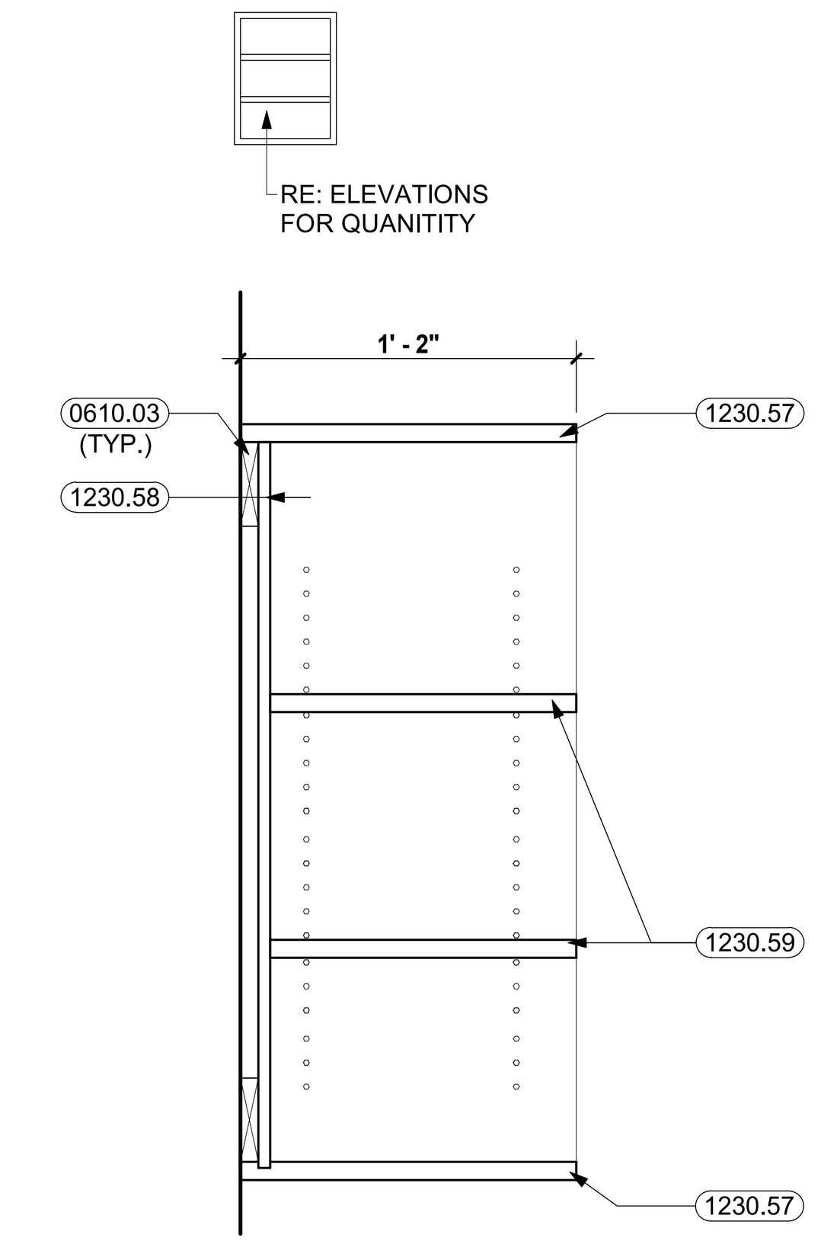
9 CSK - MAILBOX DETAIL
1 1/2" = 1'-0"



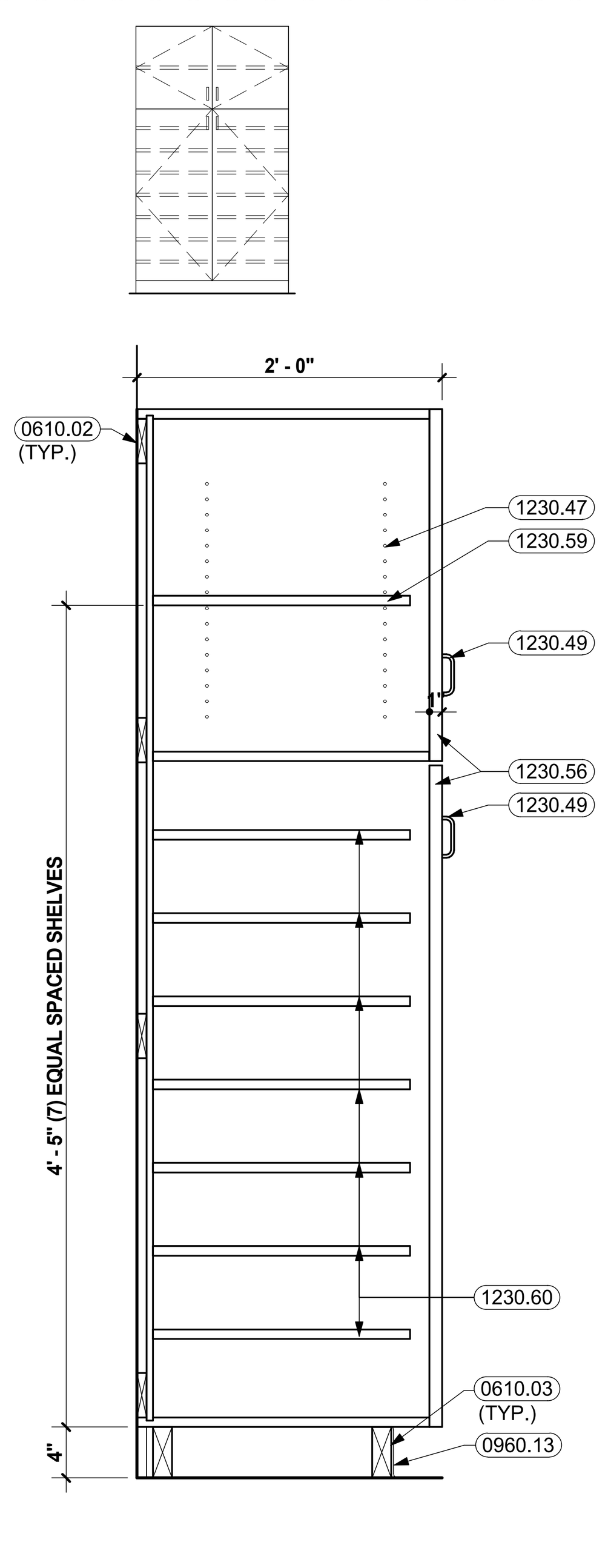
8 CSK "T700" MAIL @ WALL
1" = 1'-0"



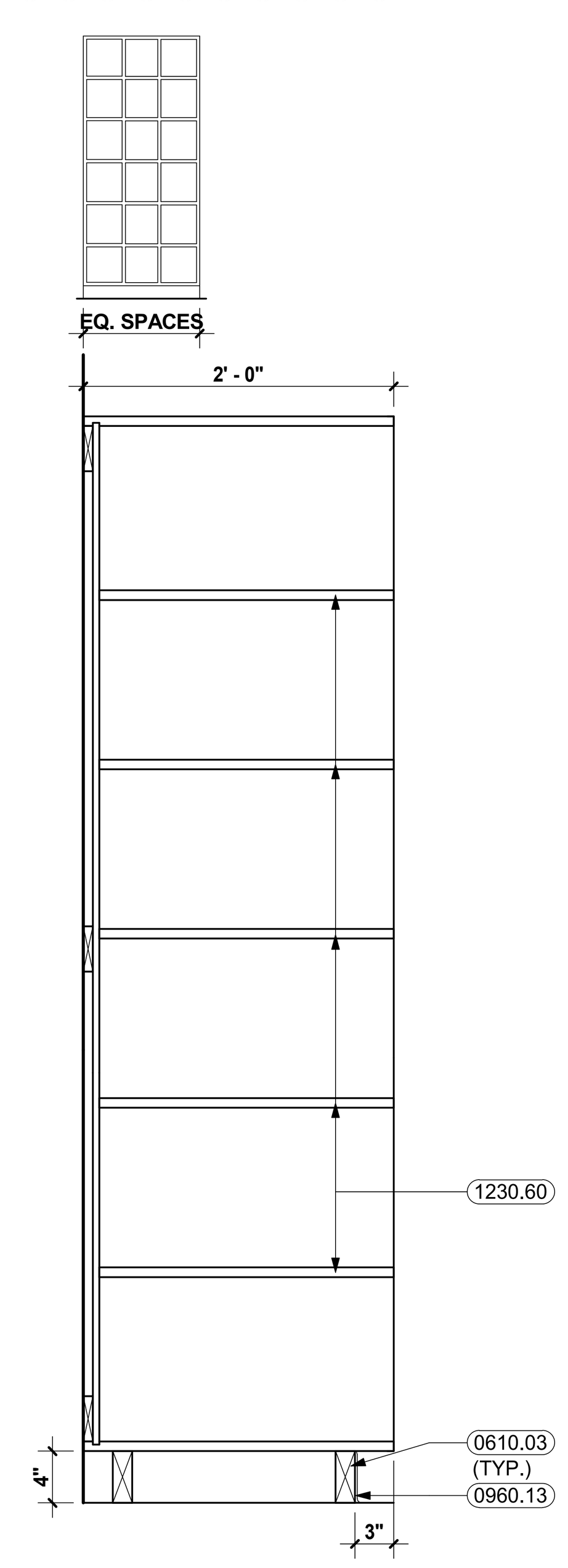
7 CSK "U301"
1 1/2" = 1'-0"



6 CSK "U300"
1 1/2" = 1'-0"



5 CSK "T406"
1" = 1'-0"



4 CSK "T443"
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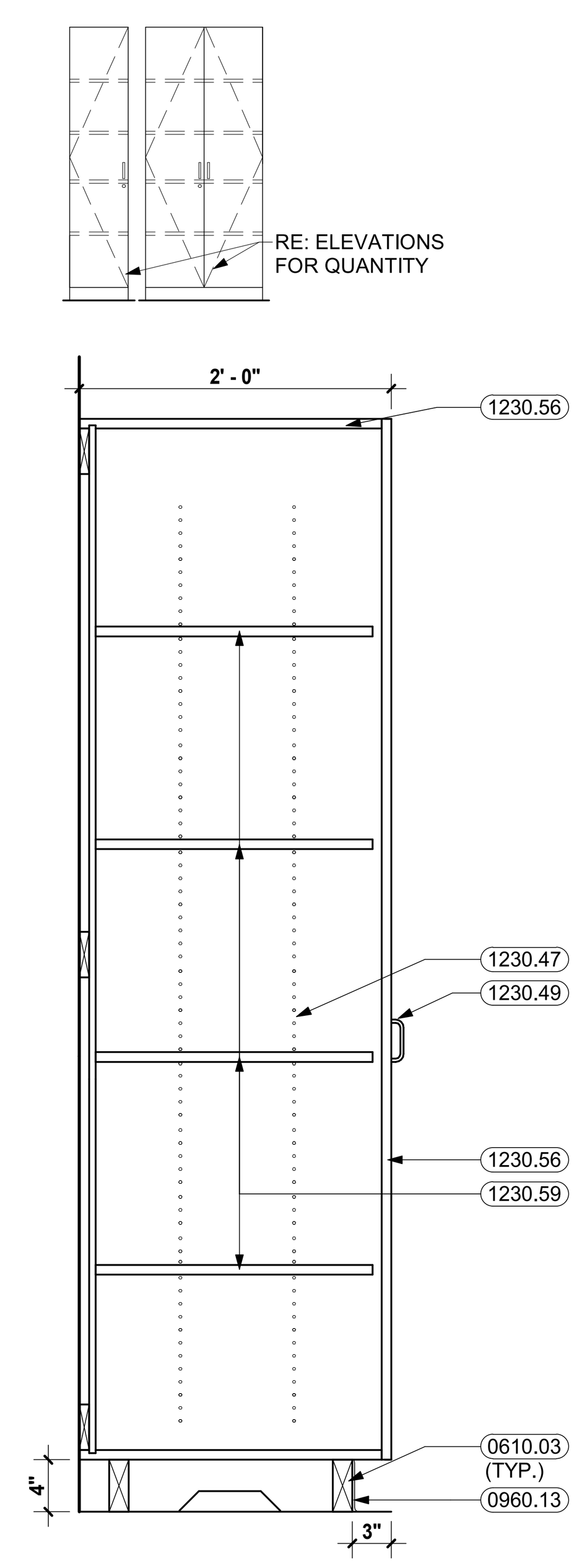
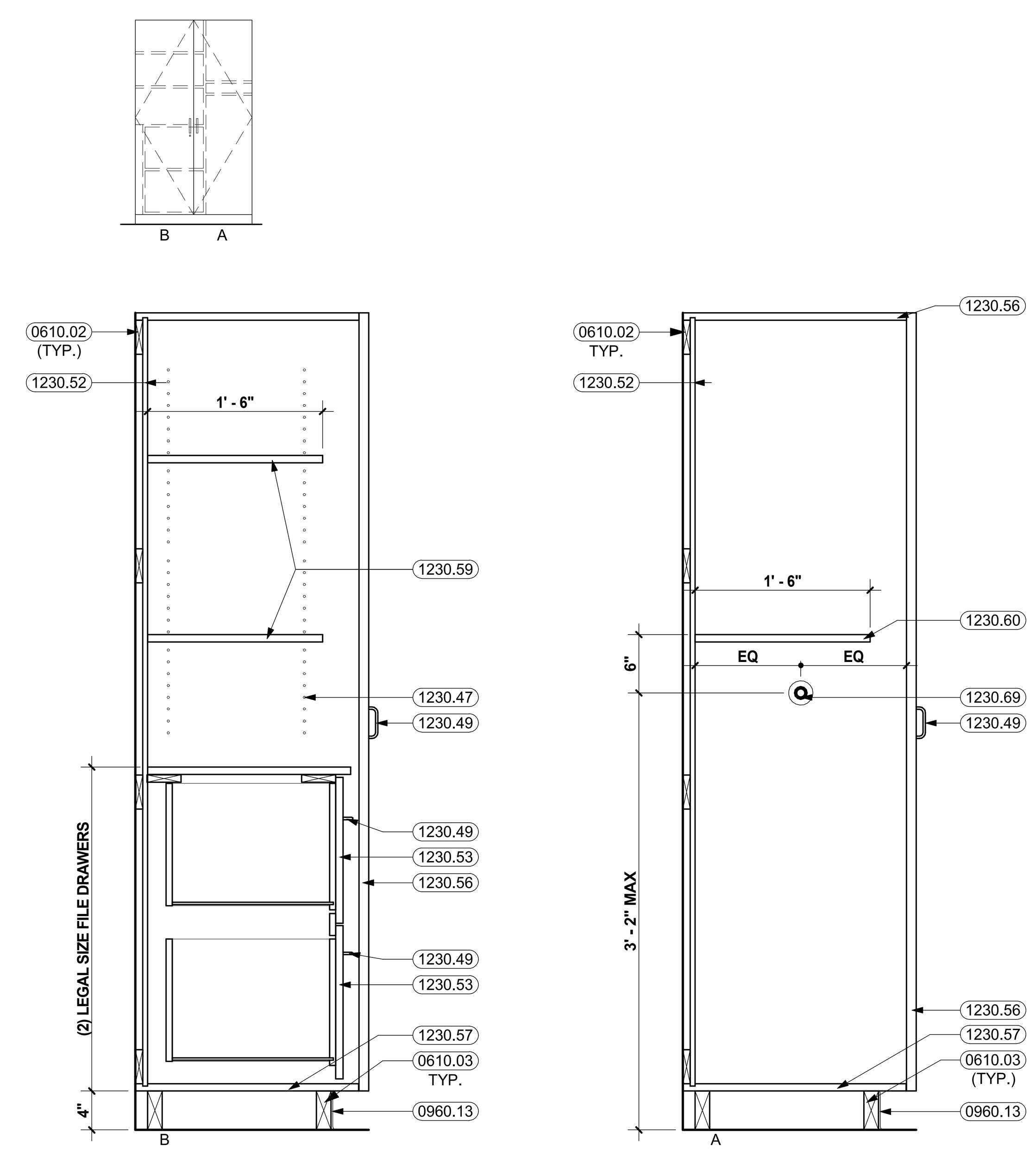
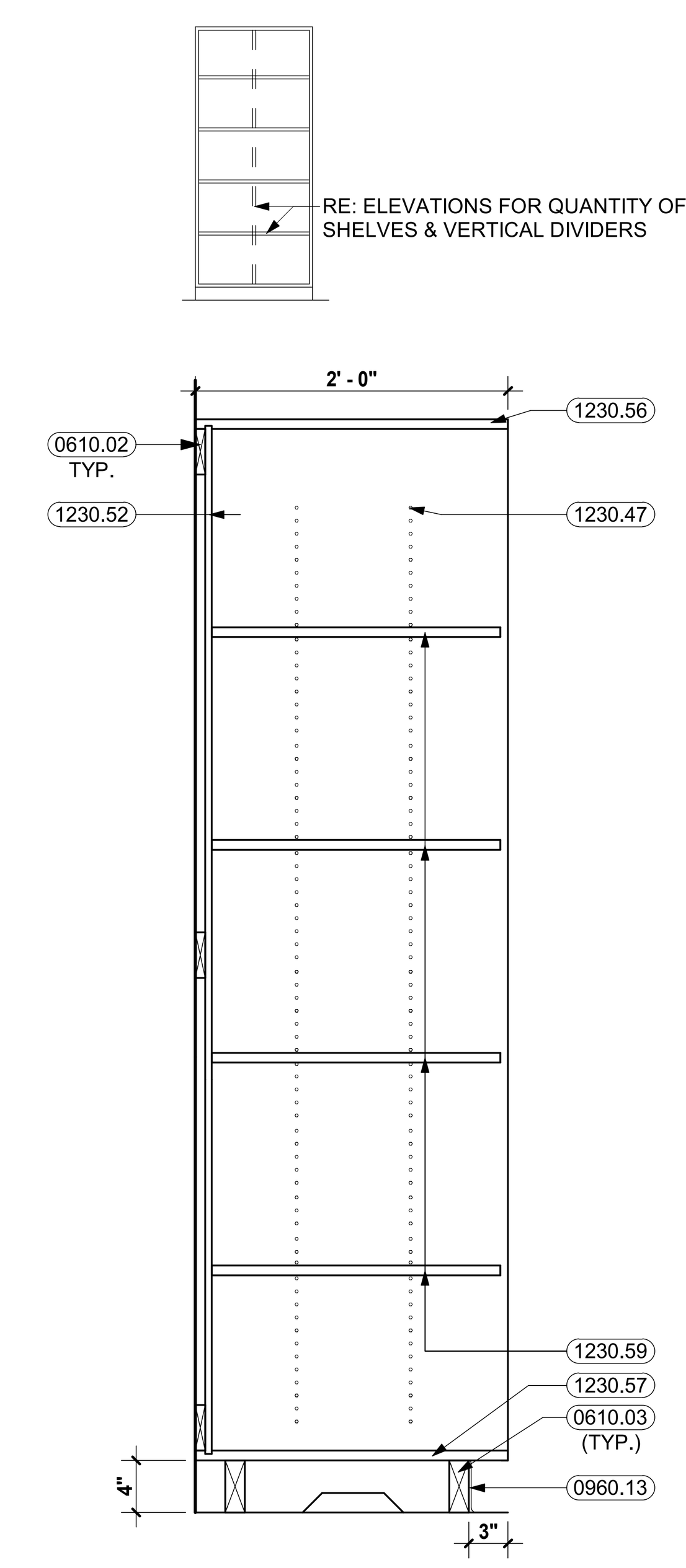


RE: ELEVATIONS FOR QUANTITY OF SHELVES, TYP. (4) SHELVES

3 CSK "T402"
1" = 1'-0"



2 CSK "T401"
1" = 1'-0"



RE: ELEVATIONS FOR QUANTITY OF SHELVES, TYP. (4) SHELVES

1 CSK "T400"
1" = 1'-0"

REGISTERED ARCHITECT
JEFFREY S. CHOYCE
16762
STATE OF TEXAS
9/9/24

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BRW

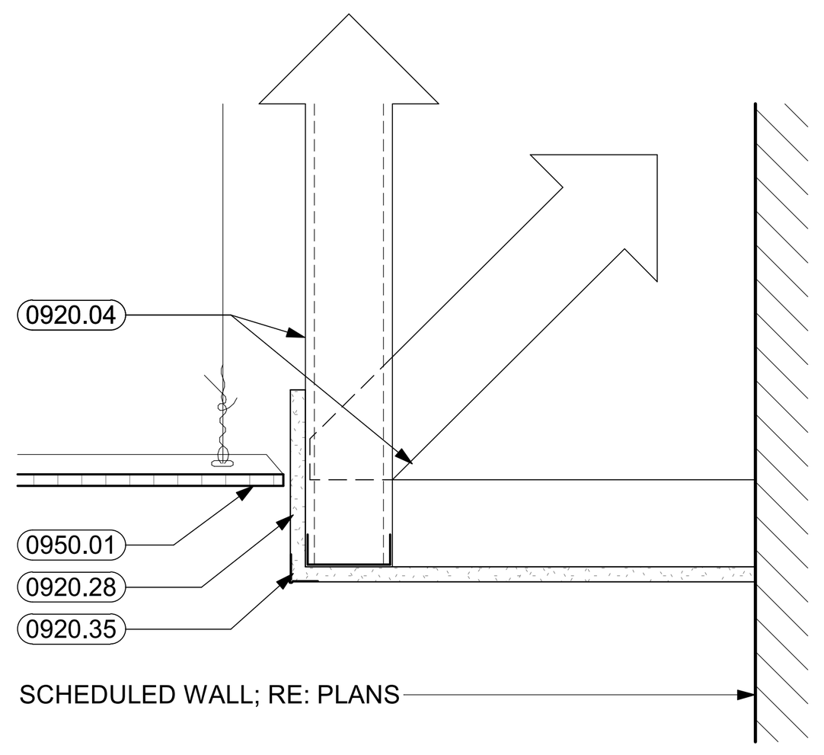
DATE	SEPTEMBER 9, 2024
DRAWN BY	AH, QN
CHECKED BY	JSC
BRW PROJECT NUMBER	223117.00

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

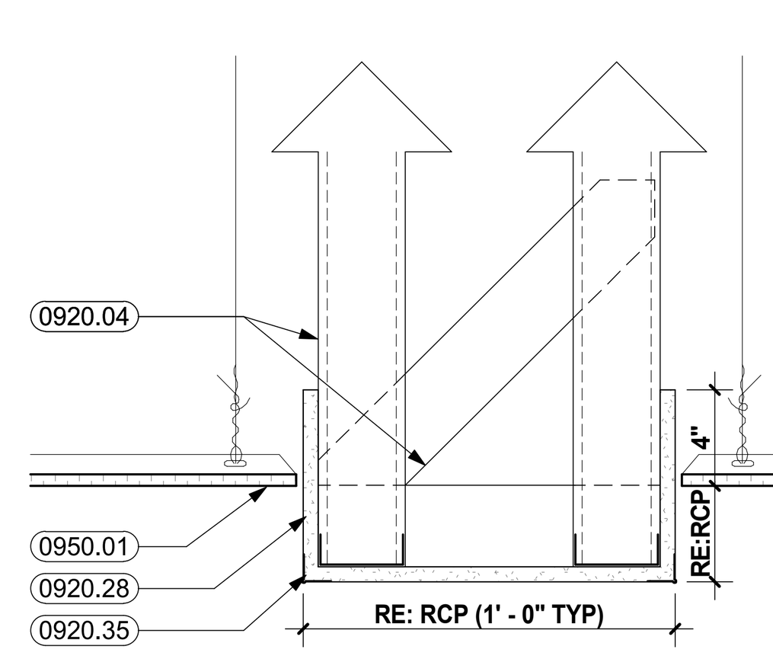
NO.	REVISION	DATE
2	ADDENDUM NO.2	10/2/2024

A5.9

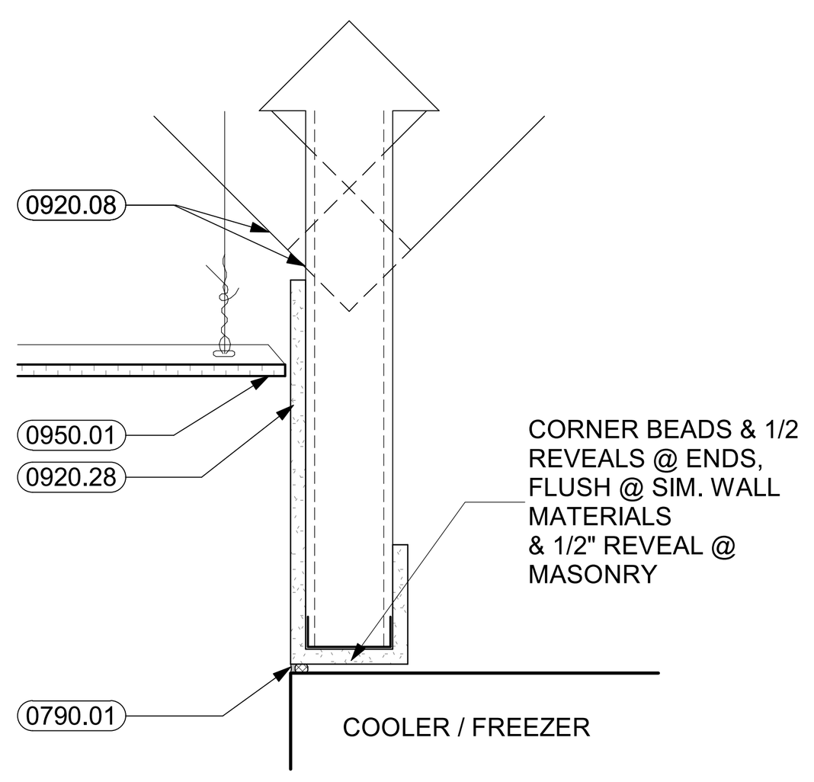
CASEWORK SECTIONS



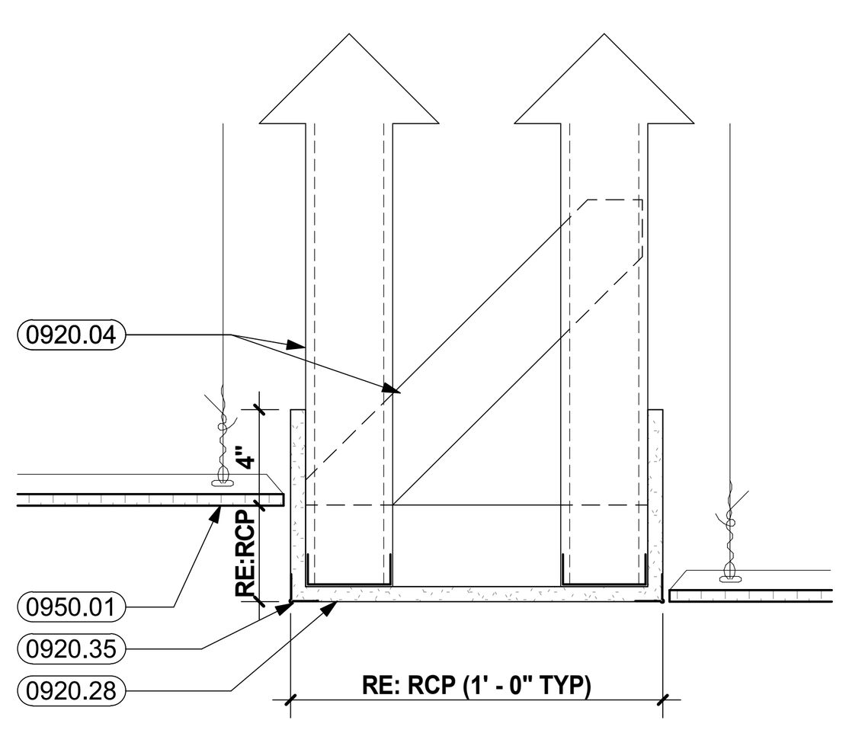
3 **SECTION DETAIL - ACT-GYP-PART**
1 1/2" = 1'-0"



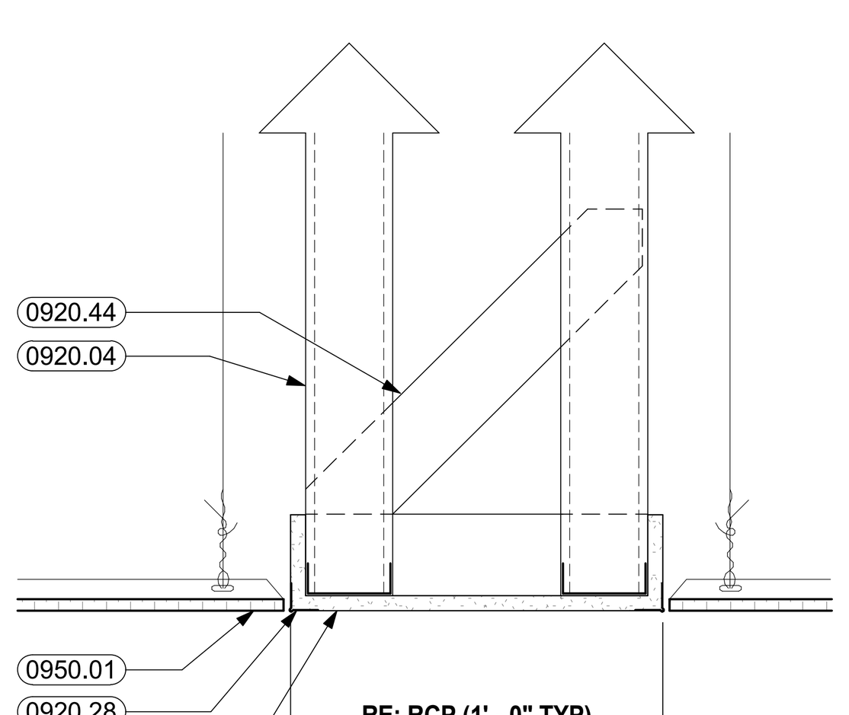
2 **SECTION DETAIL - ACT-GYP-ACT**
1 1/2" = 1'-0"



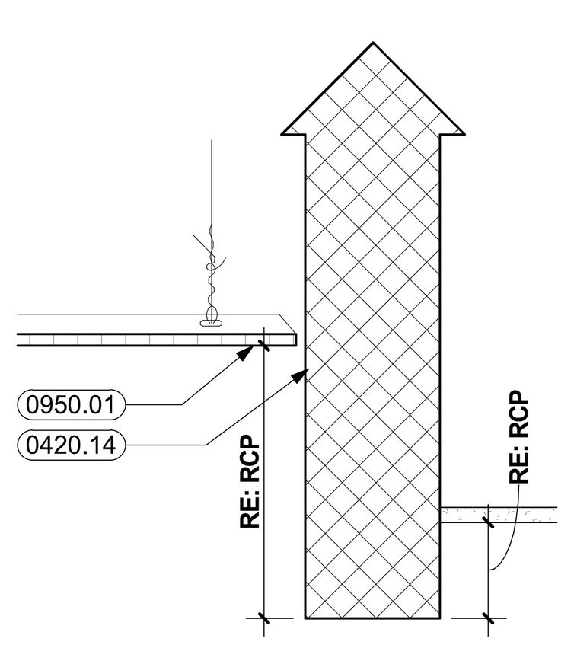
4 **SECTION DETAIL - COOLER / FREEZER**
1 1/2" = 1'-0"



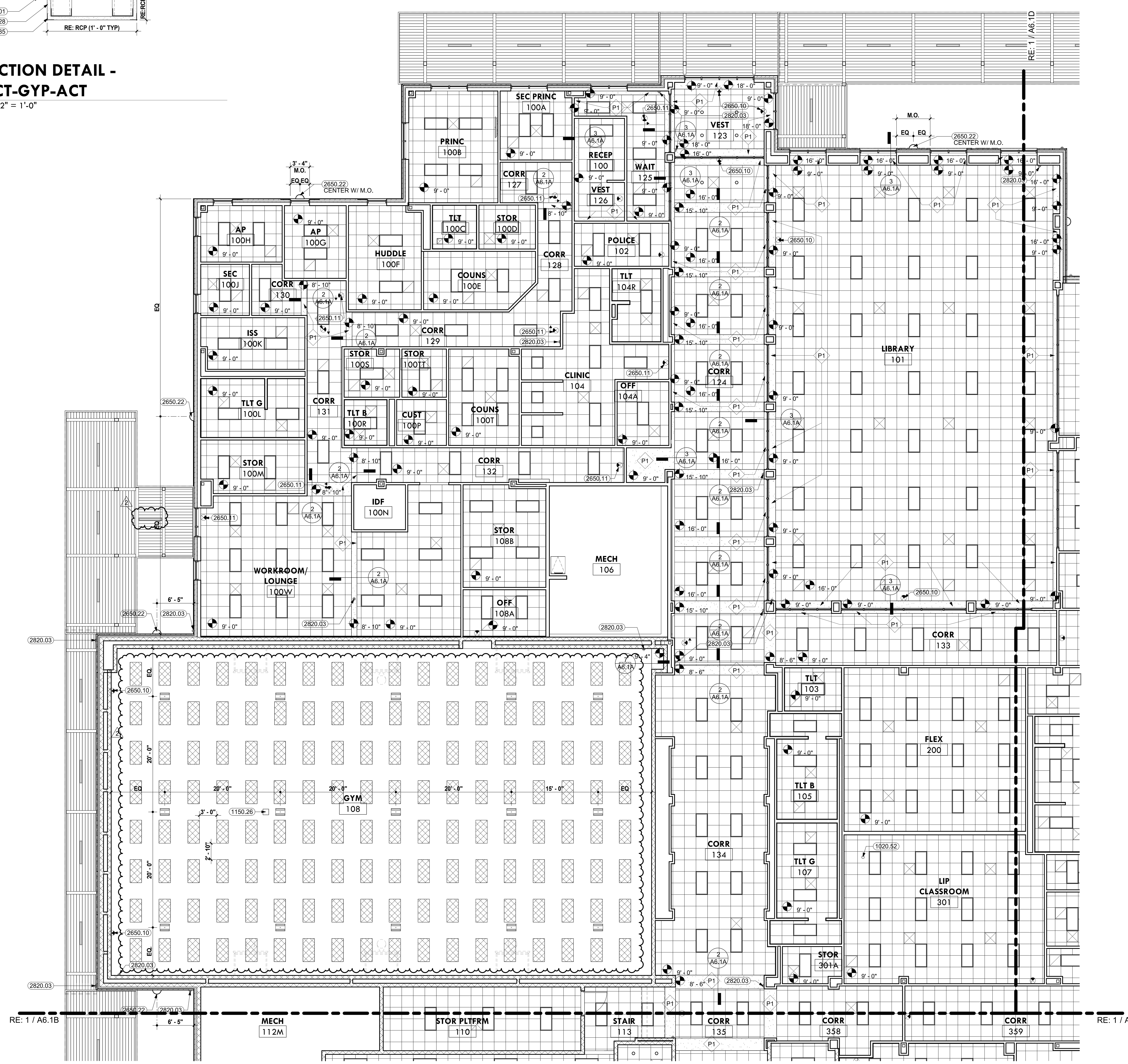
5 **SECTION DETAIL - ACT-GYP-FLUSH ACT**
1 1/2" = 1'-0"



6 **SECTION DETAIL - FLUSH ACT-GYP-FLUSH ACT**
1 1/2" = 1'-0"



7 **SECTION DETAIL - ACT-CMU-GYP**
1 1/2" = 1'-0"



1 **REFLECTED CEILING PLAN AREA A**
1/8" = 1'-0"

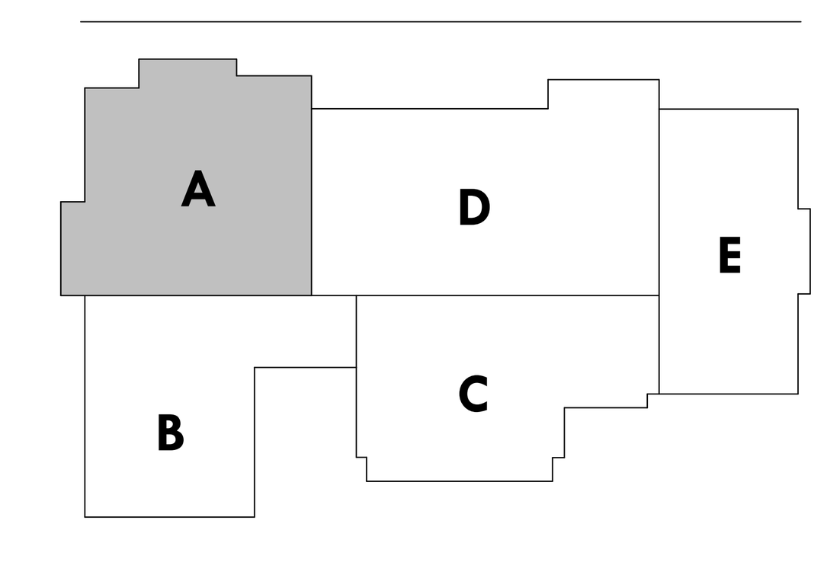
KEYNOTES

0420.14	8" CONCRETE MASONRY UNITS
0790.01	SEALANT WITH BACKER ROD AS REQUIRED
0920.04	3 5/8" METAL STUDS (20 GAUGE MINIMUM) AT 16" O.C.
0920.08	STUD BRACE AT 4'-0" O.C. MAX.
0920.28	5/8" GYPSUM BOARD (TYPE X)
0920.35	CORNER BEAD, TYPICAL
0920.44	STUD BRACE AT 32" O.C.
0950.01	SUSPENDED ACOUSTICAL LAY-IN TILE CEILING
1020.52	CEILING MOUNTED SWING (OFCI)
1150.26	CEILING MOUNTED PROJECTOR
2650.10	WALL-MOUNTED EXIT SIGN
2650.11	CEILING-MOUNTED EXIT SIGN
2650.22	WALL PACK
2820.03	CCTV CAMERA DOME HOUSING

REFLECTED CEILING PLAN LEGEND

- 2X4 LIGHT FIXTURE
- EXTERIOR LINEAR LIGHT FIXTURE
- RECESSED LIGHT
- 2X2 LIGHT FIXTURE
- HIGH BAY LIGHT FIXTURE
- EXTERIOR WALL PACK
- EXIT SIGNS
- CEILING MOUNTED PROJECTOR
- WALL MOUNTED BASKETBALL HOOD
- ACOUSTIC PANEL
- ACOUSTIC TILE CEILING SYSTEM
- SUSPENDED CEMENT PLASTER SYSTEM
- SUSPENDED GYPSUM BOARD SYSTEM
- PREMANUFACTURED CANOPY
- SUPPLY AIR DIFFUSER (RE: MECHANICAL)
- RETURN AIR DEVICE (RE: MECHANICAL)
- EXHAUST AIR DEVICE (RE: MECHANICAL)

KEY PLAN



9/9/24

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DATE	SEPTEMBER 9, 2024
DRAWN BY	HN, AH, LB
CHECKED BY	JSC
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NEW CANEY I.S.D.
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NO.	REVISION	DATE
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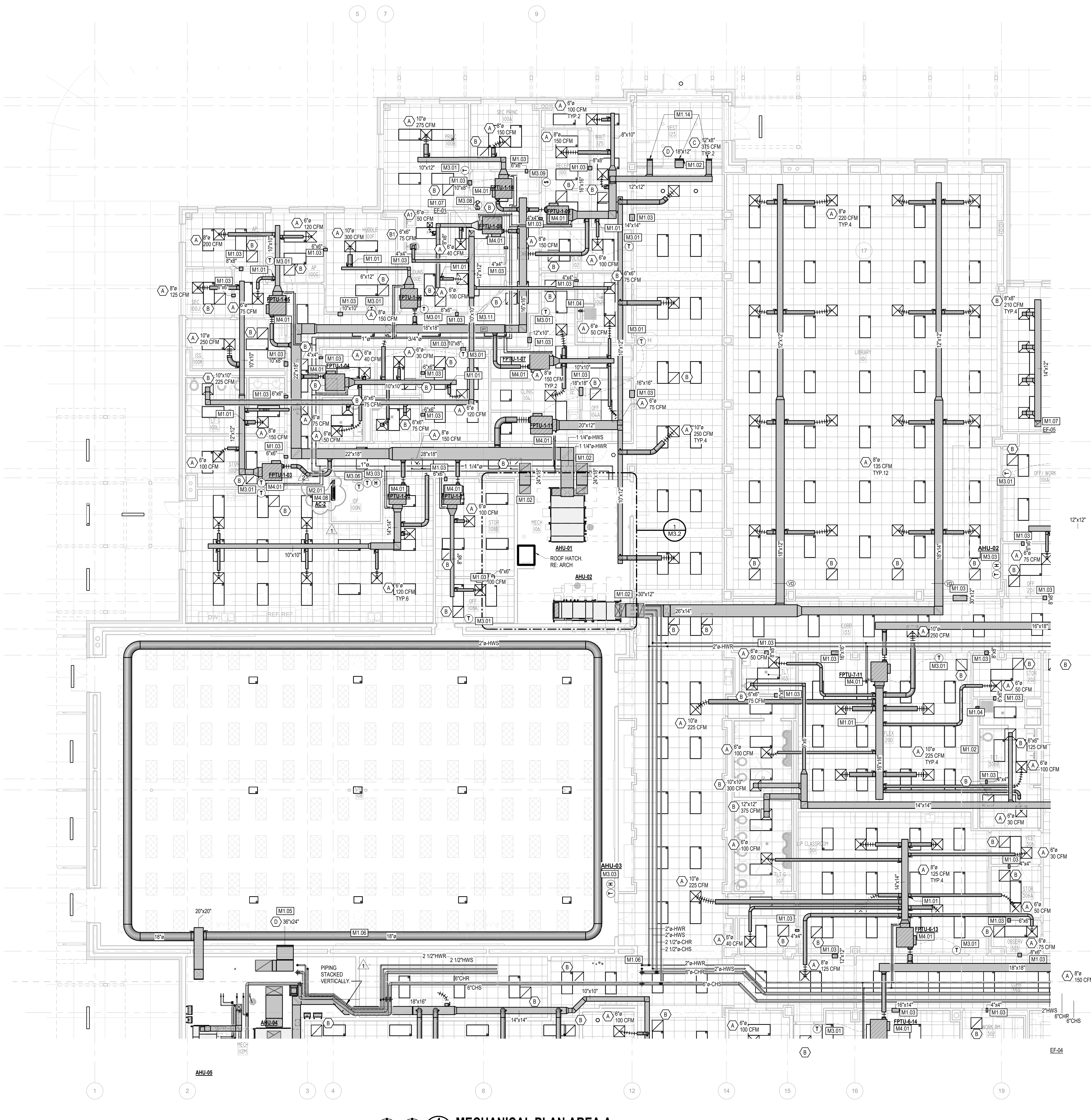
3	TBD	Date 3

A6.1A

REFLECTED CEILING PLAN AREA A



1 M2.1A **MECHANICAL PLAN AREA A**
1/8" = 1'-0"

MECHANICAL KEYED NOTES

M1.01 PROVIDE SPIN-IN FITTING WITH LOCKING QUADRANT BUTTERFLY DAMPER FOR ALL ROUND DUCT CONNECTIONS TO RECTANGULAR DUCT. TYPICAL. RE: 9/M6.1.

M1.02 PROVIDE RETURN AIR TRANSFER BOOT. SIZE AS INDICATED. RE: DETAIL 7,8/M6.1.

M1.03 PROVIDE WALL OPENING WITH MINIMUM FREE AREA AS INDICATED. OPENINGS LARGER THAN THE STUD SPACING SHALL BE FRAMED OUT. COORDINATE WITH ARCHITECT FOR LOCATIONS.

M1.04 ROUTE DRYER EXHAUST DUCT UP THROUGH ROOF AND TERMINATE WITH GOOSENECK. SIZE DUCT ACCORDING TO DRYER MANUFACTURER INSTALLATION INSTRUCTIONS. REFER TO M2.2 FOR DRYER VENT CONTINUATION. RE: 15/M6.1.

M1.05 PROVIDE RETURN AIR GRILLE WITH BOOT AT APPROXIMATE LOCATION SHOWN. SIZE AS INDICATED. MOUNT GRILLE HIGH ON WALL TIGHT TO STRUCTURE. COORDINATE EXACT ELEVATION WITH ARCHITECT PRIOR TO INSTALLATION. RE: DETAIL 5/M6.1

M1.06 PROVIDE DUCTSOX SEDONA XM FABRIC DUCT AS SHOWN. PROVIDE SLOTS IN DUCT PER MANUFACTURER'S RECOMMENDATIONS. MOUNT DUCT HIGH TIGHT TO STRUCTURE. ENSURE BOTTOM OF DUCT MAINTAINS 20' CLEAR HEIGHT WITHIN GYMNASIUM. COORDINATE EXACT ELEVATION WITH ARCHITECT PRIOR TO INSTALLATION.

M1.07 ROUTE DUCT UP TO EXHAUST FAN ON ROOF. SIZE AS INDICATED. PROVIDE TRANSITION AS REQUIRED FOR DUCT CONNECTION. PROVIDE MOTORIZED DAMPER WITHIN DUCTWORK INTERLOCKED WITH ASSOCIATED FAN.

M1.14 PROVIDE SIDE WALL GRILLES TO BE AT APPROXIAMTTE LOCATION SHOWN. GRILLES TO BE AT AN ELEVATION OF 16'-3" A.F.F. COORDNIATE LOCATION WITH ARCHITECT AND OTHER TRADES PROIR TO INSTALL. COORDINATE AIR DEVICE LOCATIONS WITH ACOUSTIC PANELS PRIOR TO INSTALL.

M2.01 ROUTE 3/4" CONDENSATE DRAIN LINE FROM FAN COIL UNIT TO FLOOR DRAIN AS SHOWN. COORDINATE EXACT DRAIN LOCATION WITH PLUMBING. RE: DETAIL 2,9/M6.2.

M3.01 PROVIDE THERMOSTAT AT APPROXIMATE LOCATION SHOWN. THERMOSTAT SHALL BE INSTALLED AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES TO AVOID CONFLICTS.

M3.03 PROVIDE COMBINATION TEMPERATURE/HUMIDITY SENSOR AT APPROXIMATE LOCATION SHOWN. SENSOR SHALL BE INSTALLED AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES TO AVOID CONFLICTS.

M3.06 PROVIDE WIRED WALL MOUNTED CONTROLLER FOR DUCTLESS AIR CONDITIONING UNIT. CONTROLLER SHALL BE PROVIDED BY DUCTLESS AIR CONDITIONING UNIT MANUFACTURER. INSTALL AT SAME ELEVATION AS LIGHT SWITCHES. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES TO AVOID CONFLICTS.

M3.08 LOCATE HVAC VENTILATION EMERGENCY SHUTDOWN SWITCH AT APPROXIMATE LOCATION SHOWN. INSTALL AT SAME ELEVATION AS LIGHT SENSORS.

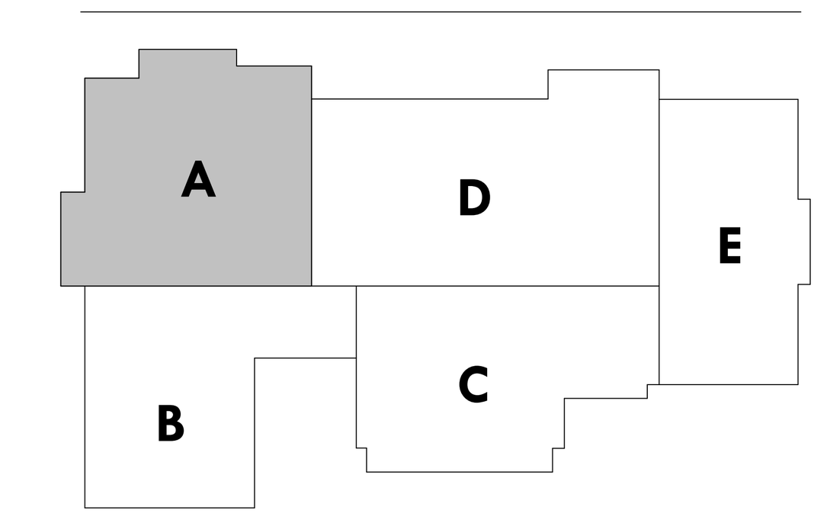
M3.09 LOCATE ADMIN UNIT AFTER HOUR TIMER AT APPROXIMATE LOCATION SHOWN. INSTALL AT SAME ELEVATION AS LIGHT SWITCHES.

M3.11 APPROXIMATE LOCATION OF VAV AIR HANDLING UNIT STATIC PRESSURE SENSOR. LOCATE APPROXIMATELY 2/3 THE LONGEST RUN OF THE ASSOCIATED AHU.

M4.01 PROVIDE FAN POWERED TERMINAL UNIT AT APPROXIMATE LOCATION SHOWN. SUPPORT UNIT FROM STRUCTURE. PROVIDE ALL CLEARANCES AS REQUIRED BY EQUIPMENT MANUFACTURER. COORDINATE WITH ADJACENT PIPING, WALLS, CONDUIT, STRUCTURAL MEMBERS, ETC. RE: DETAIL 4/M6.1.

M4.08 PROVIDE WALL MOUNTED DUCTLESS FAN COIL UNIT AT APPROXIMATE LOCATION SHOWN. INSTALL UNIT AS HIGH AS POSSIBLE ON WALL.

KEY PLAN



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10-02-2024

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TBPE Firm Registration No. 2234
DBR Project # 230393.000
BM | RA/RM | MS/LB | JL/TN | AD

DATE	SEPTEMBER 9, 2024
DRAWN BY	DBR
CHECKED BY	DBR
BRW PROJECT NUMBER	223117.00

NEW CANEY I.S.D.
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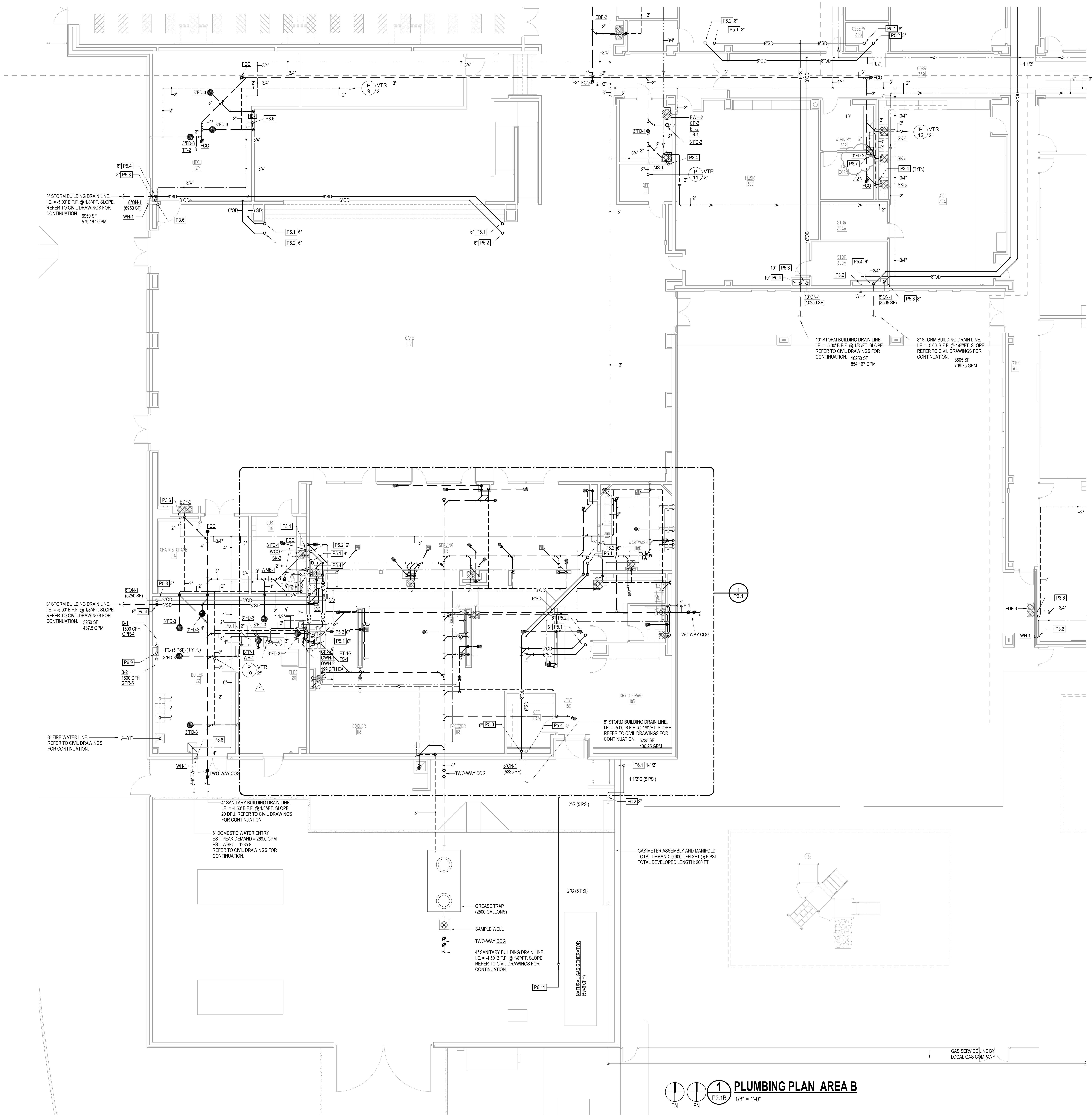
2	Addendum 2	10.02.2024

M2.1A

MECHANICAL PLAN AREA A



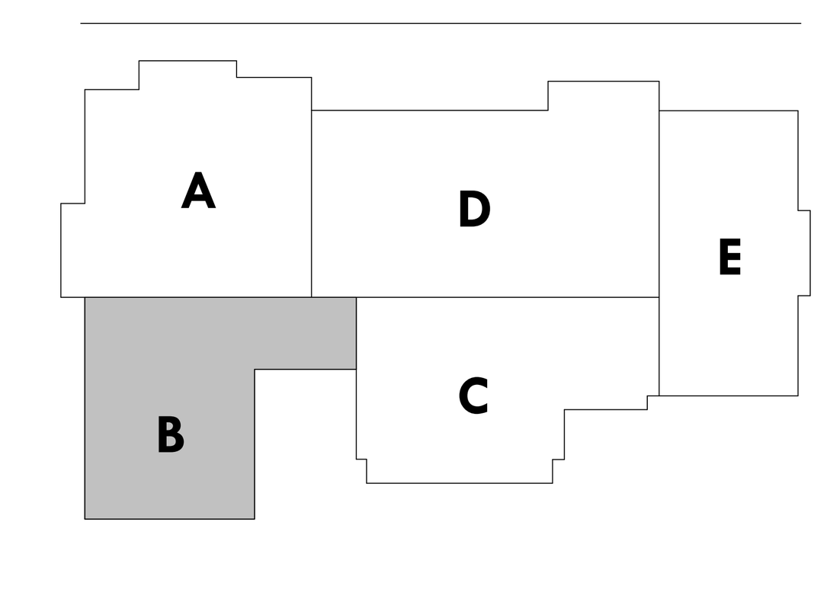
PLUMBING PLAN AREA B

1/8" = 1'-0"

PLUMBING KEYED NOTES

- P3.4 DROP AND EXTEND 3/4" HOT AND COLD WATER TO SERVE FIXTURE(S).
- P3.6 DROP AND EXTEND 3/4" COLD WATER TO SERVE FIXTURE(S).
- P5.1 STORM DOWN FROM ROOF DRAIN ABOVE, SIZE AS NOTED.
- P5.2 STORM DOWN FROM OVERFLOW DRAIN ABOVE, SIZE AS NOTED.
- P5.4 STORM DOWN TO BELOW GRADE, SIZE AS NOTED.
- P5.8 DROP TO DOWNSPOUT OVERFLOW NOZZLE, SIZE AS NOTED.
- P6.1 GAS (5PSI) UP FROM METER MANIFOLD TO ROOF TOP. SIZE AS NOTED.
- P6.2 GAS (5PSI) DOWN FROM METER MANIFOLD TO BELOW GRADE TO GENERATOR. SIZE AS NOTED.
- P6.9 1-1/4" GAS (5 PSI) DOWN FROM HOODED ROOF PENETRATION TO GAS BOILERS.
- P6.11 2" GAS (5 PSI) UP FROM BELOW SLAB TO GENERATOR.
- P8.7 PROVIDE FUNNEL FLOOR DRAIN TIGHT TO WALL FOR INDIRECT DRAIN LINE.
- P9.1 MAKE-UP WATER LINE COMPLETE WITH SHUT-OFF AND BACKFLOW DEVICE. RE: MECHANICAL DRAWINGS FOR CONTINUATION.

KEY PLAN



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P2.1B

PLUMBING PLAN AREA B

FIRE ALARM:

A. ALL CEILING MOUNTED DEVICES SHALL BE CENTERED IN THE CEILING TILE.

B. ALL FIRE ALARM VISUAL AND AUDIO/VISUAL DEVICES SHALL BE CONFIGURED TO PROVIDE CANDELA RATINGS IN ACCORDANCE WITH ADA & NFPA COVERAGES.

C. ALL VISUAL FIRE ALARM DEVICES SHALL BE 75 CD UNLESS NOTED OTHERWISE.

D. SPEAKERS SHALL BE AUDIBLE AND INTELLIGIBLE. LOCATIONS OF SPEAKER SHOWN ARE FOR REFERENCE ONLY, EXACT QUANTITY AND LOCATIONS OF SPEAKERS/SPEAKER STROBES SHALL BE AS REQUIRED BY FIRE ALARM SHOP DRAWINGS AND FULLY DESIGNED AND SEALED BY A LICENSED FIRE ALARM CONTRACTOR. CONTRACTOR SHALL DESIGN PER PROJECT SPECIFICATIONS AND MEET LOCAL AUTHORITY HAVING JURISDICTION REQUIMRENTS.

E. ELECTRICAL CONTRACTOR SHALL INCLUDE, IN THEIR BID, SCOPE FOR 120V DEDICATED 15A CIRCUIT WITH (3) #12 CONDUCTOR IN 3/4" CONDUIT TO EACH SPEAKER AMPLIFIER REQUIRED BY FIRE ALARM SHOP DRAWINGS. EXACT QUANTITY AND LOCATION MAY NOT BE SHOWN ON ELECTRICAL PLANS.

F. ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT PATHWAYS FOR FIRE ALARM PLENUM CONDUCTORS WHERE REQUIRED TO TRANSIT HARD CEILING AREAS. CONDUIT RACEWAYS SHALL ALLOW ACCESS TO CONDUIT AT EACH END IN ACCESSIBLE LOCATIONS ABOVE CEILINGS.

G. CONTRACTOR SHALL PROVIDE ADDITIONAL DEVICES AS REQUIRED BY FIRE ALARM SHOP DRAWINGS TO MEET CODE-MINIMUM DEVICE COVERAGE.

H. CONTRACTOR SHALL PERFORM AUDIBILITY TESTS AS REQUIRED BY LOCAL AHJ AND SUBMIT AUDIBILITY TESTS TO BUILDING OWNER AND ENGINEER OF RECORD FOR REVIEW.

I. ALL MECHANICAL AIR HANDLERS/FCUS/FPTUS WITH 2000CFM OR MORE SHALL HAVE A DUCT SMOKE DETECTOR IN THE SUPPLY DUCT AND A FIRE ALARM SHUT DOWN RELAY TIED TO THE MAIN FIRE ALARM PANEL. REFER TO THE MECHANICAL PLANS/ SCHEDULES FOR CFM VALUES AND FOR EXACT LOCATIONS.

2

J. CONTRACTOR SHALL ADD TEST SWITCH AT SWITCH HEIGHT ON WALL FOR EACH DUCT SMOKE DETECTOR. TYPICAL OF ALL DUCT SMOKE DETECTORS IN MECHANICAL ROOMS.

FOOD SERVICE:

A. ELECTRICAL PLANS ARE SCHEMATIC AND INDICATE GENERAL LOCATION OF ALL DEVICES. ALL ROUGH-INS AND SPECIAL INSTALLATION REQUIREMENTS FOR ANY DEVICE, FIXTURE, OR APPLIANCE IN THE KITCHEN SHALL BE BASED ON FOOD SERVICE PLANS.

B. ALL CONNECTIONS SHOWN ON THESE MAY INCLUDE SPECIAL MOUNTING INSTRUCTIONS THAT ARE INDICATED ON FOOD SERVICE PLANS. REFERENCE FOOD SERVICE FOR ALL DETAILS

C. ANY DISCONNECT INDICATED WITHIN THE LIMITS OF THE KITCHEN WALLS SHALL BE STAINLESS STEEL.

D. ALL RECEPTACLES SHALL BE GFCI PER 2020 NATIONAL ELECTRIC CODE. PROVIDE WITH WEATHERPROOF COVERS AS DESCRIBED ON FOOD SERVICE PLANS. GFCI PROTECTION SHALL BE DONE BY MEANS OF GFCI BREAKERS.

E. EXACT ELECTRICAL CONNECTION REQUIREMENTS FOR COOLER/FREEZER SYSTEM AND ACCESSORIES ARE INDICATED ON FOOD SERVICE PLANS. ELECTRICAL PLANS SHOW SCHEMATIC CIRCUIT ONLY.

F. VERIFY QUANTITY OF CONDUCTORS REQUIRED BETWEEN COOLER/FREEZER AND REFRIGERATION RACK WITH FOOD SERVICE EQUIPMENT SUBMITTAL.

G. ELECTRICAL CONTRACTOR SHALL PROVIDE CIRCUIT TO KITCHEN HOOD LIGHTS, AND SHALL INCLUDE CONNECTION TO THE LIGHT SWITCH AS PART OF THEIR SCOPE.

H. INTERCONNECT FIRE PROTECTION SYSTEM TO PANEL BOX SHUNT TRIP(S) AND BUILDING ALARM - BY DIVISION 26. ALL EQUIPMENT/DEVICES LOCATED BELOW THE KITCHEN EXHAUST HOOD SHALL BE PROVIDED WITH SHUNT TRIP BREAKERS.

I. EMPTY CONDUIT RUN FROM CASHIER STATION TO MANAGERS OFFICE FOR POS SYSTEM BY DIVISION 26. LOCATION OF MANAGER'S OFFICE SHALL BE VERIFIED IN FIELD WITH FOOD SERVICE INSTALLERS PRIOR TO INSTALLATION OF CONDUIT AND ASSOCIATED ROUGH-INS.

SITE PLAN:

A. ALL EQUIPMENT LOCATIONS ARE APPROXIMATE. COORDINATE WITH ARCHITECT/CIVIL PRIOR TO INSTALLATION FOR EXACT EQUIPMENT LOCATION.

B. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN EXCAVATING TO AVOID DAMAGE TO EXISTING POWER, COMMUNICATIONS, SEWER/SANITARY, WATER AND/OR GAS LINES, THAT MAY BE BURIED IN AREA OF NEW CONSTRUCTION OR WHEN DIGGING NEW TRENCH FOR NEW FEEDERS.

C. COORDINATE ALL WORK WITH ARCHITECTURAL AND CIVIL PLANS BEFORE INSTALLATION OF ALL ELECTRICAL EQUIPMENT GEAR.

D. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL PULL STRINGS TO ALL UNDERGROUND EMPTY CONDUITS.

E. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH DATA/COMM TECHNOLOGY INSTALLER FOR EXACT NUMBER OF EMPTY CONDUITS AND SIZES OF ALL THE UNDERGROUND DATA/COMM CONDUITS.

F. REFERENCE SPECIFICATIONS FOR MATERIALS AND METHODS.

G. WHERE CONDUIT PATH CROSSES UNDER EXISTING PAVEMENT, CONTRACTOR SHALL BORE UNDER PAVEMENT.

H. CONTRACTOR SHALL PROVIDE FLUSH WITH GRADE PULL-BOXES AS REQUIRED EVERY 250' MAXIMUM FOR DIVISION 26 AND 150' FOR DIVISION 27/28. SERVICE LATERAL PULL-BOXES SHALL BE COORDINATED WITH THE POWER COMPANY AND THEIR SPECIFICATIONS.

NOTE TO ELECTRICAL CONTRACTOR:
ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT, OUTLET BOXES, JUNCTION BOXES FOR ALL TECHNOLOGY, LOW VOLTAGE, ACCESS CONTROL SECURITY, SURVEILLANCE, AND OTHER DIVISION 27/28 SCOPE. REFER TO DIVISION 27/28 DRAWINGS AND SPECIFICATIONS FOR ALL WORK REQUIRED. OMISSION OF THIS SCOPE FROM DIV 26 SCOPE OF WORK IS PROHIBITED.

LIGHTING:

A. CONTROL DEVICES SHALL BE PROVIDED IN ACCORDANCE WITH PERFORMANCE DESCRIPTION INDICATED IN THE LIGHTING CONTROL DEVICE SCHEDULE FOUND ON SCHEDULE SHEETS.

B. MULTIPLE SWITCHES SHOWN TOGETHER SHALL BE GANGED UNDER A COMMON COVER PLATE.

C. PROVIDE LABELING OF ALL CONTROL DEVICES, SWITCH PACKS, LIGHT FIXTURES, JUNCTION BOXES, ETC IN ACCORDANCE WITH ELECTRICAL SPECIFICATIONS.

D. LIGHTING FIXTURE LOCATIONS SHOWN TAKE PRECEDENT IN CEILING LOCATION TO ALL OTHER TRADES. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ENSURING OTHER TRADES DO NOT IMPACT SPACING AND/OR OVERLAYMENT OF OTHER DEVICES WHERE LIGHT FIXTURES MUST BE INSTALLED.

E. REFERENCE SYMBOLS LEGEND FOR LIGHT SWITCH DEVICE NOMENCLATURE AND SWITCH-LEG ASSOCIATIONS.

F. ALL 2X2, 2X4 FIXTURES INSTALLED IN SUSPENDED GRID CEILING SHALL BE PROVIDED WITH (4) SECONDARY SUPPORT WIRES ANCHORED DIRECTLY TO STRUCTURE.

G. ALL LIGHT FIXTURES LABELED AS "NL" SHALL BE "ALWAYS ON" FOR NIGHT LIGHT.BYPASS LOCAL LIGHT SWITCH,TYPICAL.

H. "BB" DENOTES BATTERY BACKUP LIGHT FIXTURE.

CORRIDOR LIGHTING SEQUENCE OF OPERATIONS NOTES

A. SCHEDULE CONTROLS FOR CORRIDOR/COLLOBORATION SPACE LIGHTING. LIGHTS WILL BE SCHEDULED TO BE ON DURING REGULAR OPERATING HOURS(OWNER TO PROVIDE SCHEDULE).

B. CEILING AND WALL MOUNTED OCCUPANCY SENSORS ARE PROVIDED THROUGHOUT FOR AFTER HOURS PURPOSES. THE OCCUPANCY SENSORS WILL TURN ON THE CORRIDOR LIGHTS ON WHEN THE TIMING IS OUTSIDE OF THE SCHEDULED HOURS. THE LIGHTS IN THESE SPACES WILL THEN STAY ON FOR UP TO 30 MINUTES(DURATION OF TIME CAN BE PROGRAMMED TO 30 MINUTES OR LESS.) OCCUPANCY SENSORS WILL NOT CONTROL LIGHTS DURING REGULAR OPERATING HOURS.

C. MASTER OVERRIDE SWITCH, "ON" CONTROL, LOCATED IN THE TEACHERS LOUNGE, SHALL OVERRIDE ALL THE CORRIDOR LIGHTING ON ONLY, TO PREVENT TIMING OUT BY THE OCCUPANCY SENSORS FOR AFTER HOURS EVENTS/HOLIDAY EVENTS,ETC. (SEE PLANS FOR LOCATION)

EMER. LIGHTING:

A. ROUTE AN UNSWITCHED HOT LEG TO ALL LIGHT FIXTURES DESIGNATED AS EMERGENCY FIXTURES. HOT LEG SHALL ORIGINATE FROM CIRCUIT SERVING NORMAL LIGHTING FIXTURES IN THAT SPACE. UNSWITCHED HOT LEG SHALL CONNECT TO THE NORMAL POWER SENSING LUG ON THE UL924 GENERATOR TRANSFER DEVICE (GTD). REFER TO GTD WIRING DIAGRAM ON SHEET E601 FOR ADDITIONAL INFORMATION.

B. ALL EXTERIOR EMERGENCY LIGHTING SHALL BE PROVIDED WITH AN EMERGENCY LIGHTING CIRCUIT AND NORMAL LIGHTING CIRCUIT AND ROUTED THROUGH GTD 20A GENERATOR TRANSFER DEVICE - UL 1008 AND CONTROLS LIGHTING RELAY. LOCATE GTD ADJACENT TO EMERGENCY PANEL SERVING CIRCUIT.REFER TO GTD WIRING DIAGRAM ON SHEET E601 FOR ADDITIONAL INFORMATION.

C. ROUTE AN UNSWICHED HOT LEG TO ALL LIGHT FIXTURES DESIGNATED AS EMERGENCY FIXTURES. HOT LEG SHALL ORIGINATE FROM CIRCUIT SERVING NORMAL LIGHTING FIXTURES IN THAT SPACE. UNSWITCHED HOT LEG SHALL CONNECT TO THE NORMAL POWER SENSING LUG ON THE EMERGENCY BATTERY PACK.

D. ALL EMERGENCY LIGHT FIXTURE GENERATOR TRANSFER DEVICES SHALL BE CONNECTED TO THE EMERGENCY EGRESS LIGHTING CIRCUIT INDICATED ON DRAWINGS. ALL EMERGENCY WIRING SHALL BE ROUTED IN A SEPARATE CONDUIT.

E. PROVIDE UNSWITCHED CIRCUIT TO ALL EXIT SIGNS ORIGINATING FROM CIRCUIT NEAREST EMERGENCY CIRCUIT.

F. ALL SINGLE FACED EXIT SIGNS SHALL BE "X1" AND ALL DOUBLE FACED EXIT SIGNS SHALL BE "X2" UNLESS NOTED OTHERWISE. REFERENCE PLANS FOR CHEVRON CONFIGURATION COORDINATE INSTALLATION REQUIREMENT WITH ARCHITECTURAL PLANS.

G. EMERGENCY LIGHTING SHALL BE CONTROLLED WITH THE NORMAL LIGHTING WITHIN THE SPACE UNLESS NOTED OTHERWISE.

LIGHTING CONTROLS COMMISSIONING:

THE CONTRACTOR SHALL INCLUDE, AS PART OF THEIR SCOPE, THE REQUIREMENTS TO COMMISSION THE LIGHTING CONTROL SYSTEM, AS REQUIRED BELOW. THE LIGHTING CONTROL SYSTEM MAY BE STAND-ALONE, RELAY, CONTACTOR OPERATED, TIMER, PHOTOCELL, OR ANY COMBINATION OF THESE LISTED. FOR EACH OF THE FOLLOWING TASKS, RECORD THE DATE PERFORMED, PERSON(S) COMPLETING THE VERIFICATION, INTIAL SETTING/CONDITION, ACTIONS PERFORMED, AND FINAL SETTING CONDITION. SUBMIT DOCUMENTATION TO THE CITY HAVING JURISDICATION AT OR BEFORE SUBSTANTION COMPLETION. SUBMITTING AFTER SUBSTANTION COMPLETION WILL DELAY THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY. REFER TO COMMISSIONING SPECIFICATIONS FOR ADDITIONAL INFORMATION AND COORDINATE ALL COMMISSIONING REQUIREMENTS WITH THE COMMISSIONING AGENT.

A. ENSURE ALL LIGHTING FIXTURES HAVE LAMPS THAT ARE FUNCTIONAL

B. TEST ALL EXIT SIGNS, EMERGENCY LIGHTING FIXTURES, AND EMERGENCY TRANSFER DEVICES OR CENTRAL BATTERY SYSTEM.

C. VERIFY THAT ALL OCCUPANCY SENSORS HAVE BEEN INSTALLED AND ARE OPERATIONS.

D. TEST ALL WALL-SWITCH OCCUPANCY SENSORS

E. TEST ALL DIGITAL/LOW VOLTAGE SWITCHES AND THEIR PERIPHERALS, WHERE INSTALLED, SUCH AS:

   1. CEILING MOUNTED OCCUPANCY SENSORS
   2. POWER PACKS
   3. DAYLIGHT SENSING/HARVESTING SENSORS

F. VERIFY THE FOLLOWING FUNATIONALITY AND/OR INSTALLATION OF ALL CONTROL DEVICES

   1. SENSORS HAVE BEEN LOCATED AND AIMED TO RELEVANT LOCATIONS OF OCCUPANCY, PER MANUFACTURERS RECOMMENDATION
   2. VERIFY STATUS INDICATORS ON DEVICES ARE OPERATIONAL AND CORRECT
   3. DEVICES CONTROL LIGHTING FIXTURES AS SPECIFIED ON THE DRAWINGS
   4. ALL OCCUPANCY/VACANCY MODE TIME-OUTS ARE SET TO NO GREATER THAN 30 MINUTES.
   5. ALL CONTROL DEVICES ARE SET VACANCY MODE, OR NO MORE THAN 50% OF FIXTURES TURN ON AUTOMATICALLY UPON ENTERING A SPACE/ROOM.
   6. MOVEMENT IN ADJACENT SPACES OR CYCLING OF HVAC SYSTEMS DOES NOT FALSELY TRIGGER SENSORS. (VACANCY MODE PREFERRED TO PREVENT THIS) SHOULD ADDITIONAL INFORMATION REGARDING THE TESTING REQUIREMENTS BE NEEDED, REFERENCE IECC 2015 SECTION 408.3

POWER:

A. ELECTRICAL DEVICES SHOWN ARE NOT EXACT. ALL DEVICE LOCATIONS SHALL BE VERIFIED WITH ARCHITECTURAL MILLWORK, CASEWORK, AND GENERAL ELEVATION VIEWS.

B. HVAC AND PLUMBING EQUIPMENT LOCATIONS ARE NOT EXACT, AND THE EXACT POINT OF CONNECTION TO EQUIPMENT MAY VARY. COORDINATE EXACT ROUGH-IN REQUIREMENTS IN FIELD AND WITH FINAL SUBMITTALS FOR ALL DIV. 21/22/23 EQUIPMENT.

C. PROVIDE LABELING OF ALL DEVICES, CONDUIT, PANELS, AND JUNCTION BOXES IN ACCORDANCE WITH ELECTRICAL SPECIFICATIONS.

D. MINIMIZE ROOF PENETRATIONS. WHERE ABLE, ROUTE ALL CONDUIT FOR ROOF MOUNTED EQUIPMENT THROUGH ROOF CURB. CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING NECESSARY WATER PROOFING AROUND ROOF PENETRATIONS WITH ROOFING INSTALLER.

E. ALL RECEPTACLES LOCATED IN RESTROOMS, JANITOR CLOSETS, MECHANICAL ROOMS, ELEVATOR PITS OR SHAFTS, ELEVATOR EQUIPMENT ROOMS, SERVING ELECTRIC DRINKING FOUNTAINS OR VENDING MACHINES, LOCATED WITHIN 6' OF A SINK, LOCATED ABOVE A WET COUNTERTOP OR IN A KITCHEN OR COFFEE BAR SHALL BE GFCI. FEED-THRU GFCI/GFI IS PROHIBITED, ALL GFCI/GFI DEVICES SHALL BE PROVIDED WITH INDIVIDUAL TEST/RESET FEATURES. GFCI RESET SHALL BE READILY ACCESSIBLE AND REMOTE RESET SWITHCES PROVIDED AS REQUIRED TO PREVENT MOVING LARGE EQUIPMENT TO RESET THE DEVICE.

F. MULTI-WIRE HOME RUNS SHALL NOT BE ALLOWED EXCEPT IN CLASSROOMS. REFER TO POWER GENERAL NOTE 'G' FOR FURTHER DETAILS. PROVIDE DEDICATED NEUTRALS FOR ALL CIRCUITS. SHARING CONDUIT IS PERMISSIBLE WHERE TOTAL CONDUCTOR AMPACITY DERATING HAS BEEN PERFORMED BY ELECTRICAL CONTRACTOR. THE NEUTRAL IS CONSIDERED CURRENT-CARRYING.

G. MULTI-WIRE HOME RUNS SHALL BE ALLOWED ONLY IN CLASSROOMS. MULTI-WIRE HOMERUNS SHALL HAVE HANDLE TIES TO COMPLY WITH NEC.

H. ALL RECEPTACLES SHALL BE TAMPER RESISTANT TYPE. ALL RECEPTACLES SHALL BE HEAVY DUTY WITH GROOVE/INDENT FINDER.

I. LABEL ALL CIRCUITS AT ALL JUNCTION BOXES AND OUTLETS WITH TYPE-WRITTEN LABEL IDENTIFYING CIRCUIT ON THE FRONT OF THE DEVICE COVER PLATES AND ON COVER OF JUNCTION BOX. IF A BOX HAS MULTIPLE CIRCUITS WITHIN, LABEL ALL CIRCUITS. CIRCUIT LABEL SHALL IDENTIFY THE PANEL NAME AND BREAKER NUMBER.

   EXAMPLE:L-1

   PANEL: "L"
   CIRCUIT NUMBER: 1

J. CONTRACTOR SHALLL INDICATE CIRCUIT SERVING EACH WIRING DEVICE BY PROVIDING TYPE WRITTEN LABELING LOCATED ON THE INSIDE FACE OF EACH WIRING DEVICE COVERPLATE.

K. **ALL VFDS, MOTOR STARTERS, OR DISCONNECT SWITCHES SHALL BE SUPPLIED BY DIVISION 23 AND INSTALLED BY DIVISION 26 UNLESS NOTED OTHERWISE. ELECTRICAL CONNECTIONS SHALL BE PROVIDED BY DIVISION 26. DIVISION 26 SHALL COORDINATE WITH DIVISION 23 PRIOR TO ROUGH-IN.**

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TBPE Firm Registration No. 2234
DBR Project # 230383.000

DATE	SEPTEMBER 9, 2024
DRAWN BY	Author
CHECKED BY	Checker
BRW PROJECT NUMBER	223117.00

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NO.	REVISION	DATE
1	Addendum 1	09.23.2024
2	Addendum 2	10.02.2024

E0.2

ELECTRICAL GENERAL NOTES

GENERAL NOTE

A REFER TO SHEET E0.2 FOR GENERAL NOTES.
B REFER TO SHEET E0.2 FOR CORRIDOR LIGHTING SEQUENCE OF OPERATIONS NOTES.

ELECTRICAL KEYED NOTES

E3.5 PROVIDE SINGLE POINT OF POWER AT CHILLER FOR FREEZE PROTECTION. COORDINATE EXACT POWER REQUIREMENTS WITH DIVISION 26.

E4.16 PROVIDE 120V POWER RECEPTACLE ON COLUMN NEAR ROOF STRUCTURES FOR FANS, FANS SHALL BE OFCI. FIELD COORDINATE EXACT LOCATION, ELEVATION, AND INSTALLATION DETAILS WITH ARCHITECT AND OWNER PRIOR TO STARTING ANY WORK.

E5.14 APPROXIMATE LOCATION OF TAMPER SWITCH. PROVIDE 120V POWER FOR TAMPER SWITCH. CONTRACTOR SHALL COORDINATE INSTALLATION REQUIREMENTS WITH CIVIL/ARCHITECT/OWNER PRIOR TO ROUGH-IN. FIELD COORDINATE WITH ALL DIVISIONS.

E5.15 PROVIDE 120V JUNCTION BOX FOR CONNECTION TO IRRIGATION CONTROLLER BOX. FIELD COORDINATE WITH LANDSCAPE CONTRACTOR, ARCHITECT AND OWNER PRIOR TO STARTING ANY WORK.

E5.16 PROVIDE 120V JUNCTION BOX FOR CONNECTION TO MOTORIZED VALVES. FIELD COORDINATE WITH MECHANICAL CONTRACTOR, ARCHITECT AND OWNER PRIOR TO STARTING ANY WORK.

E7.1 APPROXIMATE LOCATION OF EXISTING 3-PHASE OVERHEAD POWER LINES.

E7.2 APPROXIMATE PROPOSED LOCATION OF NEW UTILITY COMPANY TERMINAL POWER POLE. PROVIDE A MINIMUM OF 18' DISTANCE FROM PROPERTY LINE. EXACT POLE LOCATION AND ROUTING SHALL BE DETERMINED BY ENTERGY. COORDINATE PLACEMENTS OF POLE ALONG PROPERTY'S EASEMENTS REQUIREMENTS WITH ENTERGY AND ALL SITE UTILITIES PRIOR TO ROUGH-IN.

E7.3 PROPOSED ROUTING OF POWER COMPANY UNDERGROUND PRIMARY DUCTBANK. PROVIDE (2) 5" CONDUITS. PROVIDE CAUTION TAPE AT 12" DEPTH AND TOP OF CONDUIT AT 36" DEPTH. COORDINATE ROUTING WITH ENTERGY AND ALL SITE UTILITIES PRIOR TO ROUGH-IN. INSTALL PER ENTERGY SERVICE GUIDELINES, SPECIFICATIONS AND STANDARDS. REFER TO ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.

E7.4 NEW UNDERGROUND FIRE SPRINKLER VAULT. REFERENCE CIVIL PLANS FOR EXACT LOCATION. PROVIDE RELAY FOR FIRE ALARM POST INDICATOR VALVE(PIV). PROVIDE FLOW SWITCH AND SUPERVISOR/TAMPER SWITCH IN VAULT. ROUTE 1" CONDUIT FROM FIRE SPRINKLER RISER ROOM TO VAULT FOR ALL ASSOCIATED FIRE ALARM WIRING. FIRE ALARM INSTALLER SHALL COORDINATE ALL MONITORING POINTS OF SPRINKLER SYSTEM WITH FIRE PROTECTION CONTRACTOR. ALL POINTS SHALL BE MONITORED BY THE FIRE ALARM CONTROL PANEL. COORDINATE PLACEMENT OF ALL DEVICES WITH CIVIL DRAWINGS.

E7.6 PROVIDE A MINIMUM OF 12 FEET CLEARANCE IN FRONT OF TRANSFORMER. COORDINATE WITH ENTERGY AND ALL SITE UTILITIES PRIOR TO ROUGH-IN.

E7.8 PROPOSED LOCATION OF NEW ENTERGY PAD MOUNTED TRANSFORMER. PROVIDE CONCRETE PAD PER ENTERGY SERVICE STANDARDS AND SPECIFICATIONS. COORDINATE WITH UTILITY POWER COMPANY AND ALL SITE UTILITIES PRIOR TO ROUGH-IN.

E7.9 PROVIDE 20' X 20' EASEMENT FROM THE CENTER OF THE TRANSFORMER CONCRETE PAD. REFER TO ENTERGY CONCRETE PAD STANDARDS AND SPECIFICATIONS FOR FINAL PAD SIZE AND DIMENSIONS. COORDINATE WITH ENTERGY AND ALL SITE UTILITIES PRIOR TO ROUGH-IN.

E7.10 PROVIDE BOLLARDS PER ENTERGY SERVICE STANDARDS AND SPECIFICATIONS. COORDINATE WITH UTILITY POWER COMPANY AND ALL SITE UTILITIES PRIOR TO ROUGH-IN.

E7.11 PROPOSED ROUTING OF NEW UNDERGROUND SECONDARY DUCTBANK FOR NEW SERVICE ENTRANCE, PER ENTERGY SERVICE STANDARDS AND SPECIFICATIONS. COORDINATE WITH ENTERGY AND ALL SITE UTILITIES PRIOR TO ROUGH-IN. REFER TO ONE-LINE DIAGRAM FOR FURTHER DETAILS.

E7.16 PROPOSED LOCATION OF NEW GENERATOR LOAD BANK. ALL WORKING CLEARANCES PER NEC AND LOAD BANK MANUFACTURER SHALL BE MET. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION.

E7.17 PROVIDE EXTERIOR FLOOD LIGHTING FIXTURE. CONTRACTOR SHALL FIELD COORDINATE EXACT LOCATION WITH ARCHITECT/OWNER PRIOR TO INSTALLATION.

E7.19 PROVIDE (1) 1" CONDUIT WITH PULL STRING CONDUIT STUB-OUT FOR FUTURE ELECTRONIC MARQUEE SIGN BACK TO "MECH A132" ROOM. CONDUIT SHALL BE LABELED, AND CAPPED. PROVIDE AND INSTALL ALL PULL BOXES AS REQUIRED.

E7.22 PROPOSED ROUTING OF UNDERGROUND SECONDARY DUCTBANK FROM MAIN SERVICE EQUIPMENT 'MCB' TO MAIN SWITCHBOARD 'MSB' IN ELEC ROOM B131. FIELD COORDINATE WITH ALL SITE UTILITIES PRIOR TO ROUGH-IN. REFER TO ONE-LINE DIAGRAM FOR FURTHER DETAILS.

E7.23 PROPOSED ROUTING OF UNDERGROUND DUCTBANK FROM NATURAL GAS ENGINE, EMERGENCY GENERATOR 'GN1' TO DISTRIBUTION PANELBOARD 'EDP' IN ELEC ROOM B131. FIELD COORDINATE WITH ALL SITE UTILITIES PRIOR TO ROUGH-IN. REFER TO ONE-LINE DIAGRAM FOR FURTHER DETAILS.

E7.24 APPROXIMATE LOCATION OF MARQUEE SIGN. PROVIDE (2) CIRCUITS TO MONUMENT SIGN. PROVIDE (2) DEDICATED 20 AMP CIRCUITS FOR DIGITAL MARQUEE SIGN. PROVIDE 30A/NF/2P/N3R DISCONNECT FOR MARQUEE SIGN. PROVIDE 2" CONDUIT FOR POWER. PROVIDE MINIMUM 1" CONDUIT FOR TECHNOLOGY WIRING. REFER TO TECHNOLOGY PLANS FOR ADDITIONAL MARQUEE SIGN REQUIREMENTS.

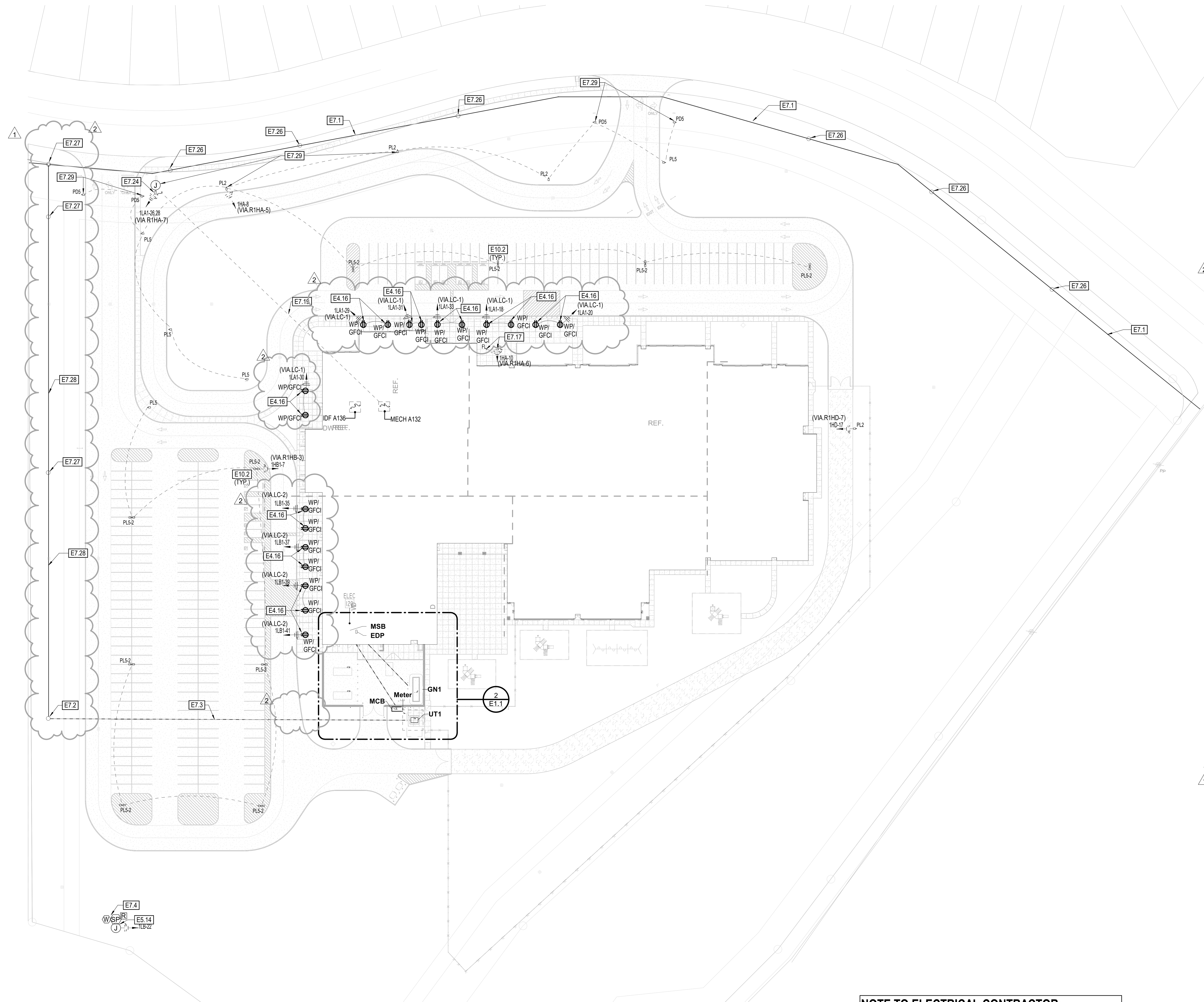
E7.26 APPROXIMATE LOCATION OF EXISTING POWER COMPANY POWER POLE.

E7.27 APPROXIMATE PROPOSED LOCATION OF NEW UTILITY COMPANY POWER POLE. EXACT POLE LOCATION AND ROUTING SHALL BE DETERMINED BY ENTERGY. COORDINATE PLACEMENTS OF POLE ALONG PROPERTY'S EASEMENTS REQUIREMENTS WITH ENTERGY AND ALL SITE UTILITIES PRIOR TO ROUGH-IN.

E7.28 APPROXIMATE PROPOSED ROUTING OF POWER COMPANY OVERHEAD PRIMARY LINE. PROVIDE A MINIMUM OF 18' FROM PROPERTY LINE. COORDINATE ROUTING AND PLACEMENTS OF POLE ALONG PROPERTY'S EASEMENTS REQUIREMENTS WITH ENTERGY AND ALL SITE UTILITIES PRIOR TO ROUGH-IN. INSTALL PER ENTERGY SERVICE GUIDELINES, SPECIFICATIONS AND STANDARDS.

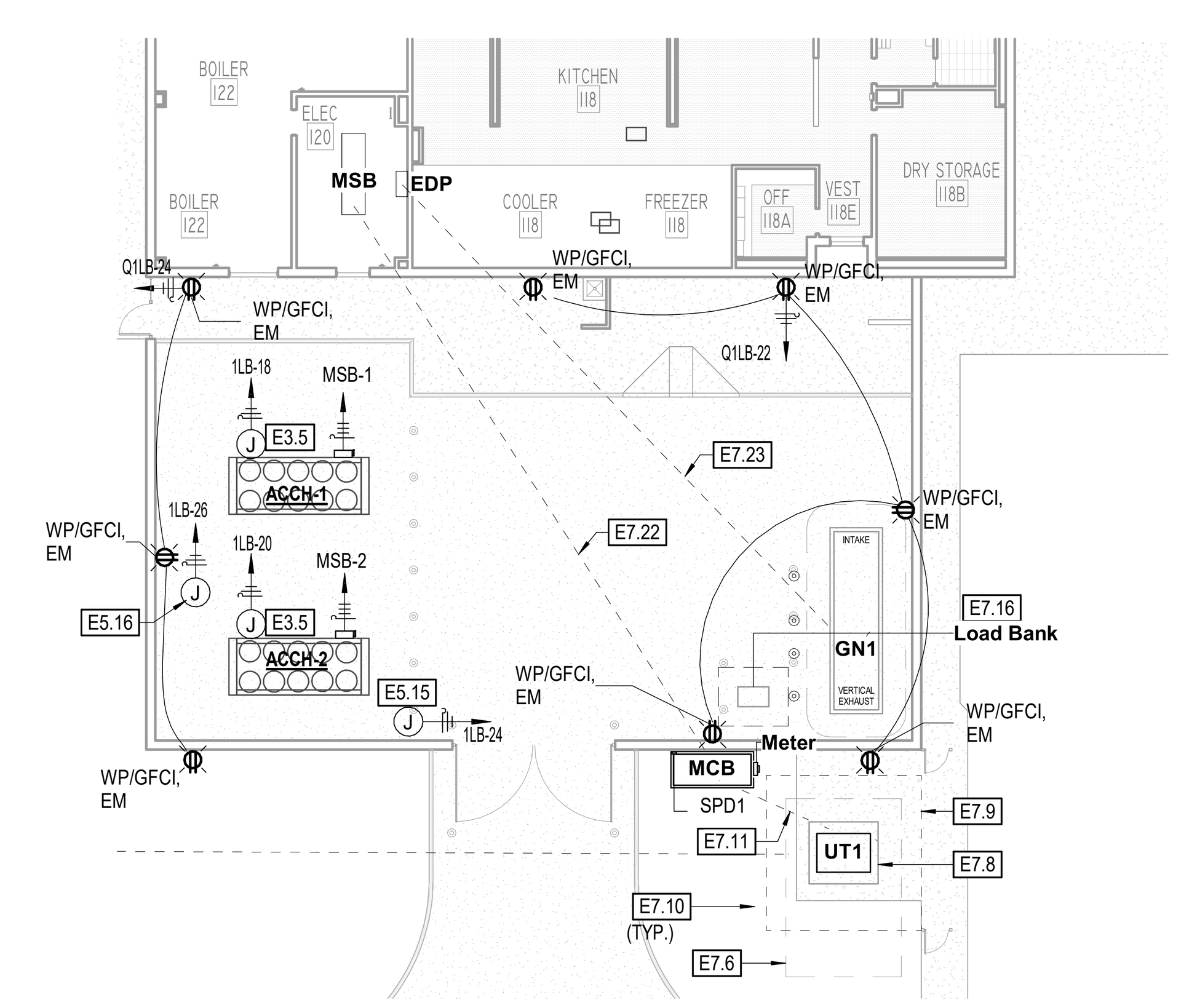
E7.29 CONTRACTOR SHALL COORDINATE PLACEMENT OF POLE LIGHTS WITH POWER COMPANY OVERHEAD LINE AND UNDERGROUND EASEMENTS PRIOR TO STARTING ANY WORK.

E10.2 EXTERIOR LIGHTING SHALL BE CONTROLLED BY RELAY PANEL WITH SCHEDULE AND PHOTOCELL OVERRIDE PER 2018 IECC CODE REQUIREMENTS. PHOTOCELL SHALL BE INTEGRATED WITH LIGHTING RELAY PANEL. COORDINATE SCHEDULE WITH OWNER. PARKING LOT POLE LIGHTS SHALL BE CONTROLLED SEPARATELY. PROVIDE CONTACT RELAY TO ALLOW BAS SYSTEM INTEGRATION COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR FOR SYSTEM INTEGRATION.



NOTE TO ELECTRICAL CONTRACTOR:
ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT, OUTLET BOXES, JUNCTION BOXES FOR ALL TECHNOLOGY, LOW VOLTAGE, ACCESS CONTROL SECURITY, SURVEILLANCE, AND OTHER DIVISION 27/28 SCOPE. REFER TO DIVISION 27/28 DRAWINGS AND SPECIFICATIONS FOR ALL WORK REQUIRED. OMISSION OF THIS SCOPE FROM DIV 26 SCOPE OF WORK IS PROHIBITED.

1 E1.1 **ELECTRICAL SITE PLAN**
1" = 50'-0"



2 E1.1 **ENLARGED ELECTRICAL CENTRAL PLANT**
1" = 20'-0"

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DATE	SEPTEMBER 9, 2024
DRAWN BY	DBR
CHECKED BY	DBR
BRW PROJECT NUMBER	223117.00

NEW CANEY I.S.D.
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NO.	REVISION	DATE
1	Addendum 1	09.23.2024
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E1.1

ELECTRICAL SITE PLAN

2018 IECC STANDARD SEQUENCE OF OPERATIONS

V0.2 - 01022019

ROOM TYPE	AUTO ON (OCCUPANCY SENSOR)	MANUAL ON (VACANCY) (OCCUPANCY SENSOR)	AUTO OFF (20MIN MAX) (OCCUPANCY SENSOR)	PARTIAL OFF AT NORMAL HOURS (OCCUPANCY SENSOR)	AUTO OFF AFTER HOURS (30MIN MAX) (OCCUPANCY SENSOR)	TIME ON (TIME SWITCH)	TIME OFF (TIME SWITCH)	ASTRONOMIC OR PHOTOCELL ON/OFF (TIME SWITCH)	AUTO STEP CONTROL WITH OFF (DAYLIGHT CTL)	AUTO CONTINUOUS DIM WITH OFF (DAYLIGHT CTL)	MANUAL BI-LEVEL REDUCTION CONTROL (LT REDUCT)	MANUAL CONTINUOUS DIM CONTROL (LT REDUCT)	MANUAL ON/OFF SWITCH (MANUAL CONTROL)	MANUAL DIMMER SWITCH (MANUAL CONTROL)	DISPLAY, ACCENT, TASK CONTROL (MANUAL CONTROL)	SEQUENCE OF OPERATION
Spaces (≤ 300 sq ft)		•	20 MIN							D	•	D	•	D		Manual On 100%; Occupancy sensor Auto Off; Manual control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
"Enclosed Offices "		•	20 MIN							D	•	D	•	D		Manual On 100%; Occupancy sensor Auto Off; Manual control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
"Open Plan Office Areas ≤600SqFt zones"		•	20 MIN							D	•	D	•	D	•	Manual On 100%; Occupancy sensor Auto Off; Manual control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
Class/Lecture/Training Room		•	20 MIN							D	•	D	•	D	•	Manual On 100%; Occupancy sensor Auto Off; Manual control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
Conference/Meeting Room		•	20 MIN							D	•	D	•	D	•	Manual On 100%; Occupancy sensor Auto Off; Manual control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
Copy/Print Room		•	20 MIN							D	•	D	•	D		Manual On 100%; Occupancy sensor Auto Off; Manual control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
Restroom	100%		20 MIN										•			Auto On 100%. Occupancy sensor Auto Off; Manual control.
Lunch/Break Rooms/Lounges	50%		20 MIN							D	•	D	•	D	•	Auto On 50%; Occupancy sensor Auto Off; Manual control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
Corridor	100%		20 MIN							D		D	•	D	•	Auto On 100%. Occupancy sensor Auto Off; Manual control device; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
Stairwell	100%		20 MIN							D		D	•	D		Auto On 100%; Occupancy sensor Auto Off; Manual control; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
Storage Room		•	20 MIN							D	•	D	•	D		Manual On 100%; Occupancy sensor Auto Off; Manual control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
Cafeteria / Gym / Library	100%						11PM			D	•	D	•	D		Auto On 100%; Occupancy sensor Auto Off; Manual control and ≥50% light reducation with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
Multipurpose Rooms		•	20 MIN							D	•	D	•	D		Manual On 100%; Occupancy sensor Auto Off; Manual control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
Locker Room	100%		20 MIN							D	•	D	•	D		Auto On 100%; Occupancy sensor Auto Off; Manual control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
Lab		•	20 MIN							D	•	D	•	D		Manual On 100%; Occupancy sensor Auto Off; Manual control and ≥50% light reduction with two on/off controls; Where ≥150W in daylight area, use continuous dimming daylighting control and dimmer switch.
Building Façade / Landscape (Decorative)						CLOSE	OPEN	•								Dusk Auto On with astro time switch or photocell; Evening Time Auto Off no later than one hour after business close. Morning Time Auto On no earlier than one hour before business open; Dawn Auto Off.
"Exterior / Parking Lots / Site Lighting (Setback)"						6AM	12AM	•								Dusk Auto On with astro time switch or photocell; Reduce at least 30% from midnight or up to one hour after business close. Auto On to full at 6:00AM or up to one hour before business open. Dawn Auto Off.

•= Designation for code compliant default control design for spaces without daylighting control
D= Where daylighting control is required, "D" designation indicates controls required in the space for code compliance design
CK= Captive Key Switch system for use in Hotel/Motel and Guest Suites

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURE	MODEL	MOUNTING	LAMPS	VOLTAGE	WATTAGE	DESCRIPTION
A1	METALUX	24CZ2-50-S-UNV-L840-CD1-U	RECESSED	LED 4000K	277 V	40 VA	2'X4' LED CENTER BASKET TROFFER WITH SMOOTH LENS, 5000 LUMENS
A1E	METALUX	24CZ2-50-S-UNV-L840-CD1-U	RECESSED	LED 4000K	277 V	40 VA	SAME AS TYPE "A1" EXCEPT WITH UL 924 "GTD" TRANSFER DEVICE BY LIGHTING CONTROLS MANUFACTURER.
A2	METALUX	24CZ2-40-S-UNV-L840-CD1-U	RECESSED	LED 4000K	277 V	30 VA	2'X4' LED CENTER BASKET TROFFER WITH SMOOTH LENS, 4100 LUMENS
A2E	METALUX	24CZ240-S-UNV-L840-CD1-U	RECESSED	LED 4000K	277 V	30 VA	SAME AS TYPE "A2" EXCEPT WITH UL 924 "GTD" TRANSFER DEVICE BY LIGHTING CONTROLS MANUFACTURER.
A3	METALUX	24CZ2-65HE-S-UNV-L840-CD1-U	RECESSED	LED 4000K	277 V	50 VA	2'X4' LED CENTER BASKET TROFFER WITH SMOOTH LENS, 6600 LUMENS
A3E	METALUX	24CZ2-65HE-S-UNV-L840-CD1-U	RECESSED	LED 4000K	277 V	50 VA	SAME AS TYPE "A3" EXCEPT WITH UL 924 "GTD" TRANSFER DEVICE BY LIGHTING CONTROLS MANUFACTURER.
A4	METALUX	24GRFA-LD5-64-F1-UNV-L840-CD1-G3-U	RECESSED	LED 4000K	277 V	48 VA	2'X4' TROFFER WITH FROSTED ACRYLIC .125" LENS, 6400 LUMENS, G3 GASKETING
A4E	METALUX	24GRFA-LD5-64-F1-UNV-L840-CD1-G3-U	RECESSED	LED 4000K	277 V	48 VA	SAME AS TYPE "A4" EXCEPT WITH UL 924 "GTD" TRANSFER DEVICE BY LIGHTING CONTROLS MANUFACTURER.
A5E	METALUX	24CZ2-65HE-S-UNV-EL14W-L840-CD1-U	RECESSED	LED 4000K	277 V	50 VA	SAME AS TYPE "A3" EXCEPT WITH EMERGENCY REMOTE BATTERY PACK. PROVIDE WITH PART NUMBER LCPSD-25DF.
A6E	METALUX	24CZ240-S-UNV-EL14W-L840-CD1-U	RECESSED	LED 4000K	277 V	30 VA	SAME AS TYPE "A2" EXCEPT WITH EMERGENCY BATTERY PACK.
B1	METALUX	22CZ2-32-S-UNV-L840-CD1-U	RECESSED	LED 4000K	277 V	24 VA	2'X2 'LED CENTER BASKET TROFFER WITH SMOOTH LENS, 3200 LUMENS
D1	HALO COMMERCIAL	HC615D010-HM60525840-61WDH	RECESSED	LED 4000K	277 V	16 VA	6" RECESSED ROUND DOWNLIGHT, SEMI SPEC FINISH AND FLANGE, 1500 LUMENS
D1E	HALO COMMERCIAL	HC615D010-REM14-HM60525840-61WDH	RECESSED	LED 4000K	277 V	16 VA	SAME AS TYPE "D1" EXCEPT WITH EMERGENCY BATTERY PACK.
D2	HALO COMMERCIAL	HC620D010-HM60525840-61WDH	RECESSED	LED 4000K	277 V	21 VA	6" RECESSED ROUND DOWNLIGHT, SEMI SPEC FINISH AND FLANGE, 2000 LUMENS
D2E	HALO COMMERCIAL	HC620D010-HM60525840-61WDH	RECESSED	LED 4000K	277 V	21 VA	SAME AS TYPE "D2" EXCEPT WITH UL 1008 "GTD" TRANSFER DEVICE BY LIGHTING CONTROLS MANUFACTURER.
FL	INVUE	VFS-K-B40-5-LED-E1-MST-xx-SMT-xx-SF-xx-VFS-TV-xx	GROUND	LED 4000K	277 V	67 VA	LED FLAG POLE LUMINAIRE, SURFACE MOUNT TENON, TOP AND SIDE VISOR
HB1	METALUX	VHB-24-W-UNV-L840-CD-U+VHB-WG+VHB-SPM+LOOP-10	SURFACE	LED 4000K	277 V	165 VA	LED HIGH BAY LUMINAIRE, IMPACT RESISTANT, WIRE GUARD, WIDE DISTRIBUTION, SINGLE POINT MOUNT KIT, #2 CABLE 10FT WITH LOOP
HB1E	METALUX	VHB-24-W-UNV-L840-CD-U+VHB-WG+VHB-SPM+LOOP-10	SURFACE	LED 4000K	277 V	165 VA	SAME AS TYPE "HB1" EXCEPT WITH UL 924 "GTD" TRANSFER DEVICE BY LIGHTING CONTROLS MANUFACTURER.
HB2E	METALUX	VHB-24-W-UNV-L840-EL20W-REM-CD-U+VHB-WG+VHB-SPM+LOOP-10	SURFACE	LED 4000K	277 V	165 VA	SAME AS TYPE "HB1" EXCEPT WITH EMERGENCY BATTERY PACK.
KE	STARTEK	HYDROD-4-1000-SD-40K-80-FINISH-SM(x)-U-1C	SURFACE	LED 4000K	277 V	58 VA	4FT SURFACE MOUNT LINEAR, IK08 IMPACT PROTECTION. PROVIDE WITH UL 1008 "GTD" TRANSFER DEVICE BY LIGHTING CONTROLS MANUFACTURE.
LE	METALUX	4SNLED-LD5-41SL-LW-UNV-EL14W-L840-CD1-U + WG/SNF-4FT-B	CHAIN HUNG	LED 4000K	277 V	35 VA	4' STAND STRIPLIGHT, FULL FROSTED LENS, 4100 LUMENS. PROVIDE WITH UL 924 "GTD" TRANSFER DEVICE BY LIGHTING CONTROLS MANUFACTURER.
M	HALO	L80830FL940(x)	TRACK	LED 4000K	120 V	37 VA	LED TRACK HEAD, FLOOD OPTIC, TO BE PROVIDED WITH HALO SINGLE CIRCUIT TRACK PER PLAN
PD5	MCGRAW EDISON	GAT-CA6-LED-50-740-U-55-5-6-X-BZ + RTAP15-5-11-BRZ-3-BC	POLE	LED 4000K	277 V	54 VA	LED POST TOP LUMINAIRE, BRONZE FINISH, TYPE V, WITH A 15FT ROUND TAPERED ALUMINUM POLE, BRONZE FINISH. LIGHTS SHALL DIM TO 50% WHEN NO OCCUPANCY IS DETECTED DURING SCHEDULED ON TIME.
PL2	LUMARK	PRV-XL-PA3A-740-VOLT-T2R-BZ-ZW-WOFFXX + RTAP25-6-7-BRZ-DM10-BC-VDP	POLE	LED 4000K	277 V	172 VA	AREA SITE LUMINAIRE, TYPE II, WITH 25FT ROUND, TAPERED ALUMINUM POLE, BRONZE FINISH, PROGRAMMABLE DIMMING SENSOR. LIGHTS SHALL DIM TO 50% WHEN NO OCCUPANCY IS DETECTED DURING SCHEDULED ON TIME. PROVIDE WITH INTERNAL HOUSE SIDE SHIELD.
PL5	LUMARK	PRV-XL-PA3A-740-VOLT-T3-BZ-ZW-WOFFXX + RTAP25-6-7-BRZ-DM10-BC-VDP	POLE	LED 4000K	277 V	172 VA	AREA SITE LUMINAIRE, TYPE V, WITH 25FT ROUND, TAPERED ALUMINUM POLE, BRONZE FINISH, PROGRAMMABLE DIMMING SENSOR
PL5-2	LUMARK	PRV-XL-PA3A-740-VOLT-5WQ-BZ-ZQ-WOFFXX + RTAP25-6-7-BRZ-DM2180-BC-VDP	POLE	LED 4000K	277 V	344 VA	AREA SITE LUMINAIRES @ 180°, TYPE V, WITH 25FT ROUND, TAPERED ALUMINUM POLE, BRONZE FINISH, PROGRAMMABLE DIMMING SENSOR. LIGHTS SHALL DIM TO 50% WHEN NO OCCUPANCY IS DETECTED DURING SCHEDULED ON TIME.
WP	MCGRAW EDISON	ISS-SA1C-740-U-T4W-BZ	SURFACE	LED 4000K	277 V	34 VA	LED SPECIFICATION GRADE WALL PACK, TYPE IV DISTRIBUTION, BRONZE FINISH
WPE	MCGRAW EDISON	ISS-SA1C-740-U-T4W-BZ	SURFACE	LED 4000K	277 V	34 VA	SAME AS TYPE "D2" EXCEPT WITH UL 1008 "GTD" TRANSFER DEVICE BY LIGHTING CONTROLS MANUFACTURER.
X1	SURE-LITES	CX71BK	SURFACE	LED	277 V	3 VA	SINGLE FACE DIE CAST ALUMINUM EXT, BATTERY BACK UP, BLACK FINISH, RED OR GREEN LETTERS. PROVIDE MOUNTING KIT AS SHOWN ON PLANS.
X1WB	SURE-LITES	LPXW71RBK	SURFACE	LED	277 V	3 VA	WET LOCATION SINGLE FACE EXIT SIGN, BATTERY BACK UP, RED LETTERS, BLACK FINISH
X2	SURE-LITES	CX72BK	SURFACE	LED	277 V	3 VA	DOULBE FACE DIE CAST ALUMINUM EXT, BATTERY BACK UP, BLACK FINISH, RED OR GREEN LETTERS
XG	SURE-LITES	CX71BK-WG10	SURFACE	LED	277 V	3 VA	SINGLE FACE DIE CAST ALUMINUM EXT, BATTERY BACK UP, BLACK FINISH, RED OR GREEN LETTERS, WALL MOUNT WIRE GUARD

NOTES:
1. LIGHTING FIXTURE CATALOG NUMBERS AND DESCRIPTIONS ARE SCHEDULED FOR ESTABLISHING QUALITY, APPEARANCE AND PERFORMANCE OF THE FIXTURES AS REQUIRED BY THE DESIGN. EXACT CATALOG NUMBERS DESCRIBING MOUNTING CONDITIONS, FINISHES AND REQUIREMENTS RELATED TO TRIMS AND LENS FOR ALL FIXTURES SHALL BE CONFIRMED (BY THE CONTRACTOR) WITH THE ROOM FINISH SCHEDULE AND REFLECTED CEILING PLANS, INCLUDING GRID TYPES, ON THE ARCHITECTURAL DRAWINGS PRIOR TO BIDDING. FIXTURES SHALL BE SUBMITTED ACCORDING TO THE CONDITIONS INDICATED ON THE ARCHITECTURAL PLANS. REFER TO THE WRITTEN SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. THE NEW LIGHT FIXTURES SCHEDULED ARE THE BASIS OF DESIGN. IT IS NOT INTENDED TO LIMIT COMPETITION FROM EQUAL MANUFACTURERS. ALL BIDDERS SHALL SUBMIT THEIR PROPOSED LIGHT FIXTURES IN SUBMITTAL FORM A MINIMUM OF 10 BUSINESS DAYS PRIOR TO BID DATE FOR REVIEW. APPROVED LIGHT FIXTURES WILL BE ISSUED IN AN ADDENDUM.

RELAY PANEL - R1HA

RELAY NO.	AREA SERVED	CIRCUIT NO.	NOTES
R1HA-1	CORRIDOR LIGHTS	SEE PLANS	2
R1HA-2	EM.LIGHTS	SEE PLANS	2
R1HA-3	EXTERIOR WALL PACKS	SEE PLANS	1
R1HA-4	EXTERIOR DOWNLIGHTS	SEE PLANS	1
R1HA-5	SITE POLE LIGHTS	SEE PLANS	1
R1HA-6	FLAG POLE LIGHTS	SEE PLANS	1
R1HA-7	MARQUEE SIGN	SEE PLANS	1
R1HA-8	EXTERIOR SIGNAGE	SEE PLANS	1
R1HA-9	SPARE	SEE PLANS	
R1HA-10	SPARE	SEE PLANS	
R1HA-11	SPARE	SEE PLANS	
R1HA-12	SPARE	SEE PLANS	
R1HA-13	SPARE	SEE PLANS	
R1HA-14	SPARE	SEE PLANS	
R1HA-15	SPARE	SEE PLANS	
R1HA-16	SPARE	SEE PLANS	
R1HA-17	SPARE	SEE PLANS	
R1HA-18	SPARE	SEE PLANS	
R1HA-19	SPARE	SEE PLANS	
R1HA-20	SPARE	SEE PLANS	

NOTES:
1. EXTERIOR LIGHTING SHALL BE PHOTOCELL CONTROLLED WITH ON/OFF SCHEDULING AS REQUIRED BY THE 2018 IECC.
2. CORRIDOR LIGHTING SHALL BE CONTROLLED BY ON/OFF SCHEDULING.PROVIDE OVERRIDE SWITCHES AND OCCUPANCY SENSORS PROVIDED AT CORRIDORS. REFERENCE PLANS FOR SWITCHING ZONES. CONFIRM SCHEDULING AND OVERRIDE LOCATIONS WITH OWNER. REFER TO CORIDOR LIGHTING SEQUENCE OF OPERATIONS NOTES ON PLANS.

RELAY PANEL - R1HB

RELAY NO.	AREA SERVED	CIRCUIT NO.	NOTES
R1HB-1	EXTERIOR WALL PACKS	SEE PLANS	1
R1HB-2	EXTERIOR DOWNLIGHTS	SEE PLANS	1
R1HB-3	SITE POLE LIGHTS	SEE PLANS	1
R1HB-4	MECH.YARD LTG.	SEE PLANS	1
R1HB-5	SPARE	SEE PLANS	
R1HB-6	SPARE	SEE PLANS	
R1HB-7	SPARE	SEE PLANS	
R1-HB-8	SPARE	SEE PLANS	
R1-HB-9	SPARE	SEE PLANS	
R1-HB-10	SPARE	SEE PLANS	
R1-HB-11	SPARE	SEE PLANS	
R1-HB-12	SPARE	SEE PLANS	
R1-HB-13	SPARE	SEE PLANS	
R1-HB-14	SPARE	SEE PLANS	
R1-HB-15	SPARE	SEE PLANS	
R1-HB-16	SPARE	SEE PLANS	
R1-HB-17	SPARE	SEE PLANS	
R1-HB-18	SPARE	SEE PLANS	
R1-HB-19	SPARE	SEE PLANS	
R1-HB-20	SPARE	SEE PLANS	

NOTES:
1. EXTERIOR LIGHTING SHALL BE PHOTOCELL CONTROLLED WITH ON/OFF SCHEDULING AS REQUIRED BY THE 2018 IECC.
2. CORRIDOR LIGHTING SHALL BE CONTROLLED BY ON/OFF SCHEDULING.PROVIDE OVERRIDE SWITCHES AND OCCUPANCY SENSORS PROVIDED AT CORRIDORS. REFERENCE PLANS FOR SWITCHING ZONES. CONFIRM SCHEDULING AND OVERRIDE LOCATIONS WITH OWNER. REFER TO COORIDOR LIGHTING SEQUENCE OF OPERATIONS NOTES ON PLANS.

RELAY PANEL - R1HD

RELAY NO.	AREA SERVED	CIRCUIT NO.	NOTES
R1HD-1	CORRIDOR LIGHTS	SEE PLANS	2
R1HD-2	CORRIDOR LIGHTS	SEE PLANS	2
R1HD-3	EM.LIGHTS	SEE PLANS	2
R1HD-4	EM.LIGHTS	SEE PLANS	2
R1HD-5	EXTERIOR WALL PACKS	SEE PLANS	1
R1HD-6	EXTERIOR WALL DOWNLIGHTS	SEE PLANS	1
R1HD-7	SITE POLE LIGHTS	SEE PLANS	1
R1HD-8	SPARE	SEE PLANS	
R1HD-9	SPARE	SEE PLANS	
R1HD-10	SPARE	SEE PLANS	
R1HD-11	SPARE	SEE PLANS	
R1HD-12	SPARE	SEE PLANS	
R1HD-13	SPARE	SEE PLANS	
R1HD-14	SPARE	SEE PLANS	
R1HD-15	SPARE	SEE PLANS	
R1HD-16	SPARE	SEE PLANS	
R1HD-17	SPARE	SEE PLANS	
R1HD-18	SPARE	SEE PLANS	
R1HD-19	SPARE	SEE PLANS	
R1HD-20	SPARE	SEE PLANS	

NOTES:
1. EXTERIOR LIGHTING SHALL BE PHOTOCELL CONTROLLED WITH ON/OFF SCHEDULING AS REQUIRED BY THE 2018 IECC.
2. CORRIDOR LIGHTING SHALL BE CONTROLLED BY ON/OFF SCHEDULING.PROVIDE OVERRIDE SWITCHES AND OCCUPANCY SENSORS PROVIDED AT CORRIDORS. REFERENCE PLANS FOR SWITCHING ZONES. CONFIRM SCHEDULING AND OVERRIDE LOCATIONS WITH OWNER. REFER TO COORIDOR LIGHTING SEQUENCE OF OPERATIONS NOTES ON PLANS.

LIGHTING CONTROLS DEVICE SCHEDULE

TYPE	DESCRIPTION	COMMENTS
S S^3 S^4 S^K	LINE VOLTAGE SWITCH.	'3' INDICATES THREE WAY SWITCHING. '4' INDICATES FOUR WAY SWITCHING. 'K' INDICATES SWITCH SHALL BE KEYED SWITCH.
S^{MC}	LINE VOLTAGE MOMENTARY CONTACT SWITCH.	
S^T	LINE VOLTAGE TIMER SWITCH WITH DIGITAL TIMER.	RATED FOR 120/277VAC. PROVIDE WITH AUDIBLE & VISUAL ALERTS. USER PROGRAMMABLE FOR 5MIN-12HR TIME-OUT SETTINGS.
S^{OC1}	LINE VOLTAGE WALL MOUNT DUAL TECHNOLOGY OCCUPANCY SENSOR	SENSOR SHALL BE SET TO VACANCY MODE
S^{OC2}	LINE VOLTAGE WALL MOUNT DUAL TECHNOLOGY OCCUPANCY SENSOR	SENSOR SHALL BE SET TO OCCUPANCY MODE
S^{LV} S^{LVK}	LOW VOLTAGE MANUAL CONTROL.	CONNECT TO POWER PACK IF OCCUPANCY SENSORS ARE INDICATED ON PLAN. PROVIDE MULTI-BUTTON SWITCH AS REQUIRED PER SWITCH LEGS SHOWN ON PLANS. 'K' INDICATES SWITCH SHALL BE KEYED SWITCH. HUBBLE KEYED SWITCH MODEL:LVSKEY-3M-SS,KEY #126 OR APPROVED EQUAL BY THE OWNER.
S^{LVD}	LOW VOLTAGE DIGITAL 3 BUTTON SWITCH.	PROVIDE 3 BUTTON SWITCH FOR EACH SWITCH LEG AS INDICATED ON THE PLANS. THE SWITCH SHALL HAVE THE FOLLOWING BUTTONS: MASTER ON/OFF, RAISE AND LOWER. THE MASTER ON/OFF SWITCH SHALL BE ENGRAVED WITH THE ZONE IT CONTROLS AND THE RAISE/LOWER SWITCHES SHALL BE ENGRAVED WITH RAISE/LOWER. PROVIDE DIGITAL ROOM CONTROLLER.
S^{OR} S^{ORK}	LOW VOLTAGE MANUAL CONTROL.	CONNECT TO RELAY PANEL OR TIME CLOCK FOR TIME OF DAY OVERRIDE AS NOTED ON PLANS. PROVIDE MULTI-BUTTON SWITCH AS NOTED ON PLANS. 'K' INDICATES SWITCH SHALL BE KEYED SWITCH.
S^D	LOW VOLTAGE SWITCH WITH 0-10V SLIDE DIMMER WITH MASTER OVER RIDE BUTTON (ANALOG)	PROVIDE POWER PACKS AS REQUIRED.
OC1	CEILING MOUNTED DUAL TECH OCCUPANCY SENSOR.	SET TO VACANCY MODE. PROVIDE POWER PACKS AS NEEDED.
OC2	CEILING MOUNTED DUAL TECH OCCUPANCY SENSOR.	SET TO OCCUPANCY MODE. PROVIDE POWER PACKS AS REQUIRED.
OC3	CEILING MOUNTED ULTRASONIC OR MICROPHONIC OCCUPANCY SENSOR.	SET TO OCCUPANCY MODE. PROVIDE POWER PACKS AS REQUIRED.
OC4	CEILING MOUNTED DUAL TECH OCCUPANCY SENSOR FOR HIGH BAY APPLICATION.	SET TO OCCUPANCY MODE. PROVIDE POWER PACKS AS REQUIRED.
DS	DAYLIGHT HARVESTING SENSOR	CONNECT TO ROOM CONTROLLER OR INDIVIDUAL LIGHT FIXTURE FOR DAYLIGHT HARVESTING DIMMING CONTROL.

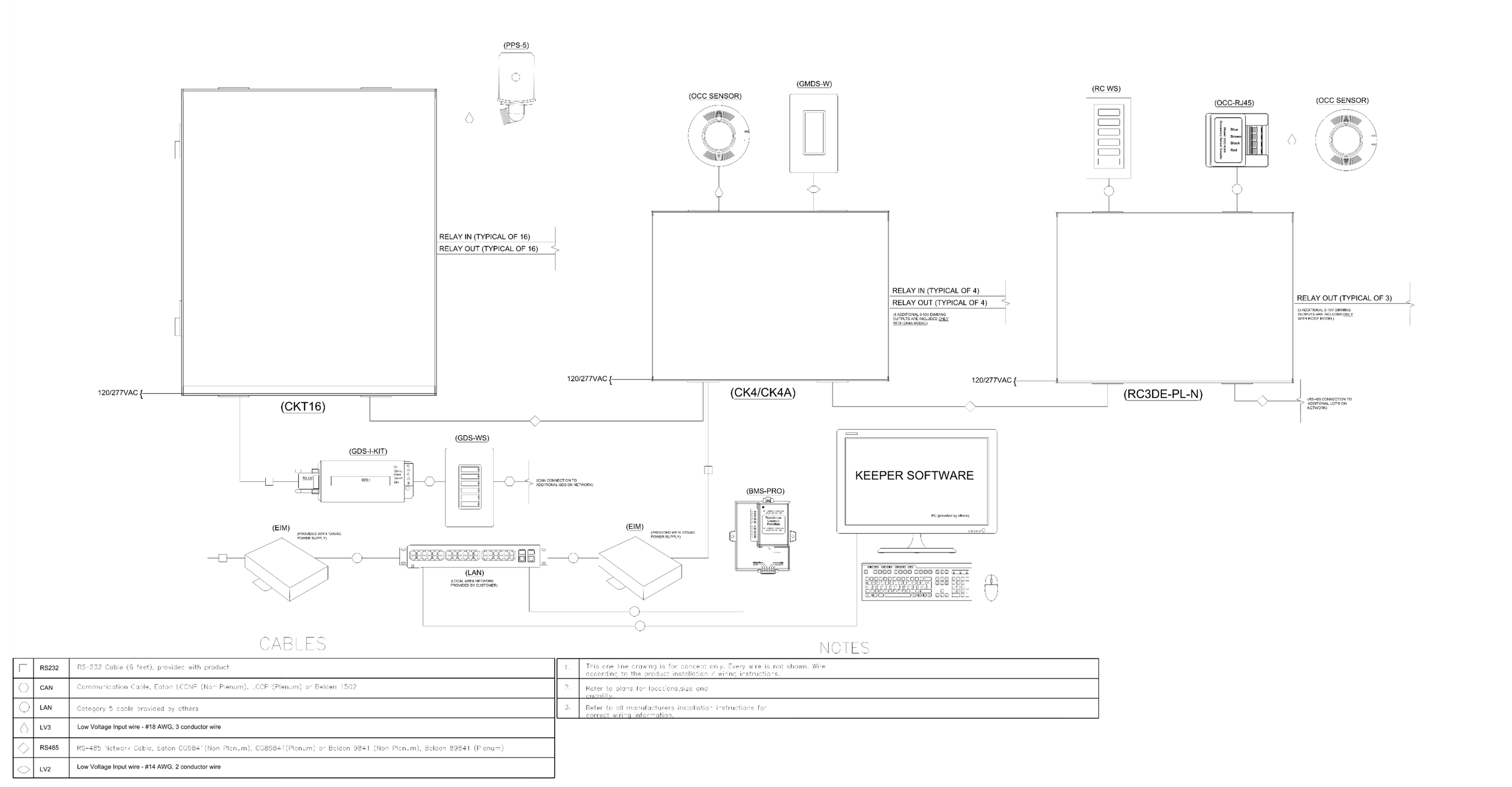
NOTES:
1. COOPER GREENGATE IS THE BASIS OF DESIGN. NO SUBSTITUTION ALLOWED.
2. LIGHTING CONTROLS SHALL BE PRICED AS AN ALTERNATE. LIGHTING CONTRLS BID SHALL NOT BE PACKAGE WITH THE LIGHT FIXTURE PACKAGE.
3. BASIS OF DESIGN SHALL BE A HARD-WIRED TYPE SYSTEM, UNLESS NOTED OTHERWISE.
4. PROVIDE ADDITIONAL SET OF CONTACTS ON OCCUPANCY SENSOR TO CONTROL HVAC SETBACK.

2

LIGHTING CONTACTOR SCHEDULE

MARK	POLES	AMPS/ POLES	COIL VOLTAGE	CONTROL METHOD	MARK
LC-1	8	20	120	SCHEDULE VIA BAS, LOCAL OVERRIDE SWITCHES PER PLANS, H-O-A	NORTH EXTERIOR FANS
LC-2	8	20	120	SCHEDULE VIA BAS, LOCAL OVERRIDE SWITCHES PER PLANS, H-O-A	WEST EXTERIOR FANS

LIGHTING CONTACTOR NOTES
1. EXTERIOR FAN RECEPTACLES SHALL BE CONTROLLED BY MOMENTARY CONACT SWITCH.
2. EACH CONTACTOR SHALL HAVE HAND-OFF-AUTO (HOA) SWITCH ADJACENT TO CONTACTOR.
3. POLE QUANTITIES INDICATED HAVE SPARE POLES BUILT IN. REFERENCE PLANS FOR ACTUAL QUANTITY OF CIRCUITS GOING TO EACH LIGHTING CONTACTOR.
4. LOCATE NEW CONTACTOR ADJACENT TO PANEL SERVING CIRCUIT, CONNECT NEW CONTACTOR TO NEAREST 120V CONVENIENCE CIRCUIT.



1 GREENGATE SYSTEM RELAY PANEL AND COMPONENTS
NOT TO SCALE

BROWN REYNOLDS WATFORD ARCHITECTS
4501 MAGNOLIA COVE DRIVE
SUITE 250
HOUSTON, TEXAS 77345
281-361-3800
WWW.BRWARCH.COM

BRENT B. MOE
117260
LICENSED PROFESSIONAL ENGINEER
10-02-2024

DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 230393.000
BM | RA/RM | MS/LB | JL/TN | AD

NO.	REVISION	DATE
1	Addendum 1	09.23.2024
2	Addendum 2	10.02.2024

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

DATE SEPTEMBER 9, 2024
DRAWN BY DBR
CHECKED BY DBR
BRW PROJECT NUMBER 223117.00

E5.1

ELECTRICAL SCHEDULES

Panelboard 1HB

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire — 2 Section — Type 1 -Nema Rating | Mains Type: MLO | 0 A -- -- | 400 A BUS (Copper) | -- | LUGS: DOUBLE -- | Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT		CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
						1	2						
	1745 VA	F	KEF-01	12	20 A	3	4	50 A	8	HWP-1	M	17458 VA	
						5	6						
						7	8						
	1745 VA	F	KEF-02	12	20 A	9	10	50 A	8	HWP-2	M	17458 VA	
						11	12						
	0 VA	--	Spare	12	20 A	13	14						
	0 VA	--	Spare	12	20 A	15	16	60 A	6	CHP-1	MT	22447 VA	
	0 VA	--	Spare	12	20 A	17	18						
						19	20						
	7500 VA	M	EUH-02	12	20 A	21	22	60 A	6	CHP-2	MT	22447 VA	
						23	24						
	0 VA	--	Spare	12	20 A	25	26	20 A	12	EUH-01	M	3000 VA	
	0 VA	--	Spare	12	20 A	27	28	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	29	30	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	31	32	--	12	Space	--	0 VA	
	0 VA	--	Spare	12	20 A	33	34	--	12	Space	--	0 VA	
	0 VA	--	Spare	12	20 A	35	36	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	37	38						
	0 VA	--	Space	12	--	39	40	70 A	4	T1LB	Spare; R; WH;...	25030 VA	
	0 VA	--	Space	12	--	41	42						
	0 VA	--	Spare	12	20 A	43	44	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	45	46	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	47	48	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	49	50	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	51	52	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	53	54	20 A	12	Spare	--	0 VA	
	0 VA	--	Space	12	--	55	56	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	57	58	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	59	60	--	12	Space	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	1080 VA	100.00%	1080 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen	1000 VA	100.00%	1000 VA		(EL)Ext. Ltg.			
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.	1285 VA	100.00%	1285 VA
220.60	(F)Fans	8362 VA	100.00%	8362 VA	220.5	(MT)Lrg. Motor	44894 VA	112.50%	50506 VA
	(M)Misc.	62209 VA	100.00%	62209 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 118830 VA VA = 143 A
Total Load (Diversified): 124442 VA VA = 150 A
Location of Panel: ELEC 120

Panelboard 1LB

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire — 2 Section — Type 1 -Nema Rating | Mains Type: MCB | 150 A MCB -- | 225 A BUS (Copper) | -- | LUGS: -- -- | Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT		CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	360 VA	R	RC - RM. B128	12	20 A	1	2	20 A	12	EF-02	F	528 VA	
	360 VA	R	RC - RM. B129	12	20 A	3	4	20 A	12	VF-01	F	696 VA	
	1000 VA	K	MICROWAVE	12	20 A	5	6	20 A	12	VF-02	F	696 VA	
	4333 VA	M	DRYER	10	30 A	7	8	20 A	12	VF-03	F	696 VA	
						9	10	20 A	12	KEF-03	F	696 VA	
	1000 VA	M	WASHER	12	20 A	11	12	20 A	12	KEF-04	F	864 VA	
	85 VA	WH	CP1-G	12	20 A	13	14	20 A	12	KEF-05	F	696 VA	
	480 VA	WH	GWH-1,2	12	20 A	15	16	20 A	12	Spare	--	0 VA	
	720 VA	WH;...	WS-1	12	20 A	17	18	20 A	12	FREEZE PROTECTION	M	720 VA	
	66 VA	M	CP-1	12	20 A	19	20	20 A	12	FREEZE PROTECTION	M	720 VA	
						21	22	20 A	10	TAMPER SWITCH	M	360 VA	
	66 VA	M	CP-2	12	20 A	23	24	20 A	12	IRRIGATION CONTROLS	M	360 VA	
						25	26	20 A	12	MOTORIZED VALVES	M	720 VA	
	2704 VA	M	B-01	12	20 A	27	28	20 A	12	MOTORIZED DAMPERS	M	540 VA	
						29	30	20 A	12	RC - RM. B129	R	180 VA	
	2704 VA	M	B-02	12	20 A	31	32	20 A	12	RC - RM. B129	R	180 VA	
						33	34						
	500 VA	M	GEN BATTERY CHRG	12	20 A	35	36	30 A	10	SPD2	SP	0 VA	
	500 VA	M	GEN ANTI CONDENSATE	12	20 A	37	38						
	1500 VA	M	GEN JACKET HEATER	12	20 A	39	40	20 A	12	Spare	--	0 VA	
						41	42	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	43	44	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	45	46	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	47	48	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	49	50	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	51	52	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	53	54	20 A	12	Spare	--	0 VA	
	0 VA	--	Space	12	--	55	56	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	57	58	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	59	60	--	12	Space	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	1080 VA	100.00%	1080 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen	1000 VA	100.00%	1000 VA		(EL)Ext. Ltg.			
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.	1285 VA	100.00%	1285 VA
220.60	(F)Fans	4872 VA	100.00%	4872 VA	220.5	(MT)Lrg. Motor			
	(M)Misc.	16793 VA	100.00%	16793 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 25030 VA VA = 69 A
Total Load (Diversified): 25030 VA VA = 69 A
Location of Panel: ELEC 120

Panelboard 1HA

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire — 1 Section — Type 1 -Nema Rating | Mains Type: MCB | 225 A MCB -- | 225 A BUS (Copper) | -- | LUGS: -- -- | Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT		CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	0 VA	--	Spare	12	20 A	1	2	20 A	12	LIGHTING	L	1350 VA	
	1840 VA	L	LIGHTING	12	20 A	3	4	20 A	12	LIGHTING	L	720 VA	
	2122 VA	L	LIGHTING	12	20 A	5	6	20 A	12	LIGHTING	L	1815 VA	
	238 VA	EL	EXTERIOR LTG.AREA A	12	20 A	7	8	20 A	12	SITE POLE LIGHTS	EL	2796 VA	
	1397 VA	EL	EXTERIOR LTG.AREA A	12	20 A	9	10	20 A	12	FLAG POLE LIGHTS	EL	134 VA	
	0 VA	--	Spare	12	20 A	11	12	20 A	12	CORRIDOR LIGHTING	L; EL	992 VA	
	0 VA	--	Spare	12	20 A	13	14	15 A	12	FPTU-1-06	F	720 VA	
	1828 VA	F; M	SF-02	12	20 A	15	16	15 A	12	FPTU-1-07	F	720 VA	
	0 VA	--	Spare	12	20 A	17	18	15 A	12	FPTU-1-08	F	720 VA	
	0 VA	--	Spare	12	20 A	19	20	15 A	12	FPTU-1-09	F	1136 VA	
						21	22	15 A	12	FPTU-1-10	F	720 VA	
	11639 VA	F	AHU-01	8	35 A	23	24	15 A	12	FPTU-1-11	F	1136 VA	
						25	26	15 A	12	FPTU-6-13	F	1136 VA	
	0 VA	--	Space	12	--	27	28	15 A	12	FPTU-7-09	F	720 VA	
	0 VA	--	Space	12	--	29	30	15 A	12	FPTU-7-10	F	720 VA	
	0 VA	--	Space	12	--	31	32	15 A	12	FPTU-7-11	F	1524 VA	
	720 VA	F	FPTU-1-01	12	15 A	33	34	15 A	12	FPTU-7-12	F	1136 VA	
	1136 VA	F	FPTU-1-02	12	15 A	35	36						
	720 VA	F	FPTU-1-03	12	15 A	37	38	20 A	12	AHU-02	F	3325 VA	
	720 VA	F	FPTU-1-04	12	15 A	39	40						
	720 VA	F	FPTU-1-05	12	15 A	41	42						
	0 VA	--	Spare	12	20 A	43	44	40 A	8	ACCU-01	C	21482 VA	
	0 VA	--	Spare	12	20 A	45	46						
	0 VA	--	Spare	12	20 A	47	48	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	49	50	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	51	52	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	53	54	20 A	12	Spare	--	0 VA	
	0 VA	--	Space	12	--	55	56						
	0 VA	--	Space	12	--	57	58	125 A	1	T1LA	Spare; R; WH;...	86547 VA	
	0 VA	--	Space	12	--	59	60						

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	39680 VA	62.60%	24840 VA	210.20A	(L)Lighting	8797 VA	125.00%	10996 VA
220.56	(K)Kitchen	5400 VA	65.00%	3510 VA		(EL)Ext. Ltg.	8327 VA	125.00%	10409 VA
220.60	(C)Cooling	21482 VA	100.00%	21482 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.	6085 VA	100.00%	6085 VA
220.60	(F)Fans	32420 VA	100.00%	32420 VA	220.5	(MT)Lrg. Motor			
	(M)Misc.	30438 VA	100.00%	30438 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 152629 VA VA = 184 A
Total Load (Diversified): 140180 VA VA = 169 A
Location of Panel: MECH 106

Panelboard 1LA

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire — 2 Section — Type 1 -Nema Rating | Mains Type: MCB | 250 A MCB -- | 250 A BUS (Copper) | -- | LUGS: -- FEED THRU | Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT		CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	540 VA	R	RC - RM. A110	12	20 A	1	2	20 A	12	RC - RM. A138	R	180 VA	
	720 VA	R	RC - RM. A110	12	20 A	3	4	20 A	12	RC - RM. A138	R	360 VA	
	360 VA	R	RC - RM. A110	12	20 A	5	6	20 A	12	RC - RM. A138	R	180 VA	
	900 VA	R	RC - RM. A109	12	20 A	7	8	20 A	12	RC - RM. A.138	R	180 VA	
	180 VA	R	RC - RM. A100	12	20 A	9	10	20 A	12	RC - RM. A138	R	540 VA	
	900 VA	R	RC - RM. A103	12	20 A	11	12	20 A	12	RC - RM. A138	R	360 VA	
	900 VA	R	RC - RM. A113	12	20 A	13	14	20 A	12	RC - RM. A138	R	900 VA	
	540 VA	R	RC- RM. A111,112	12	20 A	15	16	20 A	12	RC - RM. A133	R	1080 VA	
	720 VA	R	RC - RM. A113	12	20 A	17	18	20 A	12	RC - RM. A100	M	1080 VA	
	540 VA	R	RC - RM. A115	12	20 A	19	20	20 A	12	Spare	--	0 VA	
	720 VA	R	RC - RM. A115	12	20 A	21	22	20 A	12	RC - RM. A100	R	540 VA	
	900 VA	R	RC - RM. A106	12	20 A	23	24	20 A	12	RC - RM. A100	R	360 VA	
	900 VA	R	RC - RM. A116	12	20 A	25	26	20 A	12	RC - RM. A100	R;...	720 VA	
	1080 VA	R	RC - RM. A117	12	20 A	27	28	20 A	12	RC - RM. A100	R	1080 VA	
	1260 VA	R	RC - RM. A118	12	20 A	29	30	20 A	12	RC - RM. A100	R	1080 VA	
	1080 VA	R	RC - RM. A120	12	20 A	31	32	20 A	12	Spare	--	0 VA	
	360 VA	R	RC - RM. A124	12	20 A	33	34	20 A	12	AUDIO SYSTEM	M	360 VA	
	720 VA	R	RC - RM. A125	12	20 A	35	36	20 A	12	CORRIDOR	R	720 VA	
	540 VA	R	RC - RM. A102	12	20 A	37	38						
	900 VA	R	RC - RM. A128	12	20 A	39	40	30 A	10	SPD2	SP	0 VA	
	720 VA	R	RC - RM. A128	12	20 A	41	42						
	900 VA	R	RC - RM. A131	12	20 A	43	44	20 A	12	CORRIDOR	R	720 VA	
	540 VA	R	RC - RM. A122	12	20 A	45	46	30 A	10	DRYER	M	4333 VA	
	720 VA	R	RC - RM. A138	12	20 A	47	48						
	1125 VA	M	ICE MACHINE	12	20 A	49	50	20 A	12	WASHER	M	1000 VA	
	180 VA	R	RC - RM. A138	12	20 A	51	52						
	1000 VA	K	DISHWASHER	12	20 A	53	54	30 A	10	COPIER	M	5000 VA	
	1000 VA	M	GARBAGE DISPOSAL	12	20 A	55	56						
	180 VA	R	RC - RM. A138	12	20 A	57	58						
	1000 VA	K	MICROWAVE	12	20 A	59	60	30 A	10	COPIER	M	5000 VA	
	1000 VA	K	MICROWAVE	12	20 A	61	62						
	1200 VA	K	VENDING MACHINE	12	20 A	63	64						
	1200 VA	K	VENDING MACHINE	12	20 A	65	66	30 A	10	COPIER	M	3000 VA	
						67	68						
	5000 VA	M	COPIER	10	30 A	69	70						
						71	72	30 A	10	COPIER	M	3000 VA	
	0 VA	--	Spare	12	20 A	73	74						
	0 VA	--	Spare	12	20 A	75	76	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	77	78	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	79	80	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	81	82	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	83	84	20 A	12	Spare	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	39680 VA	62.60%	24840 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen	5400 VA	65.00%	3510 VA		(EL)Ext. Ltg.	3720 VA	125.00%	4650 VA
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.	6085 VA	100.00%	6085 VA
220.60	(F)Fans	1224 VA	100.00%	1224 VA	220.5	(MT)Lrg. Motor			
	(M)Misc.	30438 VA	100.00%	30438 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 86547 VA VA = 240 A
Total Load (Diversified): 70747 VA VA = 196 A
Location of Panel: MECH 106

Panelboard 1LA1

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire — 1 Section — Type 1 -Nema Rating | Mains Type: MLO | 0 A -- -- | 225 A BUS (Copper) | -- | LUGS: SINGLE FEED THRU | Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT		CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	720 VA	R	RC - RM. D115	10	20 A	1	2						
	720 VA	R	RC - RM. D115	10	20 A	3	4	30 A	10	EWH-1	WH	6000 VA	
	0 VA	--	Spare	12	20 A	5	6						
	360 VA	R	RC - RM. D115	10	20 A	7	8	20 A	12	CP-1	WH	85 VA	
	720 VA	R	RC - RM. D118	12	20 A	9	10	20 A	12	EF-01	F	696 VA	
	540 VA	R	RC - RM. D118	12	20 A	11	12	20 A	12	MOTORIZED DAMPERS	M	540 VA	
	1080 VA	R	RC - RM. D118	12	20 A	13	14	15 A	12	EDF	R	400 VA	
	540 VA	R	RC - RM. D116	10	20 A	15	16	15 A	12	EDF	R	400 VA	
	1080 VA	R	RC - RM. D117	10	20 A	17	18	20 A	10	EXTERIOR FAN RECEPTACLE	R	360 VA	
	1080 VA	R	RC - RM. D119	12	20 A	19	20	20 A	10	EXTERIOR FAN RECEPTACLE	R	360 VA	
	1080 VA	R	RC - RM. D120	10	20 A	21	22	20 A	12	EF-04	F	528 VA	
	1080 VA	R	RC - RM. D121	10	20 A	23	24	20 A	12	BACK-LIT SIGNAGE	EL	720 VA	
	360 VA	R	EXTERIOR RECEPTACLE	12	20 A	25	26	20 A	6	MARQUEE SIGN	EL	3000 VA	
	360 VA	R;...	RC - RM. A115	12	20 A	27	28						
	360 VA	R	EXTERIOR FAN RECEPTACLE	12	20 A	29	30	20 A	12	EXTERIOR FAN RECEPTACLE	R	360 VA	
	360 VA	R	EXTERIOR FAN RECEPTACLE	12	20 A	31	32	20 A	12	Spare	--	0 VA	
	360 VA	R	EXTERIOR FAN RECEPTACLE	10	20 A	33	34	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	35	36	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	37	38	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	39	40	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	41	42	20 A	12	Spare	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	12680 VA	89.43%	11340 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen					(EL)Ext. Ltg.	3720 VA	125.00%	4650 VA
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.	6085 VA	100.00%	6085 VA
220.60	(F)Fans	1224 VA	100.00%	1224 VA	220.5	(MT)Lrg. Motor			
	(M)Misc.	540 VA	100.00%	540 VA		(SP)Sub Pnl.			
					630.11B	(W) Welders			

Total Connected Load: 24249 VA VA = 67 A
Total Load (Diversified): 23839 VA VA = 66 A
Location of Panel: MECH 106

Panelboard 1HK

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire — 1 Section — Type 1 -Nema Rating | Mains Type: MCB | 225 A MCB -- | 225 A BUS (Copper) | -- | LUGS: -- -- | Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT		CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
						1	2						
	44063 VA	K	K KITCHEN B126 (E164B)	4	70 A	3	4	35 A	8	K WAREWASH B118 (E250)	K	23196 VA	
						5	6						
	0 VA	--	SHUNT	12	--	7	8						
	0 VA	--	Spare	12	20 A	9	10	40 A	8	K WAREWASH B118 (E252)	K	24000 VA	
	0 VA	--	Spare	12	20 A	11	12						
	0 VA	--	Spare	12	20 A	13	14						
	0 VA	--	Spare	12	20 A	15	16	20 A	12	K WAREWASH B118 (E625)	K	10725 VA	
	0 VA	--	Spare	12	20 A	17	18						
	0 VA	--	Spare	12	20 A	19	20	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	21	22	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	23	24	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	25	26	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	27	28	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	29	30	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	31	32	--	12	Space	--	0 VA	
	0 VA	--	Spare	12	20 A	33	34	--	12	Space	--	0 VA	
	0 VA	--	Spare	12	20 A	35	36	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	37	38	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	39	40	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	41	42	--	12	Space	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle				210.20A	(L)Lighting			
220.56	(K)Kitchen	101984 VA	80.00%	81587 VA		(EL)Ext. Ltg.			
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.5	(MT)Lrg. Motor			
	(M)Misc.					(SP)Sub Pnl.			
					630.11B	(W) Welders			

Total Connected Load: 101984 VA VA = 123 A
Total Load (Diversified): 81587 VA VA = 98 A
Location of Panel: ELEC 120

Panelboard 1LK

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire — 2 Section — Type 4X -Nema Rating | Mains Type: MCB | 400 A MCB Shunt Trip Main | 400 A BUS (Copper) | -- | LUGS: -- -- | Mounting Stye: RECESSED

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT		CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	540 VA	R	GENERAL...	12	20 A	1	2	20 A	12	K KITCHEN B126 (E127)	K	1920 VA	
	360 VA	R	GENERAL RECEPTACLE(E10)	12	20 A	3	4	20 A	12	K KITCHEN B126 (E129)	K	360 VA	
	360 VA	R	R LCKR B119 (E13)	12	20 A	5	6	20 A	12	K KITCHEN B126 (E129)	K	360 VA	
	684 VA	M	AIR SCREEN (E101)	12	20 A	7	8	20 A	12	K KITCHEN B126 (E131)	K	1920 VA	
	360 VA	R	R LCKR B119 (E110)	12	20 A	9	10						
	4992 VA	R	R LCKR B119 (E110A)	10	30 A	11	12	15 A	12	K KITCHEN B126 (E134)	K	2017 VA	
						13	14						
						15	16	20 A	12	K KITCHEN B126 (E144)	K	360 VA	
	3963 VA	MT	MT WAREWASH B118 (E120)	12	20 A	17	18	20 A	12	K KITCHEN B126 (E144)	K	360 VA	
						19	20	20 A	12	L KITCHEN B126 (E153)	L	1200 VA	
						21	22	20 A	12	L KITCHEN B126 (E153)	L	1200 VA	
	3963 VA	MT	MT WAREWASH B118 (E123)	12	20 A	23	24	20 A	12	L KITCHEN B126 (E153)	L	1200 VA	
						25	26	20 A	12	KITCHEN B126 (E151 &E153M)	M	1320 VA	
						27	28	20 A	12	KITCHEN B126 (E151 &E153M)	M	1320 VA	
	3963 VA	MT	MT KITCHEN B126 (E123)	12	20 A	29	30	20 A	12	KITCHEN B126 (E151 &E153M)	M	1320 VA	
						31	32	20 A	12	K KITCHEN B126 (E161B)	K	1200 VA	
	1200 VA	K	K KITCHEN B126 (E161B)	12	20 A	33	34	--	12	SHUNT	--	0 VA	
	0 VA	--	SHUNT	12	--	35	36	20 A	12	K KITCHEN B126 (E741)	K	1080 VA	
	1200 VA	K	K KITCHEN B126 (E161B)	12	20 A	37	38						
	0 VA	--	SHUNT	12	--	39	40	30 A	10	SPD4	SP	0 VA	
	1200 VA	K	K KITCHEN B126 (E161B)	12	20 A	41	42						
	0 VA	--	SHUNT	12	--	43	44						
	1200 VA	K	K KITCHEN B126 (E161B)	12	20 A	45	46	25 A	10	K KITCHEN B126 (E732)	K	4160 VA	
	0 VA	--	SHUNT	12	--	47	48						
	1200 VA	K	K KITCHEN B126 (E161B)	12	20 A	49	50	25 A	10	K KITCHEN B126 (E732)	K	4160 VA	
	0 VA	--	SHUNT	12	--	51	52	20 A	12	K KITCHEN B126 (E741)	K	1080 VA	
	3453 VA	K	K KITCHEN B126 (E184)	12	20 A	53	54	40 A	8	K KITCHEN B126 (E808)	K	6032 VA	
						55	56						
	1200 VA	K	K SERVING B127 (E213)	12	20 A	57	58	20 A	12	R Space B120	R	360 VA	
	1200 VA	K	K SERVING B127 (E213)	12	20 A	59	60	20 A	12	KITCHEN DOORBELL	Oth...	45 VA	
	240 VA	R	R SERVING B127 (E615)	12	20 A	61	62	20 A	12	Room B121, B126	Oth...	180 VA	
	240 VA	R	R SERVING B127 (E615)	12	20 A	63	64	20 A	12	R SERVING B127	R	360 VA	
	240 VA	R	R KITCHEN B126	12	20 A	65	66	20 A	12	R SERVING B127	R	180 VA	
	0 VA	--	SHUNT	12	--	67	68	20 A	12	K KITCHEN B126	K	3120 VA	
	4160 VA	K	K KITCHEN B126 (E732)	10	25 A	69	70						
						71	72	--	12	SHUNT	--	0 VA	
	1080 VA	K	K KITCHEN B126 (E741)	12	20 A	73	74	20 A	12	K KITCHEN B126	K	3120 VA	
	360 VA	R	GENERAL RECEPTACLE (E11)	12	20 A	75	76						
	0 VA	--	Spare	12	20 A	77	78	--	12	SHUNT	--	0 VA	
	0 VA	--	Spare	12	20 A	79	80	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	81	82	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	83	84	20 A	12	Spare	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	8772 VA	100.00%	8772 VA	210.20A	(L)Lighting	3600 VA	125.00%	4500 VA
220.56	(K)Kitchen	48377 VA	65.00%	31445 VA		(EL)Ext. Ltg.			
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.5	(MT)Lrg. Motor	11889 VA	108.33%	12880 VA
	(M)Misc.	4644 VA	100.00%	4644 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 77292 VA VA = 215 A
Total Load (Diversified): 62251 VA VA = 173 A
Location of Panel: VEST 118E

Panelboard 1HB1

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire — 2 Section — Type 1 -Nema Rating | Mains Type: MCB | 225 A MCB -- | 225 A BUS (Copper) | -- | LUGS: -- -- | Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT		CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	0 VA	--	Spare	12	20 A	1	2	20 A	12	LIGHTING	L	1937 VA	
	2514 VA	L	LIGHTING	12	20 A	3	4	20 A	12	LIGHTING	EL	210 VA	
	306 VA	EL	EXTERIOR LTG. AREA B	12	20 A	5	6	20 A	12	LIGHTING	L	690 VA	
	2236 VA	EL	SITE POLE LIGHTS	12	20 A	7	8	20 A	12	LIGHTING	L	1195 VA	
	720 VA	F	FPTU-6-12	12	20 A	9	10	20 A	12	EXTERIOR LTG. AREA B	EL	1080 VA	
						11	12	20 A	12	MECH.YARD LTG.	EL	225 VA	
	2494 VA	F	SF-03	12	20 A	13	14	20 A	12	FPTU-6-14	F	1136 VA	
						15	16	20 A	12	Spare	--	0 VA	
						17	18	20 A	12	Spare	--	0 VA	
	6318 VA	F	AHU-03	12	20 A	19	20	20 A	12	Spare	--	0 VA	
						21	22	20 A	12	Spare	--	0 VA	
						23	24	20 A	12	Spare	--	0 VA	
	2826 VA	F	AHU-03-EF	12	15 A	25	26	20 A	12	Spare	--	0 VA	
						27	28	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	29	30	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	31	32						
	0 VA	--	Spare	12	20 A	33	34	125 A	1	T1LB1	Spare; L; R; WH;...	40434 VA	
	0 VA	--	Spare	12	20 A	35	36						
	0 VA	--	Space	12	--	37	38						
						39	40	20 A	12	SF-04	F	3990 VA	
	915 VA	F	AHU-03-ERV	12	15 A	41	42						
						43	44						
						45	46	35 A	8	AHU-04	F	11639 VA	
	1330 VA	F	AHU-04-ERV	12	15 A	47	48						
						49	50						
						51	52	20 A	12	AHU-04-EF	F	6318 VA	
	6318 VA	F	AHU-05	12	20 A	53	54						
						55	56	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	57	58	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	59	60	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	61	62	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	63	64	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	65	66	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	67	68	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	69	70	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	71	72	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	73	74	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	75	76	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	77	78	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	79	80	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	81	82	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	83	84	--	12	Space	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	19420 VA	75.75%	14710 VA	210.20A	(L)Lighting	6373 VA	125.00%	7966 VA
220.56	(K)Kitchen					(EL)Ext. Ltg.	4057 VA	125.00%	5071 VA
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.	15085 VA	100.00%	15085 VA
220.60	(F)Fans	45396 VA	100.00%	45396 VA	220.5	(MT)Lrg. Motor			
	(M)Misc.	4500 VA	100.00%	4500 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 94831 VA VA = 114 A
Total Load (Diversified): 92728 VA VA = 112 A
Location of Panel: MECH 112M

Panelboard 1LB1

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire — 2 Section — Type 1 -Nema Rating | Mains Type: MCB | 250 A MCB -- | 250 A BUS (Copper) | -- | LUGS: -- -- | Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT		CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	540 VA	R	RC - RM. A139	12	20 A	1	2	20 A	12	PROJECTOR	M	720 VA	
	360 VA	R	RC - RM. A139	12	20 A	3	4	20 A	12	PROJECTOR	M	720 VA	
	360 VA	R	RC - RM. A139	12	20 A	5	6	20 A	12	RC - RM. B108	R	360 VA	
	360 VA	R	RC - RM. A139	12	20 A	7	8	20 A	12	RC - RM. B108	R	1080 VA	
	720 VA	R	RC - RM. A139	12	20 A	9	10	20 A	12	CORRIDOR	R	720 VA	
	360 VA	R	RC - RM. A139	12	20 A	11	12	15 A	12	EDF	R	400 VA	
	720 VA	R	RC - RM A139	12	20 A	13	14	15 A	12	EDF	R	400 VA	
	360 VA	R	RC - RM. A139	12	20 A	15	16	15 A	12	EDF	R	400 VA	
	360 VA	R	RC - RM. A146	10	20 A	17	18	15 A	12	EDF	R	400 VA	
	360 VA	R	RC - RM. A144, A145	10	20 A	19	20	20 A	12	Spare	--	0 VA	
	540 VA	R	RC - RM. A145	12	20 A	21	22	20 A	12	EXTERIOR RECEPTACLE	R	360 VA	
	360 VA	R	TECH A147	12	20 A	23	24						
	360 VA	R	R TECH A147	12	20 A	25	26	60 A	6	EWH-2	WH	15000 VA	
	540 VA	R	R TECH A147	12	20 A	27	28						
	360 VA	M	M GYM A 138-LU SYSTEM	12	20 A	29	30	20 A	12	CP-2	WH	85 VA	
	360 VA	R	R GYM A 138-LU SYSTEM	12	20 A	31	32	20 A	12	SF-05	F	864 VA	
	360 VA	R	R GYM A 138-LU SYSTEM	12	20 A	33	34	20 A	12	MOTORIZED DAMPERS	M	900 VA	
	360 VA	R	EXTERIOR FAN RECEPTACLE	12	20 A	35	36	20 A	12	EF-03	F	528 VA	
	360 VA	R	EXTERIOR FAN RECEPTACLE	12	20 A	37	38						
	360 VA	R	EXTERIOR FAN RECEPTACLE	10	20 A	39	40	30 A	10	SPD2	SP	0 VA	
	180 VA	R	EXTERIOR FAN RECEPTACLE	10	20 A	41	42						
	720 VA	R	RC - RM. B117	12	20 A	43	44	20 A	12	TRACK LIGHTS	L	37 VA	
	360 VA	R	RC - RM. B117	12	20 A	45	46	20 A	12	Spare	--	0 VA	
	360 VA	M	PROJECTOR SCREEN	12	20 A	47	48	20 A	12	RC - RM. A139	R	360 VA	
	540 VA	R	RC - RM. B117	12	20 A	49	50	20 A	12	RC - RM. A139	R	360 VA	
	540 VA	R	RC - RM. B115	12	20 A	51	52	20 A	12	RC - RM. A139	R	360 VA	
	360 VA	R;...	RC - RM. B117	12	20 A	53	54	20 A	12	RC - RM. B115	R	360 VA	
	360 VA	R	RC- RM. B117	12	20 A	55	56	20 A	12	RC - RM. B115	R	360 VA	
	720 VA	R	RC - RM. B117	12	20 A	57	58	20 A	12	RC - RM. B115	R	360 VA	
	540 VA	R	RC - RM. B117	12	20 A	59	60	20 A	12	RC - RM.B115	R	360 VA	
	360 VA	R	RC - RM. B117	12	20 A	61	62	20 A	12	PROJECTOR SCREEN	M	360 VA	
	1080 VA	M	LOCAL SOUND SPEAKER	12	20 A	63	64	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	65	66	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	67	68	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	69	70	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	71	72	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	73	74	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	75	76	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	77	78	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	79	80	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	81	82	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	83	84	20 A	12	Spare	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	19420 VA	75.75%	14710 VA	210.20A	(L)Lighting	37 VA	125.00%	46 VA
220.56	(K)Kitchen					(EL)Ext. Ltg.			
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.	15085 VA	100.00%	15085 VA
220.60	(F)Fans	1392 VA	100.00%	1392 VA	220.5	(MT)Lrg. Motor			
	(M)Misc.	4500 VA	100.00%	4500 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 40434 VA VA = 112 A
Total Load (Diversified): 35733 VA VA = 99 A
Location of Panel: MECH 112M

DISTRIBUTION PANELBOARD 1DPHD

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire — 1 Section — Type 1 -Nema Rating | Mains Type: MCB | 800 A MCB -- | 800 A BUS (Copper) | -- | LUGS: -- -- | Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT		CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
						1	2						
	138685 VA	Spare; L; F; EL; M	1HD	4/0	225 A	3	4	50 A	8	AHU-07	F	17458 VA	
						5	6						
						7	8						
	94033 VA	Spare; R; SP; M	T1LC	2/0	175 A	9	10	50 A	8	AHU-09	F	17458 VA	
						11	12						
						13	14						
	87481 VA	Spare; R; WH;...	T1LD	2/0	175 A	15	16	250 A	250	SPARE	SP	0 VA	
						17	18						
						19	20						
	0 VA	SP	SPARE	600	400 A	21	22	60 A	6	SPARE	SP	0 VA	
						23	24						
						25	26						
	0 VA	SP	SPARE	250	250 A	27	28	400 A	600	PREPARED SPACE	SP	0 VA	
						29	30						
						31	32						
	0 VA	SP	SPARE	3	100 A	33	34	250 A	250	PREPARED SPACE	SP	0 VA	
						35	36						
						37	38						
	0 VA	SP	SPARE	6	60 A	39	40	200 A	3/0	PREPARED SPACE	SP	0 VA	
						41	42						

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	159260 VA	53.14%	84630 VA	210.20A	(L)Lighting	23735 VA	125.00%	29669 VA
220.56	(K)Kitchen	1200 VA	100.00%	1200 VA		(EL)Ext. Ltg.	557 VA	125.00%	696 VA
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.	9085 VA	100.00%	9085 VA
220.60	(F)Fans	151925 VA	100.00%	151925 VA	220.5	(MT)Lrg. Motor			
	(M)Misc.	9353 VA	100.00%	9353 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 355115 VA VA = 427 A
Total Load (Diversified): 286558 VA VA = 345 A
Location of Panel: ELEC 331E

1HB	1LB	1HA	1LA
1LA1	1HK	1LK	1HB1
1LB1	1DPHD		

BROWN REYNOLDS WATFORD ARCHITECTS
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STATE OF TEXAS
BRENT B. MOE
117260
LICENSED PROFESSIONAL ENGINEER
10-02-2024

DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 230393.000
BM | RA/RM | MS/LB | JL/TN | AD

DATE SEPTEMBER 9, 2024
DRAWN BY Author
CHECKED BY Checker
BRW PROJECT NUMBER 223117.00

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

NO.	REVISION	DATE
1	Addendum 1	09.23.2024
2	Addendum 2	10.02.2024

E5.2

ELECTRICAL PANEL SCHEDULES

Panelboard 1HD

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire | 2 Section | Type 1 -Nema Rating
Mains Type: MCB | 225 A MCB -- | 225 A BUS (Copper) | --
LUGS: -- | FEED THRU
Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	0 VA	--	Spare	12	20 A	1	2	20 A	12	Spare	--	0 VA	
	1640 VA	L	LIGHTING	12	20 A	3	4	20 A	12	LIGHTING	L	1095 VA	
	1920 VA	L	LIGHTING	12	20 A	5	6	20 A	12	LIGHTING	L	1920 VA	
	1920 VA	L	LIGHTING	12	20 A	7	8	20 A	12	LIGHTING	L	1760 VA	
	2600 VA	L	LIGHTING	12	20 A	9	10	20 A	12	LIGHTING	L	2400 VA	
	2560 VA	L	LIGHTING	12	20 A	11	12	20 A	12	LIGHTING	L	2560 VA	
	1760 VA	L	LIGHTING	12	20 A	13	14	20 A	12	LIGHTING	L	1600 VA	
	238 VA	EL	EXTERIOR LTG. AREA C,D,E	12	20 A	15	16	20 A	12	EXTERIOR LTG. AREA C,D,E	EL	147 VA	
	172 VA	EL	SITE POLE LIGHTS	12	20 A	17	18	15 A	12	FPTU-9-07	F	720 VA	
	720 VA	F	FPTU-8-05	12	15 A	19	20	15 A	12	FPTU-9-08	F	720 VA	
	1136 VA	F	FPTU-8-06	12	15 A	21	22	15 A	12	FPTU-9-09	F	720 VA	
	720 VA	F	FPTU-8-07	12	15 A	23	24	15 A	12	FPTU-9-10	F	720 VA	
	720 VA	F	FPTU-8-08	12	15 A	25	26	15 A	12	FPTU-9-11	F	720 VA	
	720 VA	F	FPTU-8-09	12	15 A	27	28	15 A	12	FPTU-9-12	F	720 VA	
	720 VA	F	FPTU-8-10	12	15 A	29	30	15 A	12	FPTU-9-13	F	720 VA	
	720 VA	F	FPTU-8-11	12	15 A	31	32	15 A	12	FPTU-9-14	F	720 VA	
	720 VA	F	FPTU-8-12	12	15 A	33	34	15 A	12	FPTU-9-15	F	720 VA	
	720 VA	F	FPTU-8-13	12	15 A	35	36	15 A	12	FPTU-9-16	F	720 VA	
	720 VA	F	FPTU-8-14	12	15 A	37	38	15 A	12	FPTU-8-01	F	720 VA	
	720 VA	F	FPTU-8-15	12	15 A	39	40	15 A	12	FPTU-8-02	F	1524 VA	
	720 VA	F	FPTU-9-06	12	15 A	41	42	15 A	12	FPTU-8-03	F	720 VA	
						43	44						
	3990 VA	F; M	SF-06	12	20 A	45	46	20 A	12	SF-08	F; M	3990 VA	
						47	48						
						49	50						
	3990 VA	F; M	SF-07	12	20 A	51	52	20 A	12	SF-09	F; M	3990 VA	
						53	54						
	720 VA	F	FPTU-8-04	12	15 A	55	56	15 A	12	FPTU-6-05	F	720 VA	
	720 VA	F	FPTU-7-01	12	15 A	57	58	15 A	12	FPTU-6-06	F	720 VA	
	720 VA	F	FPTU-7-02	12	15 A	59	60	15 A	12	FPTU-6-07	F	720 VA	
	720 VA	F	FPTU-7-03	12	15 A	61	62	15 A	12	FPTU-6-08	F	720 VA	
	720 VA	F	FPTU-7-04	12	15 A	63	64	15 A	12	FPTU-6-09	F	720 VA	
	720 VA	F	FPTU-7-05	12	15 A	65	66	15 A	12	FPTU-6-10	F	720 VA	
	720 VA	F	FPTU-7-06	12	15 A	67	68	15 A	12	FPTU-6-11	F	1136 VA	
	720 VA	F	FPTU-7-07	12	15 A	69	70	15 A	12	FPTU-9-01	F	720 VA	
	720 VA	F	FPTU-7-08	12	15 A	71	72	15 A	12	FPTU-9-02	F	720 VA	
	1136 VA	F	FPTU-7-13	12	15 A	73	74	15 A	12	FPTU-9-03	F	720 VA	
	1136 VA	F	FPTU-7-14	12	15 A	75	76	15 A	12	FPTU-9-04	F	720 VA	
	720 VA	F	FPTU-6-01	12	15 A	77	78	15 A	12	FPTU-9-05	F	720 VA	
	720 VA	F	FPTU-6-02	12	15 A	79	80	--	12	Space	--	0 VA	
	720 VA	F	FPTU-6-03	12	15 A	81	82	--	12	Space	--	0 VA	
	720 VA	F	FPTU-6-04	12	15 A	83	84	--	12	Space	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle				210.20A	(L)Lighting	23735 VA	125.00%	29669 VA
220.56	(K)Kitchen					(EL)Ext. Ltg.	557 VA	125.00%	696 VA
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans	114393 VA	100.00%	114393 VA	220.5	(MT)Lrg. Motor			
	(M)Misc.					(SP)Sub Pnl.			
					630.11B	(W) Welders			

Total Connected Load: 138685 VA VA = 167 A
Total Load (Diversified): 144758 VA VA = 174 A
Location of Panel: ELEC 331E

Panelboard 1HD1

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire | 2 Section | Type 1 -Nema Rating
Mains Type: MLO | 0 A -- -- | 225 A BUS (Copper) | --
LUGS: SINGLE | FEED THRU
Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
						1	2						
	22447 VA	F	AHU-06	6	60 A	3	4	50 A	8	AHU-08	F	17458 VA	
						5	6						
						7	8						
	3325 VA	F	AHU-06-EF	12	15 A	9	10	15 A	12	AHU-08-EF	F	3325 VA	
						11	12						
						13	14						
	1330 VA	F	AHU-06-ERV	12	15 A	15	16	15 A	12	AHU-08-ERV	F	1330 VA	
						17	18						
						19	20						
	3325 VA	F	AHU-07-EF	12	15 A	21	22	15 A	12	AHU-09-EF	F	3325 VA	
						23	24						
						25	26						
	1330 VA	F	AHU-07-ERV	12	15 A	27	28	15 A	12	AHU-09-ERV	F	1330 VA	
						29	30						
	0 VA	--	Spare	12	20 A	31	32	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	33	34	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	35	36	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	37	38	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	39	40	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	41	42	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	43	44	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	45	46	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	47	48	20 A	12	Spare	--	0 VA	
	0 VA	--	Space	12	--	49	50	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	51	52	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	53	54	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	55	56	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	57	58	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	59	60	--	12	Space	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle				210.20A	(L)Lighting			
220.56	(K)Kitchen					(EL)Ext. Ltg.			
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans	58525 VA	100.00%	58525 VA	220.5	(MT)Lrg. Motor			
	(M)Misc.					(SP)Sub Pnl.			
					630.11B	(W) Welders			

Total Connected Load: 58525 VA VA = 70 A
Total Load (Diversified): 58525 VA VA = 70 A
Location of Panel: ELEC 331E

Panelboard 1LC

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire | 2 Section | Type 1 -Nema Rating
Mains Type: MCB | 250 A MCB -- | 400 A BUS (Copper) | --
LUGS: -- | FEED THRU
Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	720 VA	R	RC - RM. D112	10	20 A	1	2	20 A	12	RC - RM. C107	R	360 VA	
	720 VA	R	RC - RM. D112	10	20 A	3	4	20 A	12	RC - RM. C107	R	720 VA	
	720 VA	R	RC - Rm.D112	10	20 A	5	6	20 A	12	RC - RM. C107	R	1080 VA	
	720 VA	R	RC - RM. D111	10	20 A	7	8	20 A	12	RC - RM. C118	R	360 VA	
	720 VA	R	RC - RM. D111	10	20 A	9	10	20 A	12	RC - RM. C118	R	720 VA	
	720 VA	R	RC - RM. D111	10	20 A	11	12	20 A	12	RC - RM. C118	R	1080 VA	
	720 VA	R	RC - RM. D108	10	20 A	13	14	20 A	10	RC - RM. C110	R	360 VA	
	720 VA	R	RC - RM. D108	10	20 A	15	16	20 A	10	RC - RM. C110	R	720 VA	
	720 VA	R	RC - RM. D108	10	20 A	17	18	20 A	10	RC - RM. C110	R	1080 VA	
	720 VA	R	RC - RM. D105	10	20 A	19	20	20 A	10	RC - RM. C115	R	360 VA	
	720 VA	R	RC - RM. D105	10	20 A	21	22	20 A	12	RC - RM. C115	R	720 VA	
	720 VA	R	RC - RM. D105	10	20 A	23	24	20 A	12	RC - RM. C115	R	1080 VA	
	720 VA	R	RC - RM. D106	10	20 A	25	26	20 A	10	RC - RM. C112	R	360 VA	
	720 VA	R	RC - RM. D106	10	20 A	27	28	20 A	10	RC - RM. C112	R	720 VA	
	720 VA	R	RC - RM. D106	10	20 A	29	30	20 A	10	RC - RM. C112	R	1080 VA	
	720 VA	R	RC - RM. D107	10	20 A	31	32	20 A	10	RC - RM. C113	R	360 VA	
	720 VA	R	RC - RM. D107	10	20 A	33	34	20 A	10	RC - RM. C113	R	720 VA	
	720 VA	R	RC - RM. D107	10	20 A	35	36	20 A	10	RC - RM. C113	R	1080 VA	
	720 VA	R	RC - RM. D110	12	20 A	37	38						
	720 VA	R	RC - RM. D110	12	20 A	39	40	30 A	10	SPD2	SP	0 VA	
	720 VA	R	RC - RM. D110	12	20 A	41	42						
	720 VA	R	RC - RM. D113	12	20 A	43	44	20 A	10	RC - RM. C128	R	360 VA	
	720 VA	R	RC - RM. D113	12	20 A	45	46	20 A	10	RC - RM. C128	R	720 VA	
	720 VA	R	RC - RM. D113	12	20 A	47	48	20 A	10	RC - RM. C128	R	1080 VA	
	720 VA	R	RC - RM. D142	12	20 A	49	50	20 A	10	RC - RM. C129	R	360 VA	
	720 VA	R	RC - RM. D142	12	20 A	51	52	20 A	10	RC - RM. C129	R	720 VA	
	720 VA	R	RC - RM. D142	12	20 A	53	54	20 A	10	RC - RM. C129	R	1080 VA	
	720 VA	R	RC - RM. D140	12	20 A	55	56	20 A	12	RC - RM. C126	R	360 VA	
	720 VA	R	RC - RM. D140	12	20 A	57	58	20 A	12	RC - RM. C126	R	720 VA	
	720 VA	R	RC - RM. D140	12	20 A	59	60	20 A	12	RC - RM. C126	R	1080 VA	
	720 VA	R	RC - RM. D143	12	20 A	61	62	20 A	12	RC - RM, C131	R	360 VA	
	720 VA	R	RC - RM. D143	12	20 A	63	64	20 A	12	RC - RM. C131	R	720 VA	
	720 VA	R	RC - RM. D143	12	20 A	65	66	20 A	12	RC - RM. C131	R	1080 VA	
	720 VA	R	RC - RM. D139	12	20 A	67	68	20 A	12	RC - RM. C123	R	360 VA	
	720 VA	R	RC - RM. D139	12	20 A	69	70	20 A	12	RC - RM. C123	R	720 VA	
	720 VA	R	RC - RM. D139	12	20 A	71	72	20 A	12	RC - RM. C123	R	1080 VA	
	720 VA	R	RC - RM.D138	12	20 A	73	74	20 A	12	RC - RM. C134	R	360 VA	
	720 VA	R	RC - RM.D138	12	20 A	75	76	20 A	12	RC - RM. C134	R	720 VA	
	720 VA	R	RC - RM.D138	12	20 A	77	78	20 A	12	RC - RM. C134	R	1080 VA	
	0 VA	--	Spare	12	20 A	79	80	--	12	Space	--	0 VA	
	0 VA	--	Spare	12	20 A	81	82	--	12	Space	--	0 VA	
	0 VA	--	Spare	12	20 A	83	84	--	12	Space	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	86120 VA	55.81%	48060 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen					(EL)Ext. Ltg.			
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.5	(MT)Lrg. Motor			
	(M)Misc.	7913 VA	100.00%	7913 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 94033 VA VA = 261 A
Total Load (Diversified): 55973 VA VA = 155 A
Location of Panel: ELEC 307A

Panelboard 1LC1

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire | 2 Section | Type 1 -Nema Rating
Mains Type: MLO | 0 A -- -- | 400 A BUS (Copper) | --
LUGS: SINGLE | FEED THRU
Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	900 VA	R	RC- RM. D135	12	20 A	1	2	20 A	12	RC - RM. C120,122,	R	360 VA	
	900 VA	R	RC- RM. D135	12	20 A	3	4	20 A	12	RC - RM. C106	R	900 VA	
	720 VA	R	RC - RM. D133	12	20 A	5	6	20 A	12	RC- RM. C135	R	900 VA	
	900 VA	R; M	RC - RM. D133	12	20 A	7	8	20 A	12	RC - RM. B101	R	540 VA	
	360 VA	R	RC - RM. D134	12	20 A	9	10	20 A	12	RC- RM .B101	R	360 VA	
	360 VA	R	RC- RM .D136	12	20 A	11	12	20 A	12	RC - RM. B101	R	360 VA	
	720 VA	R	RC - RM. D132	12	20 A	13	14	20 A	12	Spare	--	0 VA	
	720 VA	R	RC - RM. D132	12	20 A	15	16	20 A	12	RC - RM. B101	R; M	1860 VA	
	720 VA	R	RC - RM. D132	12	20 A	17	18	20 A	12	RC - RM. B101	R	540 VA	
	1080 VA	R	RC - RM. D123	12	20 A	19	20	20 A	12	RC - RM. B105	R	1080 VA	
	1080 VA	R	RC - RM. D124	12	20 A	21	22	20 A	12	RC - RM. B102,103	R	720 VA	
	540 VA	R	RC - RM. D122,125,126	12	20 A	23	24	20 A	12	Spare	--	0 VA	
	360 VA	R	RC - RM. D130	12	20 A	25	26	20 A	12	RC - RM. B107	R	540 VA	
	900 VA	R	RC - RM. D130	12	20 A	27	28	20 A	12	Spare	--	0 VA	
	540 VA	R	RC - RM. D127,128,129	12	20 A	29	30	20 A	12	RC - RM. B107	R	720 VA	
	900 VA	R	RC - RM. D128	12	20 A	31	32	20 A	12	RC - RM. B107	R	720 VA	
	540 VA	R; M	RC - RM. A142	12	20 A	33	34	15 A	12	EDF	R	400 VA	
	360 VA	R	RC - RM. A142	12	20 A	35	36	15 A	12	EDF	R	400 VA	
	540 VA	R	RC - RM. A142	12	20 A	37	38	15 A	12	EDF	R	400 VA	
	400 VA	R	EDF	12	15 A	39	40	15 A	12	EDF	R	400 VA	
	400 VA	R	EDF	12	15 A	41	42	15 A	10	EDF	R	400 VA	
	400 VA	R	EDF	12	15 A	43	44	15 A	10	EDF	R	400 VA	
	720 VA	R	CORRIDOR	12	20 A	45	46	15 A	10	EDF	R	400 VA	
	540 VA	R	CORRIDOR	12	20 A	47	48	15 A	10	EDF	R	400 VA	
	540 VA	R	WP'GFCI	10	20 A	49	50	20 A	12	CORRIDOR	R	360 VA	
	4333 VA	M	DRYER	10	30 A	51	52	20 A	12	CORRIDOR	R	1080 VA	
						53	54	20 A	12	CORRIDOR	R	540 VA	
	1000 VA	M	WASHER	12	20 A	55	56	20 A	12	CORRIDOR	R	720 VA	
	720 VA	R	EXTERIOR PARKING	10	20 A	57	58	20 A	12	CORRIDOR	R	900 VA	
	360 VA	R	RC - RM.B107	12	20 A	59	60	20 A	12	LOCAL SOUND SPEAKER	M	720 VA	
	360 VA	R	RC - RM.B107	12	20 A	61	62	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	63	64	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	65	66	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	67	68	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	69	70	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	71	72	20 A	12	Spare	--	0 VA	
	0 VA	--	Space	12	--	73	74	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	75	76	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	77	78	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	79	80	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	81	82	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	83	84	--	12	Space	--	0 VA	

2

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	32120 VA	65.57%	21060 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen					(EL)Ext. Ltg.			
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.5	(MT)Lrg. Motor			
	(M)Misc.	7913 VA	100.00%	7913 VA		(SP)Sub Pnl.			
					630.11B	(W) Welders			

Total Connected Load: 40033 VA VA = 111 A
Total Load (Diversified): 28973 VA VA = 80 A
Location of Panel: ELEC 307A

Panelboard 1LD

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire | 2 Section | Type 1 -Nema Rating
Mains Type: MCB | 250 A MCB Shunt Trip Main | 250 A BUS (Copper) | Isolated Ground Bus
LUGS: -- | FEED THRU
Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	720 VA	R	RC - RM. E118	12	20 A	1	2	20 A	10	RC - RM. E114	R	720 VA	
	720 VA	R	RC - RM. E118	12	20 A	3	4	20 A	10	RC - RM. E114	R	720 VA	
	720 VA	R	RC - RM. E118	12	20 A	5	6	20 A	10	RC - RM. E114	R	720 VA	
	720 VA	R	RC - RM. E122	12	20 A	7	8	20 A	12	RC - RM. E105	R	720 VA	
	720 VA	R	RC - RM. E122	12	20 A	9	10	20 A	12	RC - RM. E105	R	720 VA	
	720 VA	R	RC - RM. E122	12	20 A	11	12	20 A	12	RC - RM. E105	R	720 VA	
	720 VA	R	RC - RM. E125	10	20 A	13	14	20 A	10	RC - RM. E104	R	720 VA	
	720 VA	R	RC - RM. E125	10	20 A	15	16	20 A	10	RC - RM. E104	R	720 VA	
	720 VA	R	RC - RM. E125	10	20 A	17	18	20 A	10	RC - RM. E104	R	720 VA	
	720 VA	R	RC - RM. E120	12	20 A	19	20	20 A	10	RC - RM. E100	R	720 VA	
	720 VA	R	RC - RM. E120	12	20 A	21	22	20 A	10	RC- RM. E100	R	720 VA	
	720 VA	R	RC - RM. E120	12	20 A	23	24	20 A	10	RC - RM. E100	R	720 VA	
	720 VA	R	RC - RM. E121	10	20 A	25	26	20 A	12	RC- RM. E106	R	720 VA	
	720 VA	R	RC - RM. E121	10	20 A	27	28	20 A	12	RC - RM. E106	R	720 VA	
	720 VA	R	RC - RM. E121	10	20 A	29	30	20 A	12	RC - RM. E106	R	720 VA	
	720 VA	R	RC - RM. E126	10	20 A	31	32	20 A	12	RC - RM. E103	R	720 VA	
	720 VA	R	RC - RM. E126	10	20 A	33	34	20 A	12	RC - RM. E103	R	720 VA	
	720 VA	R	RC - RM. E126	10	20 A	35	36	20 A	12	RC - RM. E103	R	720 VA	
	720 VA	R	RC - RM. E110	12	20 A	37	38						
	720 VA	R	RC - RM. E110	12	20 A	39	40	30 A	10	SPD2	SP	0 VA	
	720 VA	R	RC - RM. E110	12	20 A	41	42						
	720 VA	R	RC - RM. E112	12	20 A	43	44	20 A	10	RC - RM. E101	R	720 VA	
	720 VA	R	RC - RM. E112	12	20 A	45	46	20 A	10	RC - RM. E101	R	720 VA	
	720 VA	R	RC - RM. E112	12	20 A	47	48	20 A	10	RC - RM. E101	R	720 VA	
	720 VA	R	RC - RM. E113	10	20 A	49	50	20 A	12	RC - RM. C103	R	720 VA	
	720 VA	R	RC - RM. E113	10	20 A	51	52	20 A	12	RC - RM. C103	R	720 VA	
	720 VA	R	RC - RM. E113	10	20 A	53	54	20 A	12	RC - RM. C103	R	720 VA	
	720 VA	R	RC - RM. E116	12	20 A	55	56	20 A	12	RC - RM. C101	R	720 VA	
	720 VA	R	RC - RM. E116	12	20 A	57	58	20 A	12	RC - RM. C101	R	720 VA	
	720 VA	R	RC - RM. E116	12	20 A	59	60	20 A	12	RC - RM. C101	R	720 VA	
	720 VA	R	RC - RM. E115	12	20 A	61	62	20 A	12	RC - RM. C104	R	720 VA	
	720 VA	R	RC - RM. E115	12	20 A	63	64	20 A	12	RC - RM. C104	R	720 VA	
	720 VA	R	RC - RM. E115	12	20 A	65	66	20 A	12	RC - RM. C104	R	720 VA	
	0 VA	--	Spare	12	20 A	67	68	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	69	70	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	71	72	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	73	74	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	75	76	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	77	78	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	79	80	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	81	82	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	83	84	20 A	12	Spare	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	73140 VA	56.84%	41570 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen	1200 VA	100.00%	1200 VA		(EL)Ext. Ltg.			
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.	9085 VA	100.00%	9085 VA
220.60	(F)Fans	2616 VA	100.00%	2616 VA	220.5	(MT)Lrg. Motor			
	(M)Misc.	1440 VA	100.00%	1440 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 87481 VA VA = 243 A
Total Load (Diversified): 55911 VA VA = 155 A
Location of Panel: ELEC 331E

Panelboard 1LD1

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire | 2 Section | Type 1 -Nema Rating
Mains Type: MLO | 0 A -- -- | 250 A BUS (Copper) | --
LUGS: DOUBLE | FEED THRU
Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	720 VA	R	RC - RM. C100	12	20 A	1	2	20 A	12	RC - RM. E108,109,117	R	540 VA	
	720 VA	R	RC - RM. C100	12	20 A	3	4	20 A	12	RC - RM. D151,152,153	R	540 VA	
	720 VA	R	RC - RM. C100	12	20 A	5	6	20 A	12	RC - RM.D144,147	R	360 VA	
	540 VA	R	RC - RM. D100	12	20 A	7	8	20 A	12	CORRIDOR	R	360 VA	
	360 VA	R	RC - RM. D100	12	20 A	9	10	20 A	12	CORRIDOR	R	720 VA	
	1080 VA	R	RC - RM. D100	12	20 A	11	12	20 A	12	CORRIDOR	R	720 VA	
	540 VA	R	RC - RM. D100	12	20 A	13	14	20 A	12	CORRIDOR	R	720 VA	
	360 VA	R	RC - RM. D100	12	20 A	15	16	20 A	12	CORRIDOR	R	360 VA	
	1080 VA	R	RC - RM. D100	12	20 A	17	18	20 A	12	CORRIDOR	R	540 VA	
	540 VA	R	RC - RM. D103	12	20 A	19	20	20 A	12	CORRIDOR	R	720 VA	
	360 VA	R	RC - RM. D103	12	20 A	21	22	20 A	12	CORRIDOR	R	360 VA	
	1080 VA	R	RC - RM. D103	12	20 A	23	24	15 A	12	EDF	R	400 VA	
	540 VA	R	RC - RM. D103	12	20 A	25	26	15 A	12	EDF	R	400 VA	
	360 VA	R	RC - RM. D103	12	20 A	27	28	15 A	12	EDF	R	400 VA	
	1080 VA	R	RC - RM. D103	12	20 A	29	30	15 A	12	EDF	R	400 VA	
	720 VA	R	RC - RM. D101	12	20 A	31	32	15 A	12	EDF	R	400 VA	
	540 VA	R	RC - RM. D101	12	20 A	33	34	15 A	12	EDF	R	400 VA	
	720 VA	R	RC - RM. D101	12	20 A	35	36	20 A	10	EXTERIOR RECEPTACLE	R	1080 VA	
	720 VA	R	RC - RM. D101	12	20 A	37	38	--	12	Space	--	0 VA	
	360 VA	R	RC - RM. D101	12	20 A	39	40	--	12	Space	--	0 VA	
	540 VA	R	RC - RM. D101	12	20 A	41	42	--	12	Space	--	0 VA	
	720 VA	R	RC - RM. D102	12	20 A	43	44						
	360 VA	R	RC - RM. D102	12	20 A	45	46	40 A	8	EWH-3	WH	9000 VA	
	720 VA	R	RC - RM. D102	12	20 A	47	48						
	1200 VA	K	REFRIGERATOR	12	20 A	49	50	20 A	12	CP-3	WH	85 VA	
	720 VA	R	RC- RM. D150	12	20 A	51	52	20 A	12	MOTORIZED DAMPERS	M	720 VA	
	720 VA	R	RC - RM. D150	12	20 A	53	54	20 A	12	MOTORIZED DAMPERS	M	720 VA	
	540 VA	R	RC - RM. D148	12	20 A	55	56	20 A	12	EF-05	F	528 VA	
	900 VA	R	RC - RM. D148	12	20 A	57	58	20 A	12	EF-06	F	696 VA	
	0 VA	--	Spare	12	20 A	59	60	20 A	12	EF-07	F	696 VA	
	0 VA	--	Spare	12	20 A	61	62	20 A	12	EF-08	F	696 VA	
	0 VA	--	Spare	12	20 A	63	64	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	65	66	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	67	68	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	69	70	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	71	72	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	73	74	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	75	76	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	77	78	20 A	12	Spare	--	0 VA	
	0 VA	--	Space	12	--	79	80	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	81	82	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	83	84	--	12	Space	--	0 VA	

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	27780 VA	68.00%	18890 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen	1200 VA	100.00%	1200 VA		(EL)Ext. Ltg.			
220.60	(C)Cooling			0 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.	9085 VA	100.00%	9085 VA
220.60	(F)Fans	2616 VA	100.00%	2616 VA	220.5	(MT)Lrg. Motor			
	(M)Misc.	1440 VA	100.00%	1440 VA		(SP)Sub Pnl.			
					630.11B	(W) Welders			

Total Connected Load: 42121 VA VA = 117 A
Total Load (Diversified): 33231 VA VA = 92 A
Location of Panel: ELEC 331E

Panelboard Q1HB

65000 A AIC Rating
X New
Existing

480/277 Wye Volt, 3 Phase, 4 Wire | 1 Section | Type 1 -Nema Rating
Mains Type: MLO | 0 A -- -- | 400 A BUS (Copper) | --
LUGS: SINGLE | --
Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	0 VA	--	Space	12	--	1	2						
	0 VA	--	Space	12	--	3	4	125 A	1	TQ1LB	Spare; R; SP; C; H...	47927 VA	
	0 VA	--	Space	12	--	5	6						
	0 VA	--	Spare	12	20 A	7	8						
	0 VA	--	Spare	12	20 A	9	10	70 A	4	TQ1LB1	Spare; R; SP; C; K...	32331 VA	
	0 VA	--	Spare	12	20 A	11	12						
	0 VA	--	Spare	12	20 A	13	14						
	0 VA	--	Spare	12	20 A	15	16	45 A	8	TQ1LD	Spare; R; SP; C; M	13960 VA	
	0 VA	--	Spare	12	20 A	17	18						
	0 VA	--	Spare	12	20 A	19	20	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	21	22	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	23	24	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	25	26	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	27	28	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	29	30	20 A	12	Spare	--	0 VA	
	0 VA	--	Space	12	--	31	32	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	33	34	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	35	36	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	37	38						
	0 VA	--	Space	12	--	39	40	30 A	10	SPD3	SP	0 VA	
	0 VA	--	Space	12	--	41	42						

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	22040 VA	72.69%	16020 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen	26478 VA	70.00%	18535 VA		(EL)Ext. Ltg.			
220.60	(C)Cooling	24015 VA	100.00%	24015 VA	620.14	(E)Elevators			
220.60	(H)Heating	3360 VA	100.00%	0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.5	(MT)Lrg. Motor			
	(M)Misc.	21685 VA	100.00%	21685 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 97578 VA VA = 117 A
Total Load (Diversified): 80255 VA VA = 97 A
Location of Panel: ELEC 120

Panelboard Q1LB

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire | 1 Section | Type 1 -Nema Rating
Mains Type: MCB | 150 A MCB -- | 225 A BUS (Copper) | --
LUGS: -- | --
Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
						1	2	20 A	12	R KITCHEN B126 (E109)	R	1200 VA	
	12356 VA	C	REFRIGERATION SYSTEM (E103)	8	50 A	3	4	20 A	12	H COOLER B125 (E102A)	H; M	1200 VA	
						5	6	20 A	12	M COOLER B125 (E102B & C)	M	240 VA	
	2849 VA	C	FREEZER COIL (E103C)	12	20 A	7	8	20 A	12	M FREEZER B124 (E102B & C)	M	240 VA	
						9	10	20 A	12	H FREEZER B124 (E102A)	H; M	1300 VA	
	324 VA	C	COOLER COIL	12	20 A	11	12	20 A	12	RC - RM. B130	R	1080 VA	
						13	14	20 A	12	RC - RM. B132	R	360 VA	
	8648 VA	K	LOAD CENTER (201A)	8	40 A	15	16	20 A	12	RC - RM. B131	R	540 VA	
						17	18	20 A	12	RC - RM. B123	R	900 VA	
						19	20	20 A	12	RC - RM. B123	R	720 VA	
	15130 VA	K	LOAD CENTER (201B)	4	70 A	21	22	20 A	12	EXTERIOR RECEPTACLE	R	900 VA	
						23	24	20 A	12	EXTERIOR RECEPTACLE	R	540 VA	
	540 VA	R	EXTERIOR RECEPTACLE	12	20 A	25	26	20 A	12	POS SYSTEM	R	360 VA	
	360 VA	M	DDC PANEL	12	20 A	27	28	20 A	12	COD PANEL	M	360 VA	
	180 VA	R	R FREEZER B 124	12	20 A	29	30	20 A	12	DRAIN LINE HEATER (E103F)	H	960 VA	
	0 VA	--	Spare	12	20 A	31	32	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	33	34	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	35	36	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	37	38						
	0 VA	--	Spare	12	20 A	39	40	30 A	10	SPD2	SP	0 VA	
	0 VA	--	Spare	12	20 A	41	42						

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	7320 VA	100.00%	7320 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen	23778 VA	100.00%	23778 VA		(EL)Ext. Ltg.			
220.60	(C)Cooling	15529 VA	100.00%	15529 VA	620.14	(E)Elevators			
220.60	(H)Heating	3360 VA	100.00%	0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.5	(MT)Lrg. Motor			
	(M)Misc.	1300 VA	100.00%	1300 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 51287 VA VA = 142 A
Total Load (Diversified): 47927 VA VA = 133 A
Location of Panel: ELEC 120

Panelboard Q1LD

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire | 1 Section | Type 1 -Nema Rating
Mains Type: MCB | 100 A MCB -- | 125 A BUS (Copper) | --
LUGS: -- | --
Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	720 VA	R	RC - RM. D146	12	20 A	1	2	20 A	12	EXTERIOR RECEPTACLE	R	360 VA	
	1920 VA	M	RC - RM .D145	12	20 A	3	4	30 A	10	CU-1	C	4160 VA	
	2880 VA	M	RC - RM.D146	10	30 A	5	6						
	360 VA	R	RC - RM.D146	12	20 A	7	8	20 A	12	DDC	M	360 VA	
	360 VA	R	RC - RM. D146	12	20 A	9	10	20 A	12	ACP	M	360 VA	
	360 VA	R	RC - RM. D146	12	20 A	11	12	20 A	12	IDP	M	500 VA	
	900 VA	R; M	RC - RM. D145	12	20 A	13	14	20 A	12	BDA/DAS SYSTEM	R	180 VA	
	360 VA	R	RC - RM. D146	12	20 A	15	16	20 A	12	BDA/DAS SYSTEM	R	180 VA	
	0 VA	--	Spare	12	20 A	17	18	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	19	20	--	12	Space	--	0 VA	
	0 VA	--	Spare	12	20 A	21	22	--	12	Space	--	0 VA	
	0 VA	--	Spare	12	20 A	23	24	--	12	Space	--	0 VA	
	0 VA	--	Space	12	--	25	26						
	0 VA	--	Space	12	--	27	28	30 A	10	SPD2	SP	0 VA	
	0 VA	--	Space	12	--	29	30						

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	3600 VA	100.00%	3600 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen					(EL)Ext. Ltg.			
220.60	(C)Cooling	4160 VA	100.00%	4160 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.5	(MT)Lrg. Motor			
	(M)Misc.	6200 VA	100.00%	6200 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 13960 VA VA = 39 A
Total Load (Diversified): 13960 VA VA = 39 A
Location of Panel: ELEC 331E

Panelboard Q1LB1

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire | 1 Section | Type 1 -Nema Rating
Mains Type: MCB | 150 A MCB -- | 225 A BUS (Copper) | --
LUGS: -- | FEED THRU
Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	900 VA	R	RC - RM.B104	10	20 A	1	2	20 A	12	IDP	M	500 VA	
	1920 VA	M	RC - RM. B104	12	20 A	3	4	20 A	10	ACP	M	360 VA	
	2880 VA	M	RC - RM. B104	10	30 A	5	6	20 A	12	CU-3	C	2163 VA	
	360 VA	R	RC - RM. B104	12	20 A	7	8						
	360 VA	R	RC - RM. B104	10	20 A	9	10	20 A	12	LIFT CARE SYSTEM	R	500 VA	
	360 VA	R	RC - RM. B104	10	20 A	11	12	20 A	12	R STOR D126	R	180 VA	
	720 VA	R; M	RC - RM .B104	12	20 A	13	14	20 A	12	RC - RM. D130	R	1080 VA	
	180 VA	R	EXTERIOR RECEPTACLE	12	20 A	15	16	20 A	12	RC - RM. A142	R	1080 VA	
	180 VA	R	EXTERIOR RECEPTACLE	12	20 A	17	18	20 A	12	DDC	M	360 VA	
	0 VA	--	Spare	12	20 A	19	20	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	21	22	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	23	24	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	25	26	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	27	28	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	29	30	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	31	32	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	33	34	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	35	36	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	37	38						
	0 VA	--	Spare	12	20 A	39	40	30 A	10	SPD2	SP	0 VA	
	0 VA	--	Spare	12	20 A	41	42						

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	11120 VA	94.96%	10560 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen	2700 VA	90.00%	2430 VA		(EL)Ext. Ltg.			
220.60	(C)Cooling	4326 VA	100.00%	4326 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.5	(MT)Lrg. Motor			
	(M)Misc.	14185 VA	100.00%	14185 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 32331 VA VA = 90 A
Total Load (Diversified): 31501 VA VA = 87 A
Location of Panel: MECH 112M

Panelboard Q1LA

10000 A AIC Rating
X New
Existing

120/208 Wye Volt, 3 Phase, 4 Wire | 1 Section | Type 1 -Nema Rating
Mains Type: MLO | 0 A -- -- | 225 A BUS (Copper) | --
LUGS: SINGLE | --
Mounting Stye: SURFACE

NOTE	LOAD (VA)	TYPE	DESCRIPTION	WIRE	CB	CKT	CKT	CB	WIRE	DESCRIPTION	TYPE	LOAD (VA)	NOTE
	720 VA	R	RC - RM.A137	12	20 A	1	2	20 A	12	REFRIGERATOR	K	900 VA	
	360 VA	R	RC - RM.A137	12	20 A	3	4	20 A	12	ICE MACHINE	M	1125 VA	
	2880 VA	M	RC - RM.A137	10	30 A	5	6	20 A	12	REFRIGERATOR	K	900 VA	
	1920 VA	M	RC - RM. A137	12	20 A	7	8	20 A	12	REFRIGERATOR	K	900 VA	
	540 VA	R	EXTERIOR RECEPTACLE	10	20 A	9	10	20 A	12	RC - RM. A132	R; M	900 VA	
	2163 VA	C	CU-2	12	20 A	11	12	20 A	12	RC - RM. A129	R	900 VA	
						13	14	20 A	12	RC - RM. A104	M	360 VA	
	300 VA	M	ACP	12	20 A	15	16	20 A	12	RC - RM. A104	R	900 VA	
	500 VA	M	IDP	12	20 A	17	18	20 A	12	RC - RM. A105	M	360 VA	
	360 VA	M	DDC	12	20 A	19	20	20 A	12	Spare	--	0 VA	
	900 VA	R	RC - RM. A104	12	20 A	21	22	20 A	12	Spare	--	0 VA	
	360 VA	R	RC - RM.A137	12	20 A	23	24	20 A	12	Spare	--	0 VA	
	0 VA	--	Spare	12	20 A	25	26						
	0 VA	--	Spare	12	20 A	27	28	30 A	10	SPD2	SP	0 VA	
	0 VA	--	Spare	12	20 A	29	30						

NEC REF:	Load Type	Conn.	Fct.	Diversity	NEC REF:	Load Type	Conn.	Fct.	Diversity
220.44	(R)Receptacle	5400 VA	100.00%	5400 VA	210.20A	(L)Lighting			
220.56	(K)Kitchen	2700 VA	90.00%	2430 VA		(EL)Ext. Ltg.			
220.60	(C)Cooling	2163 VA	100.00%	2163 VA	620.14	(E)Elevators			
220.60	(H)Heating			0 VA		(WH)Wat. Htr.			
220.60	(F)Fans				220.5	(MT)Lrg. Motor			
	(M)Misc.	7985 VA	100.00%	7985 VA		(SP)Sub Pnl.	0 VA	Not Computed	0 VA
					630.11B	(W) Welders			

Total Connected Load: 18248 VA VA = 51 A
Total Load (Diversified): 17978 VA VA = 50 A
Location of Panel: MECH 106

1HD	1HD1	1LC	1LC1
1LD	1LD1	Q1HB	Q1LB
Q1LB1	Q1LA	Q1LD	

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STATE OF TEXAS
BRENT B. MOE
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10-02-2024

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https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 230393.000
BM | RA/RM | MS/LB | JL/TN | AD

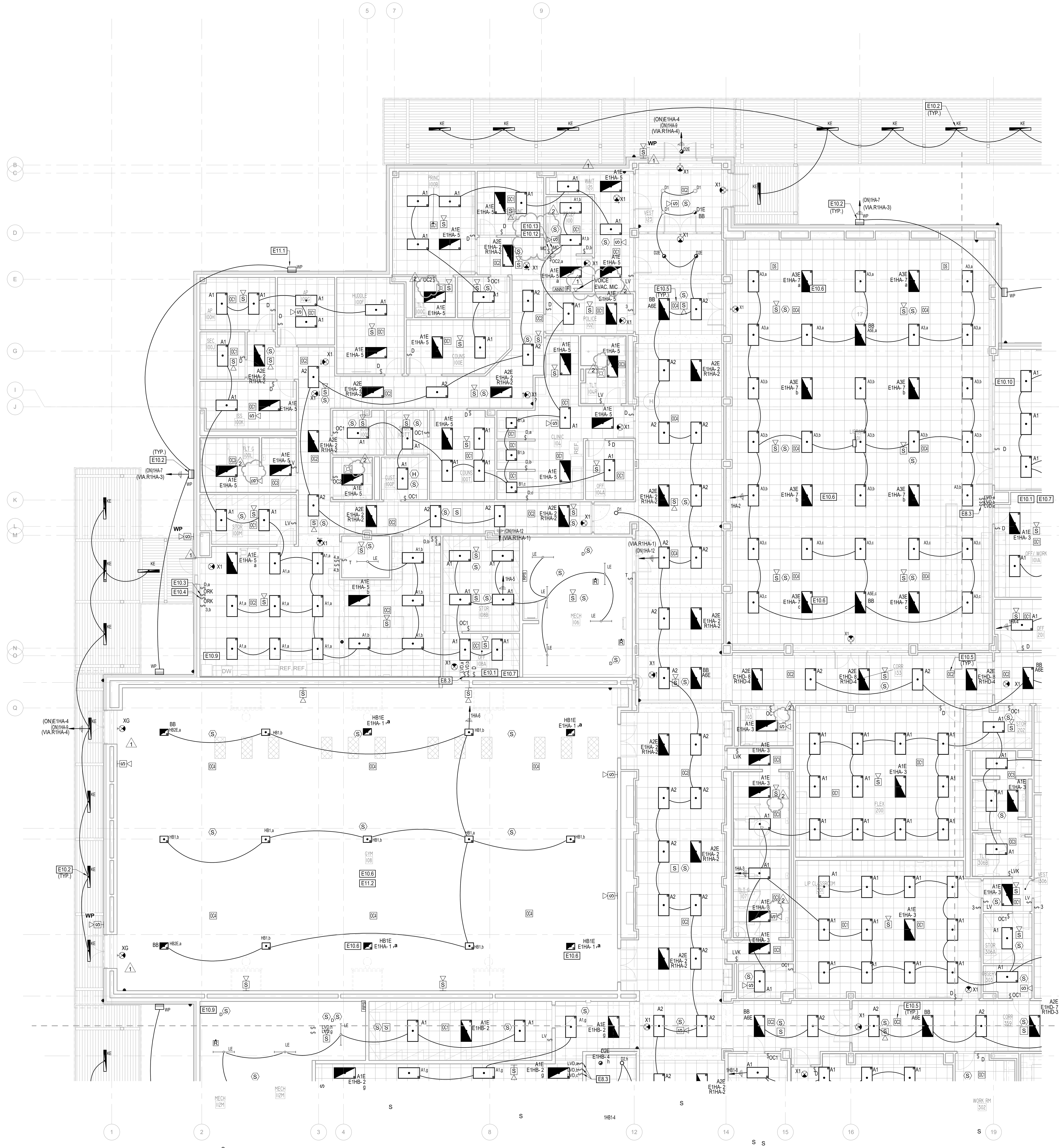
DATE SEPTEMBER 9, 2024
DRAWN BY Author
CHECKED BY Checker
BRW PROJECT NUMBER 223117.00

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

NO.	REVISION	DATE
1	Addendum 1	09.23.2024
2	Addendum 2	10.02.2024

E5.3

ELECTRICAL PANEL SCHEDULES



1 ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA A
EL2.1A 1/8" = 1'-0"

GENERAL NOTE

A REFER TO SHEET E0.2 FOR GENERAL NOTES.

B REFER TO SHEET E0.2 FOR CORRIDOR LIGHTING SEQUENCE OF OPERATIONS NOTES.

ELECTRICAL KEYED NOTES

E8.3 PROVIDE 3 BUTTON DIMMING SWITCH. REFERENCE LIGHTING CONTROL DETAILS FOR CONTROL ZONES AND QUANTITIES. PROVIDE LABEL ENGRAVINGS AS SHOWN ON LIGHTING CONTROL DETAILS. REFERENCE LIGHTING CONTROL DEVICE SCHEDULE ON SHEET E5.01 FOR ADDITIONAL INFORMATION.

E10.1 FOR HIGH CEILING AREAS FOR ROOM CONTROLLERS LABEL THE CEILING GRID PER NCISD STANDARDS. COORDINATE WITH OWNER. BLACK LETTER AND CLEAR BACKGROUND WITH 1/4" HIGH LETTERS ONE 1/2" TALL LABEL FOR DIGITAL LIGHTING MODULE(DLM). PROVIDE PLASTIC TAPE MACHINE TYPED NAME PLATE. GYM/LIBRARY ROOM CONTROLLER SHALL BE LOCATED IN THE LOW CEILING STORAGE ROOM AREA FOR MAINTENANCE ACCESSIBILITY.

E10.2 EXTERIOR LIGHTING SHALL BE CONTROLLED BY RELAY PANEL WITH SCHEDULE AND PHOTOCELL OVERRIDE PER 2018 IECC CODE REQUIREMENTS. PHOTOCELL SHALL BE INTEGRATED WITH LIGHTING RELAY PANEL. COORDINATE SCHEDULE WITH OWNER. PARKING LOT POLE LIGHTS SHALL BE CONTROLLED SEPARATELY. PROVIDE CONTACT RELAY TO ALLOW BAS SYSTEM INTEGRATION COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR FOR SYSTEM INTEGRATION.

E10.3 PROVIDE HUBBELL KEYED SWITCH, AT THE SECURITY KEYPAD LOCATION IN THE STAFF ENTRANCE BREAKROOM (SEQUENCE OF OPERATIONS: EXTERIOR POLE LIGHTING KEYED SWITCH SHALL SWEEP ALL EXTERIOR PARKING POLE LIGHTS ON ONLY FOR A PERIOD OF TIME, CONFIRM LENGTH OF TIME WITH OWNER). ONCE THE OVERRIDE TIMES OUT, THE LIGHTS FOR AFTER HOURS OPERATION WILL BE CONTROLLED ON/OFF BY THE RELAY SCHEDULE).(SCHEDULING WEEKDAYS TO BE CONFIRMED WITH OWNER.). (CONFIRM LOCATION WITH LOW VOLTAGE DESIGN CONSULTANT AND SECURITY KEY PAD LOCATION PRIOR TO ROUGH-IN. LABEL THE KEYED SWITCH "PARKING LOT POLE LIGHTS")

MOMENTARY ON/OFF ROTARY KEYED SWITCH SHALL BE AS FOLLOWS.
A. MANUFACTURER: HUBBELL CONTROLS LV SERIES HEAVY DUTY KEY SWITCH.
B. MODEL: LVSKEY-3M-SS
C. KEY: #126

E10.4 PROVIDE HUBBELL KEYED SWITCH, AT THE SECURITY KEYPAD LOCATION IN THE STAFF ENTRANCE BREAKROOM(SEQUENCE OF OPERATIONS: CORRIDOR KEYED SWITCH SHALL SWEEP ALL CORRIDOR LIGHTS ON ONLY FOR A PERIOD TIME, CONFIRM LENGTH OF TIME WITH OWNER). ONCE THE OVERRIDE TIMES OUT, THE LIGHTS FOR AFTER HOURS OPERATION WILL BE CONTROLLED ON/OFF BY THE OCCUPANCY SENSORS). (SCHEDULING : WEEKDAYS TO BE CONFIRMED WITH OWNER). (CONFIRM LOCATION WITH LOW VOLTAGE DESIGN CONSULTANT AND SECURITY KEY PAD LOCATION PRIOR TO ROUGH-IN. LABEL THE KEYED SWITCH "ALL CORRIDOR LIGHTING")

MOMENTARY ON/OFF ROTARY KEYED SWITCH SHALL BE AS FOLLOWS.
A. MANUFACTURER: HUBBELL CONTROLS LV SERIES HEAVY DUTY KEY SWITCH.
B. MODEL: LVKEY-3M-SS
C. KEY: #126

E10.5 CORRIDORS SHALL BE CONTROLLED BY LIGHTING CONTROL RELAY SCHEDULE DURING REGULAR OPERATING SCHOOL HOURS. OCCUPANCY SENSOR SHALL CONTROL THE CORRIDOR LIGHTS FOR ON/OFF OPERATING AFTER REGULAR SCHEDULE HOURS. (TYPICAL)

E10.6 PROVIDE UL924 20A DEVICE FOR EACH SWITCH ZONE IN SPACE. LOCATE IN LOCATION INDICATED BY KEYED NOTE NUMBER "E10.7".

E10.7 UL924 20A DEVICES SHALL BE LOCATED IN AN ACCESSIBLE LOCATION WITHIN THIS AREA AND LABELED.

E10.9 PROVIDE REMOTE BATTERY FOR FIXTURE TYPE "HB2E" LOCATED IN "GYM A139". REMOTE BATTERY SHALL BE LOCATED IN A LOW CEILING ROOM FOR EASY ACCESS AND MAINTENANCE. LABEL THE CEILING GRID PER NCISD STANDARDS. FIELD COORDINATE WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

E10.10 PROVIDE REMOTE BATTERY FOR FIXTURE TYPE "A5E" LOCATED IN "LIBRARY A100". REMOTE BATTERY SHALL BE LOCATED IN A LOW CEILING ROOM FOR EASY ACCESS AND MAINTENANCE. LABEL THE CEILING GRID PER NCISD STANDARDS. FIELD COORDINATE WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

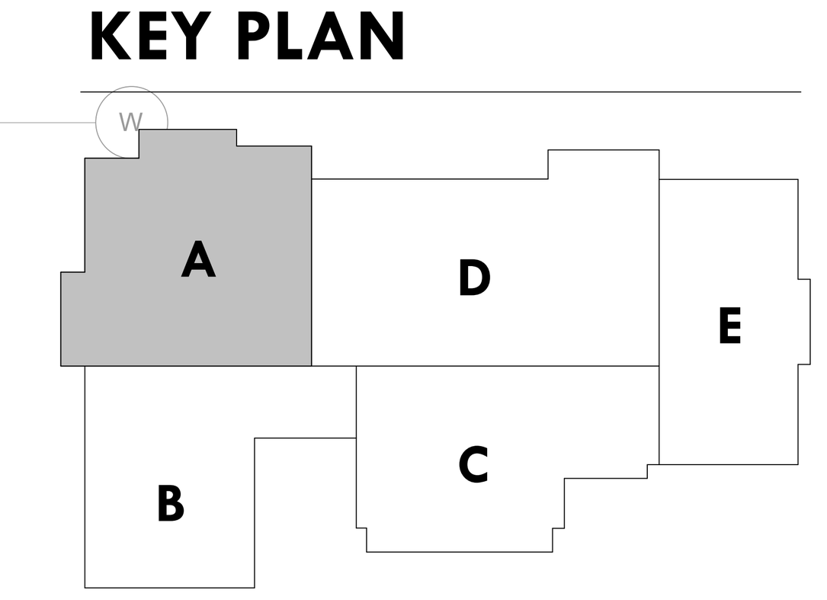
E10.12 PROVIDE HUBBELL KEYED SWITCH AT THE RECEPTION ROOM FOR EXTERIOR FAN RECEPTACLE CONTROL. LABEL THE KEYED SWITCH "NORTH EXTERIOR FANS". CONTRACTOR SHALL FIELD COORDINATE EXACT SWITCH LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

E10.13 PROVIDE HUBBELL KEYED SWITCH AT THE RECEPTION ROOM FOR EXTERIOR FAN RECEPTACLE CONTROL. LABEL THE KEYED SWITCH "WEST EXTERIOR FANS". CONTRACTOR SHALL FIELD COORDINATE EXACT SWITCH LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

E11.1 REFER TO ARCHITECT PLANS AND ELEVATION FOR EXACT WALL PACK LOCATIONS (TYPICAL FOR ALL WALL PACKS). CONTRACTOR SHALL COORDINATE WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

E11.2 REFER TO POWER PLAN 'EP2.1A' AND '2/E6.3' FOR LU SYSTEM REQUIREMENTS. FINAL PLACEMENT OF LIGHT FIXTURES SHALL BE COORDINATED WITH THE LU SYSTEM LAYOUT.

KEY PLAN



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10-02-2024

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TBPE Firm Registration No. 2234
DBR Project # 230393.000
BM | RA/RMMS/LB | JL/TN | AD

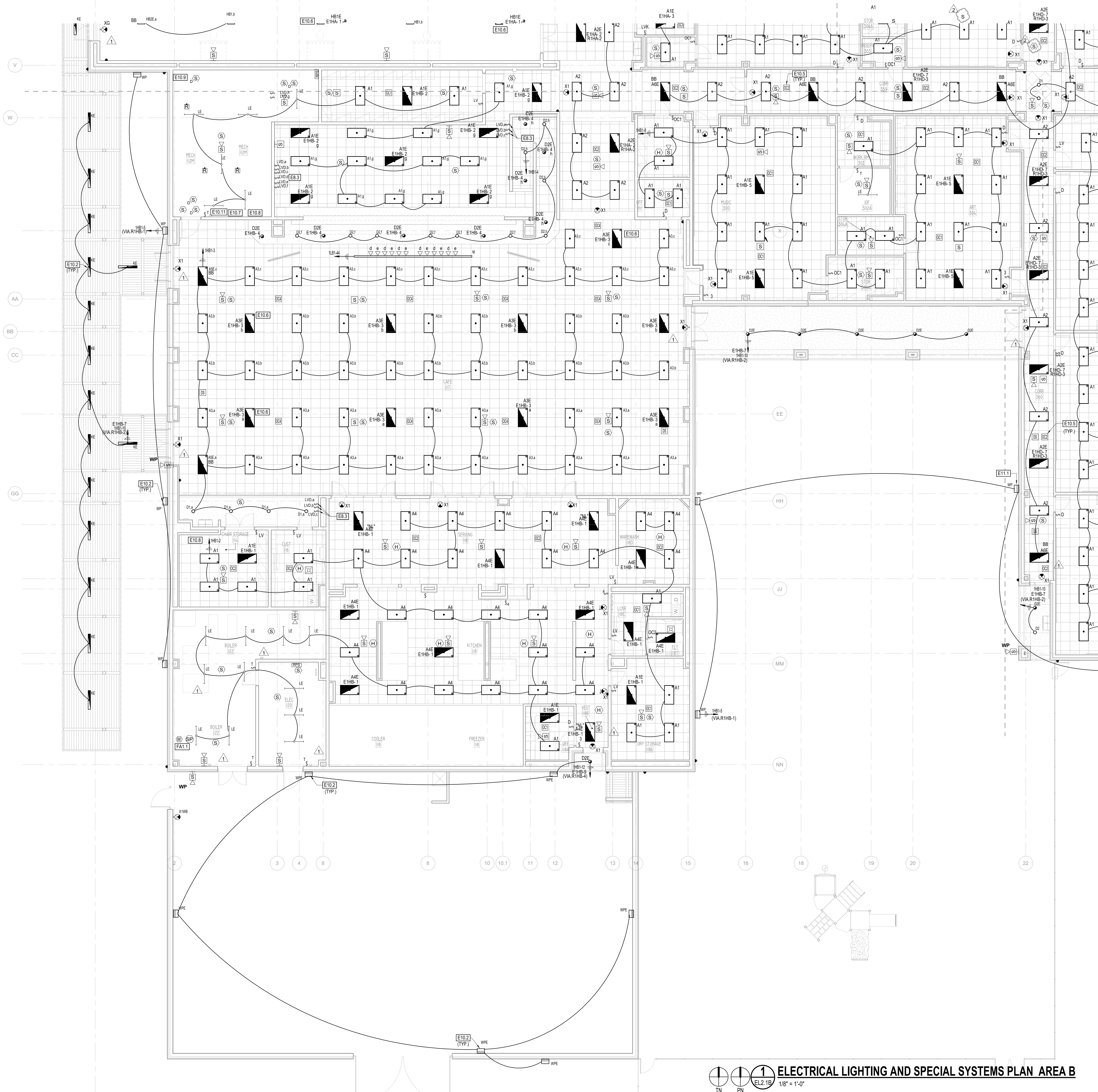
DATE	SEPTEMBER 9, 2024
DRAWN BY	DBR
CHECKED BY	DBR
BRW PROJECT NUMBER	223117.00

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

NO.	REVISION	DATE
1	Addendum 1	09.23.2024
2	Addendum 2	10.02.2024

EL2.1A

ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA A



ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA B

1 / EL2.1B — 1/8" = 1'-0"

TN PN

GENERAL NOTE

- A REFER TO SHEET E0.2 FOR GENERAL NOTES.
- B REFER TO SHEET E0.2 FOR CORRIDOR LIGHTING SEQUENCE OF OPERATIONS NOTES.

ELECTRICAL KEYED NOTES

E8.3 PROVIDE 3 BUTTON DIMMING SWITCH. REFERENCE LIGHTING CONTROL DETAILS FOR CONTROL ZONES AND QUANTITIES. PROVIDE LABEL ENGRAVINGS AS SHOWN ON LIGHTING CONTROL DETAILS. REFERENCE LIGHTING CONTROL DEVICE SCHEDULE ON SHEET E5.01 FOR ADDITIONAL INFORMATION.

E10.2 EXTERIOR LIGHTING SHALL BE CONTROLLED BY RELAY PANEL WITH SCHEDULE AND PHOTOCELL OVERRIDE PER 2018 IECC CODE REQUIREMENTS. PHOTOCELL SHALL BE INTEGRATED WITH LIGHTING RELAY PANEL. COORDINATE SCHEDULE WITH OWNER. PARKING LOT POLE LIGHTS SHALL BE CONTROLLED SEPARATELY. PROVIDE CONTACT RELAY TO ALLOW BAS SYSTEM INTEGRATION COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR FOR SYSTEM INTEGRATION.

E10.5 CORRIDORS SHALL BE CONTROLLED BY LIGHTING CONTROL RELAY SCHEDULE DURING REGULAR OPERATING SCHOOL HOURS. OCCUPANCY SENSOR SHALL CONTROL THE CORRIDOR LIGHTS FOR ON/OFF OPERATING AFTER REGULAR SCHEDULE HOURS. (TYPICAL)

E10.6 PROVIDE UL924 20A DEVICE FOR EACH SWITCH ZONE IN SPACE. LOCATE IN LOCATION INDICATED BY KEYED NOTE NUMBER "E10.7".

E10.7 UL924 20A DEVICES SHALL BE LOCATED IN AN ACCESSIBLE LOCATION WITHIN THIS AREA AND LABELED.

E10.8 PROVIDE REMOTE BATTERY FOR FIXTURE TYPE "A5E" LOCATED IN "CAFE B117". REMOTE BATTERY SHALL BE LOCATED IN A LOW CEILING ROOM FOR EASY ACCESS AND MAINTENANCE. LABEL THE CEILING GRID PER NCISD STANDARDS. FIELD COORDINATE WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

E10.9 PROVIDE REMOTE BATTERY FOR FIXTURE TYPE "HB2E" LOCATED IN "GYM A139". REMOTE BATTERY SHALL BE LOCATED IN A LOW CEILING ROOM FOR EASY ACCESS AND MAINTENANCE. LABEL THE CEILING GRID PER NCISD STANDARDS. FIELD COORDINATE WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

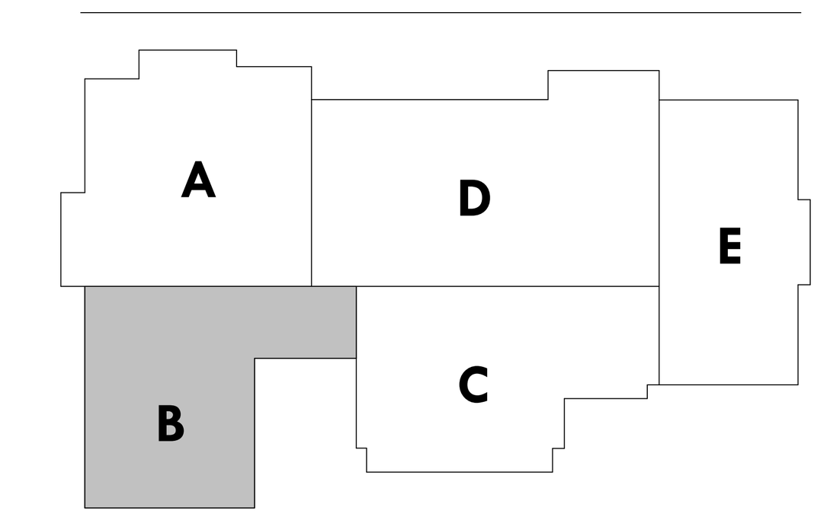
E10.11 FOR HIGH CEILING AREAS FOR ROOM CONTROLLERS LABEL THE CEILING GRID PER NCISD STANDARDS. COORDINATE WITH OWNER. WHITE LETTER AND BLACK BACKGROUND WITH 1/4" HIGH LETTERS ONE 1/2" TALL LABEL FOR DIGITAL LIGHTING MODULE(DLM).PROVIDE PLASTIC TAPE MACHINE TYPED NAME PLATE. CAFETERIA ROOM CONTROLLER SHALL BE LOCATED IN THE MECHANICAL ROOM FOR MAINTENANCE ACCESSIBILITY.

E11.1 REFER TO ARCHITECT PLANS AND ELEVATION FOR EXACT WALL PACK LOCATIONS (TYPICAL FOR ALL WALL PACKS). CONTRACTOR SHALL COORDINATE WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

FIRE ALARM KEYED NOTES

FA1.1 PROVIDE FLOW SWITCH AND SUPERVISORY SWITCH PER SPRINKLER ZONE. COORDINATE WITH FIRE PROTECTION CONTRACTOR PRIOR TO ORDER AND INSTALL.

KEY PLAN



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10-02-2024

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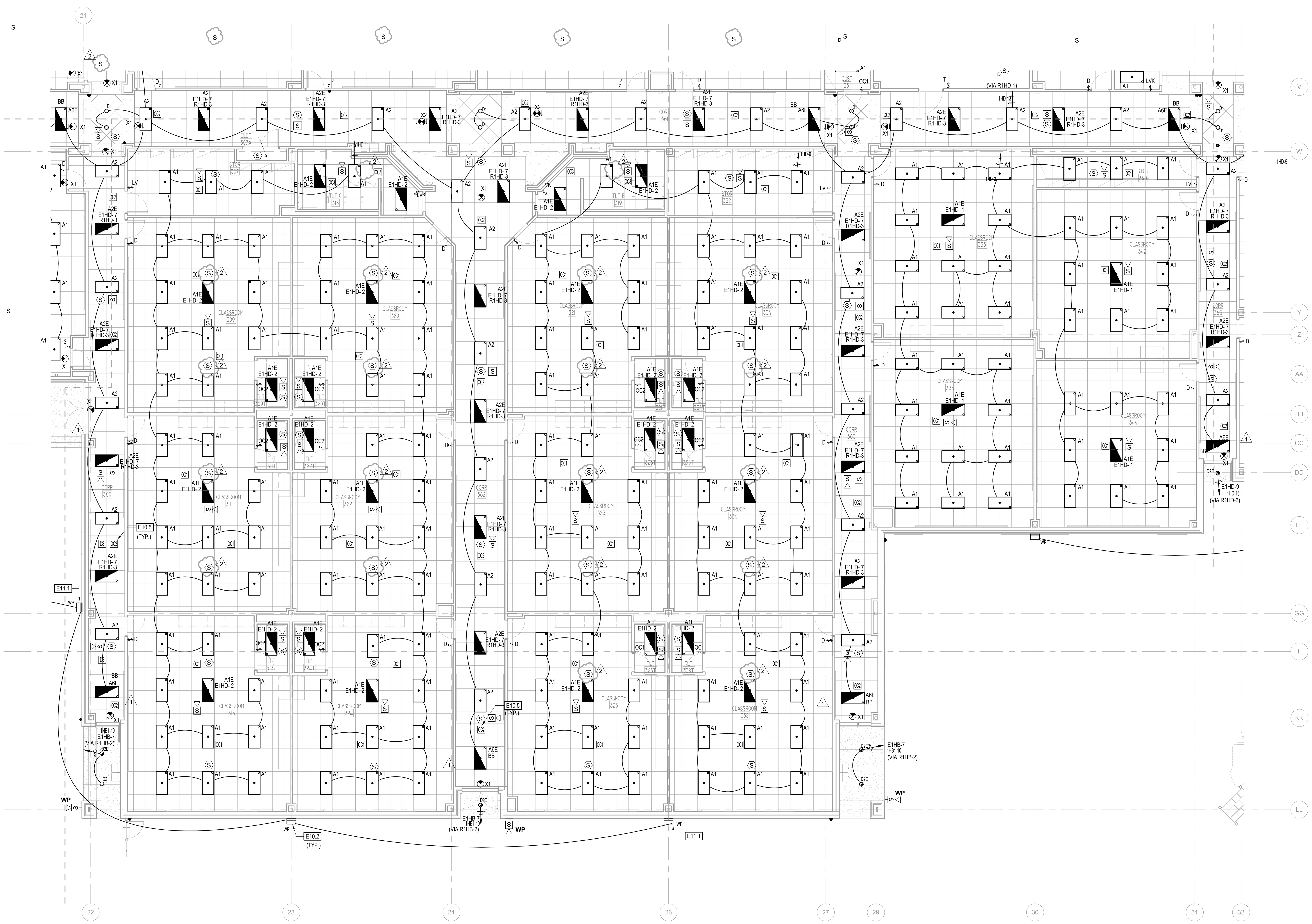
1	Addendum 1	09.23.2024
2	Addendum 2	10.02.2024

EL2.1B

ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA B



GENERAL NOTE

A REFER TO SHEET E0.2 FOR GENERAL NOTES.

B REFER TO SHEET E0.2 FOR CORRIDOR LIGHTING SEQUENCE OF OPERATIONS NOTES.

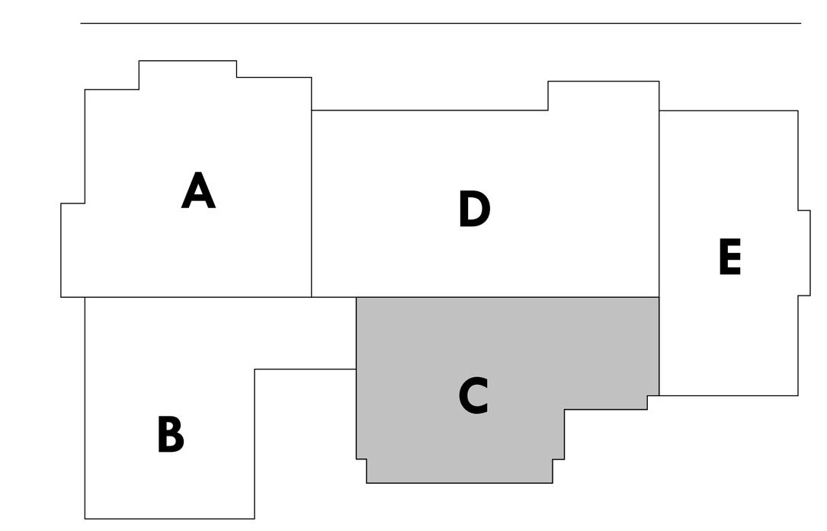
ELECTRICAL KEYED NOTES

E10.2 EXTERIOR LIGHTING SHALL BE CONTROLLED BY RELAY PANEL WITH SCHEDULE AND PHOTOCELL OVERRIDE PER 2018 IECC CODE REQUIREMENTS. PHOTOCELL SHALL BE INTEGRATED WITH LIGHTING RELAY PANEL. COORDINATE SCHEDULE WITH OWNER. PARKING LOT POLE LIGHTS SHALL BE CONTROLLED SEPARATELY. PROVIDE CONTACT RELAY TO ALLOW BAS SYSTEM INTEGRATION COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR FOR SYSTEM INTEGRATION.

E10.5 CORRIDORS SHALL BE CONTROLLED BY LIGHTING CONTROL RELAY SCHEDULE DURING REGULAR OPERATING SCHOOL HOURS. OCCUPANCY SENSOR SHALL CONTROL THE CORRIDOR LIGHTS FOR ON/OFF OPERATING AFTER REGULAR SCHEDULE HOURS. (TYPICAL)

E11.1 REFER TO ARCHITECT PLANS AND ELEVATION FOR EXACT WALL PACK LOCATIONS (TYPICAL FOR ALL WALL PACKS). CONTRACTOR SHALL COORDINATE WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

KEY PLAN



TN PN

1 EL2.1C **ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA C**

1/8" = 1'-0"

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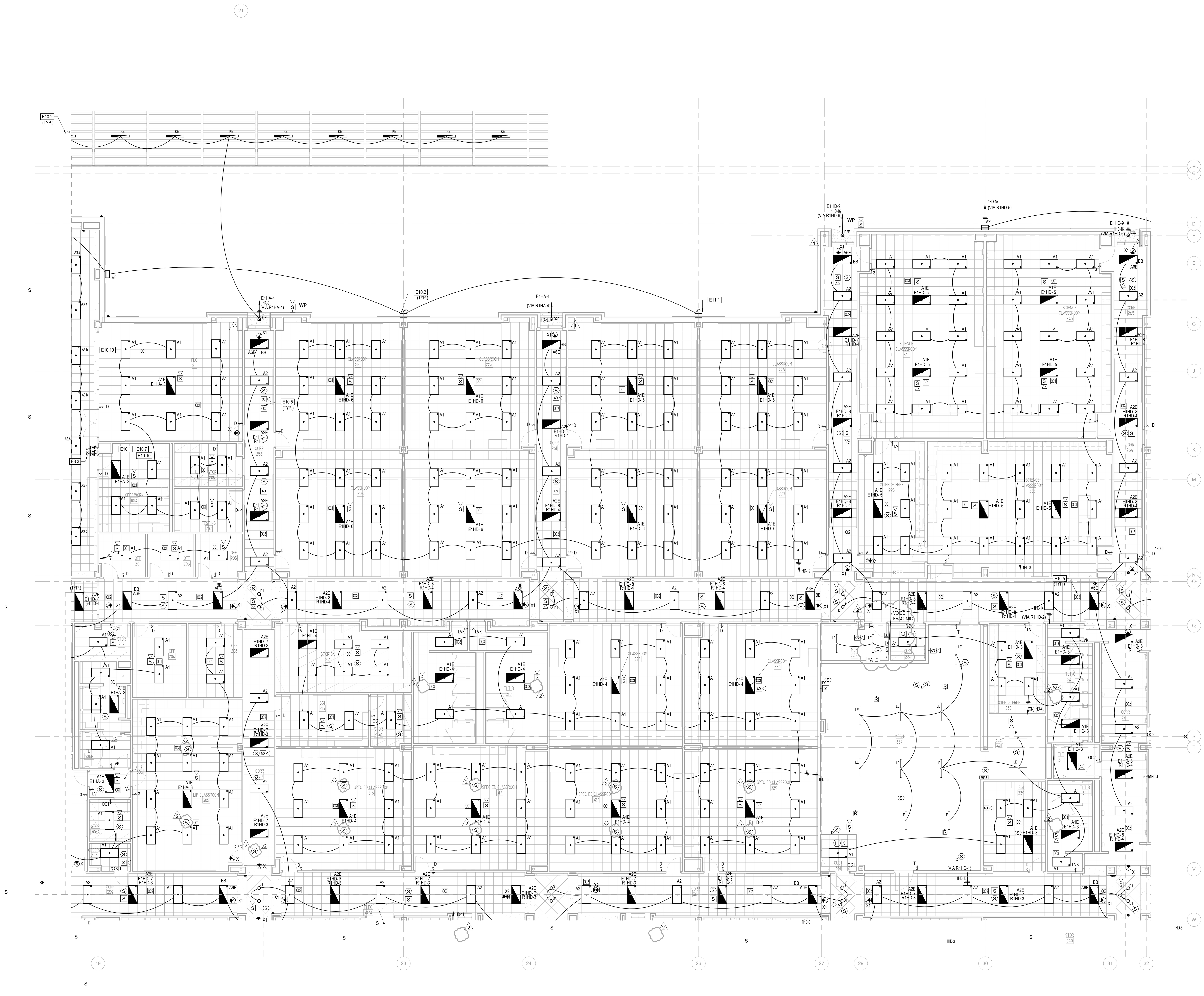
EL2.1C

ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA C



ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA D
1/8" = 1'-0"

GENERAL NOTE

A REFER TO SHEET E0.2 FOR GENERAL NOTES.
B REFER TO SHEET E0.2 FOR CORRIDOR LIGHTING SEQUENCE OF OPERATIONS NOTES.

ELECTRICAL KEYED NOTES

E8.3 PROVIDE 3 BUTTON DIMMING SWITCH. REFERENCE LIGHTING CONTROL DETAILS FOR CONTROL ZONES AND QUANTITIES. PROVIDE LABEL ENGRAVINGS AS SHOWN ON LIGHTING CONTROL DETAILS. REFERENCE LIGHTING CONTROL DEVICE SCHEDULE ON SHEET E5.01 FOR ADDITIONAL INFORMATION.

E10.1 FOR HIGH CEILING AREAS FOR ROOM CONTROLLERS LABEL THE CEILING GRID PER NCISD STANDARDS. COORDINATE WITH OWNER. BLACK LETTER AND CLEAR BACKGROUND WITH 1/4" HIGH LETTERS ONE 1/2" TALL LABEL FOR DIGITAL LIGHTING MODULE(DLM). PROVIDE PLASTIC TAPE MACHINE TYPED NAME PLATE. GYM/LIBRARY ROOM CONTROLLER SHALL BE LOCATED IN THE LOW CEILING STORAGE ROOM AREA FOR MAINTENANCE ACCESSIBILITY.

E10.2 EXTERIOR LIGHTING SHALL BE CONTROLLED BY RELAY PANEL WITH SCHEDULE AND PHOTOCELL OVERRIDE PER 2018 IECC CODE REQUIREMENTS. PHOTOCELL SHALL BE INTEGRATED WITH LIGHTING RELAY PANEL. COORDINATE SCHEDULE WITH OWNER. PARKING LOT POLE LIGHTS SHALL BE CONTROLLED SEPARATELY. PROVIDE CONTACT RELAY TO ALLOW BAS SYSTEM INTEGRATION COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR FOR SYSTEM INTEGRATION.

E10.5 CORRIDORS SHALL BE CONTROLLED BY LIGHTING CONTROL RELAY SCHEDULE DURING REGULAR OPERATING SCHOOL HOURS. OCCUPANCY SENSOR SHALL CONTROL THE CORRIDOR LIGHTS FOR ON/OFF OPERATING AFTER REGULAR SCHEDULE HOURS. (TYPICAL)

E10.7 UL924 20A DEVICES SHALL BE LOCATED IN AN ACCESSIBLE LOCATION WITHIN THIS AREA AND LABELED.

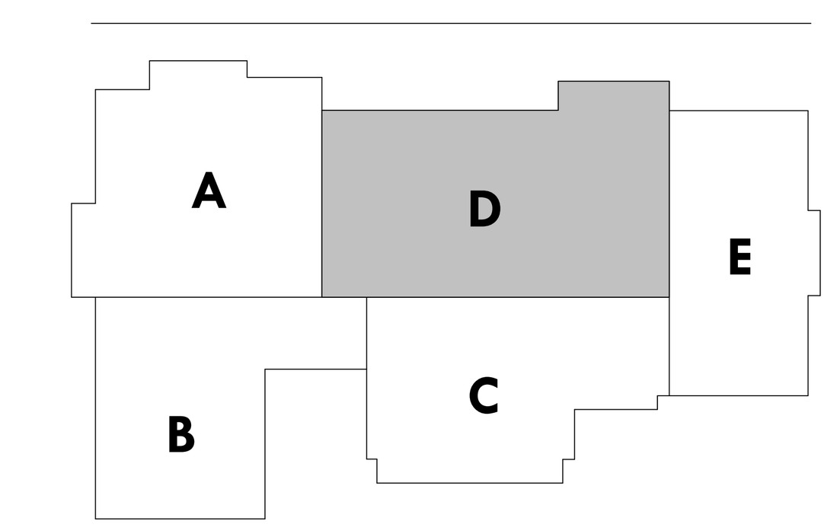
E10.10 PROVIDE REMOTE BATTERY FOR FIXTURE TYPE "A5E" LOCATED IN "LIBRARY A100". REMOTE BATTERY SHALL BE LOCATED IN A LOW CEILING ROOM FOR EASY ACCESS AND MAINTENANCE. LABEL THE CEILING GRID PER NCISD STANDARDS. FIELD COORDINATE WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

E11.1 REFER TO ARCHITECT PLANS AND ELEVATION FOR EXACT WALL PACK LOCATIONS (TYPICAL FOR ALL WALL PACKS). CONTRACTOR SHALL COORDINATE WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

FIRE ALARM KEYED NOTES

FA1.2 PROVIDE BOSCH IP COMMUNICATION PART #B465. PROGRAMMING BY OWNER.

KEY PLAN



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EL2.1D

ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA D

1 ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA E

EL2.1E 1/8" = 1'-0"

TN PN

GENERAL NOTE

A REFER TO SHEET E0.2 FOR GENERAL NOTES.

B REFER TO SHEET E0.2 FOR CORRIDOR LIGHTING SEQUENCE OF OPERATIONS NOTES.

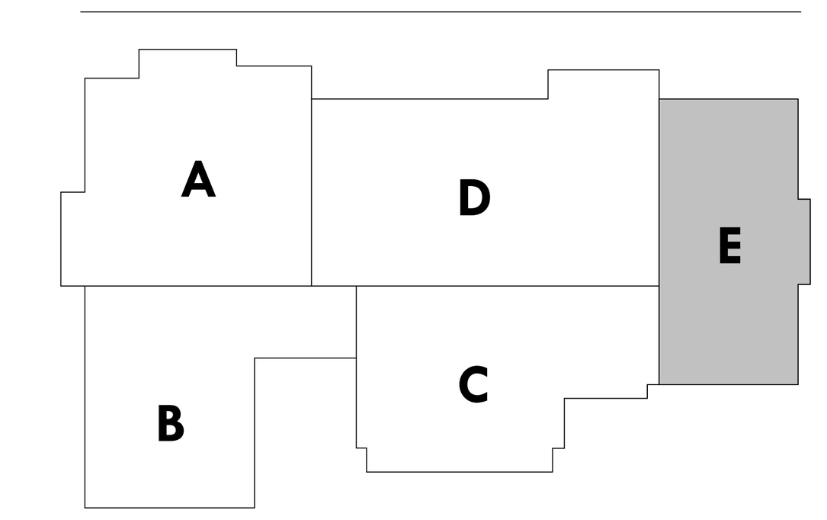
ELECTRICAL KEYED NOTES

E10.2 EXTERIOR LIGHTING SHALL BE CONTROLLED BY RELAY PANEL WITH SCHEDULE AND PHOTOCELL OVERRIDE PER 2018 IECC CODE REQUIREMENTS. PHOTOCELL SHALL BE INTEGRATED WITH LIGHTING RELAY PANEL. COORDINATE SCHEDULE WITH OWNER. PARKING LOT POLE LIGHTS SHALL BE CONTROLLED SEPARATELY. PROVIDE CONTACT RELAY TO ALLOW BAS SYSTEM INTEGRATION COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR FOR SYSTEM INTEGRATION.

E10.5 CORRIDORS SHALL BE CONTROLLED BY LIGHTING CONTROL RELAY SCHEDULE DURING REGULAR OPERATING SCHOOL HOURS. OCCUPANCY SENSOR SHALL CONTROL THE CORRIDOR LIGHTS FOR ON/OFF OPERATING AFTER REGULAR SCHEDULE HOURS. (TYPICAL)

E11.1 REFER TO ARCHITECT PLANS AND ELEVATION FOR EXACT WALL PACK LOCATIONS (TYPICAL FOR ALL WALL PACKS). CONTRACTOR SHALL COORDINATE WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

KEY PLAN



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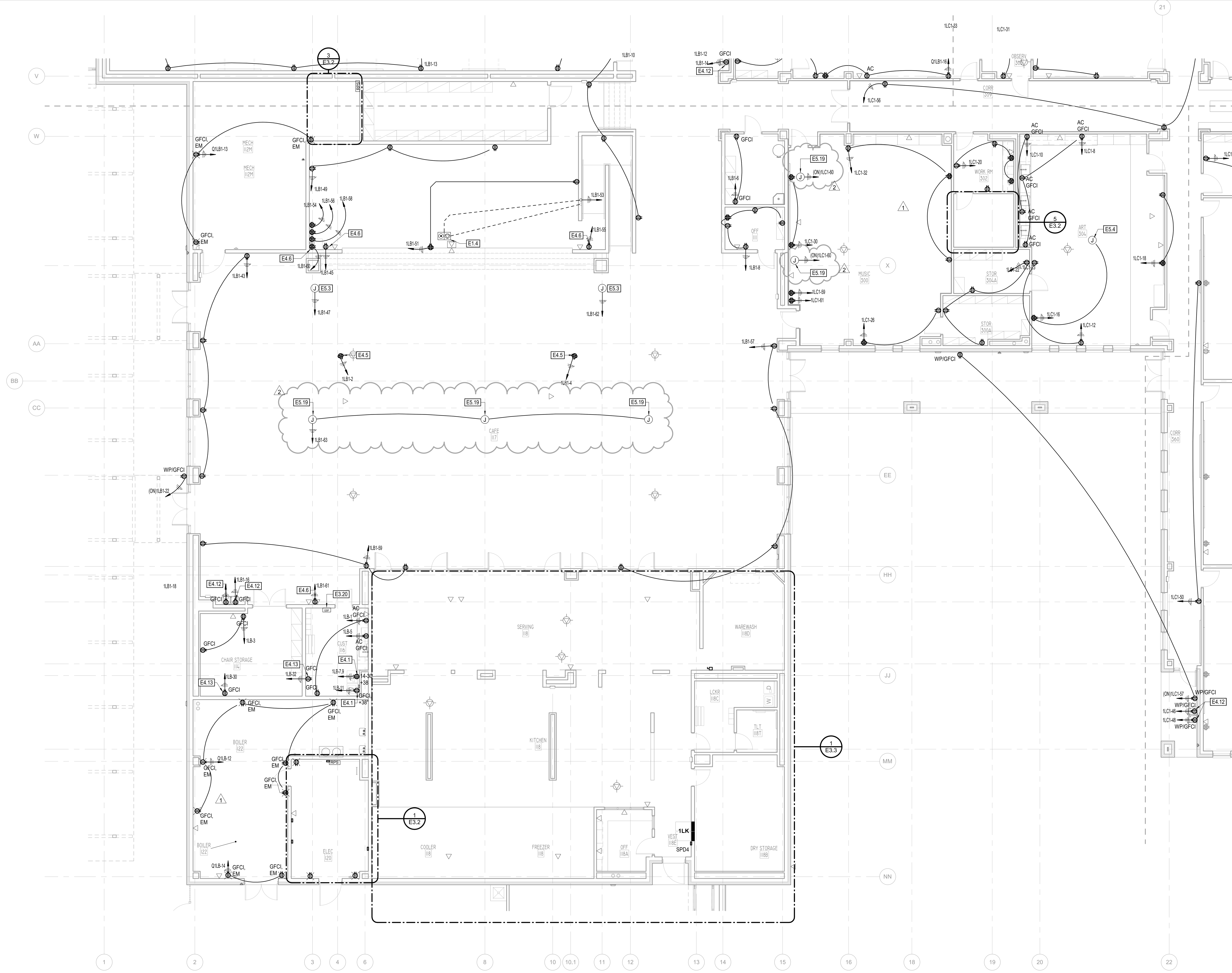
EL2.1E

ELECTRICAL LIGHTING AND SPECIAL SYSTEMS PLAN AREA E



GENERAL NOTE

A REFER TO SHEET E0.2 FOR GENERAL NOTES.

B REFER TO SHEET E0.2 FOR CORRIDOR LIGHTING SEQUENCE OF OPERATIONS NOTES.

ELECTRICAL KEYED NOTES

E1.4 PROVIDE A 8-GANG FLOOR BOX, LEGRAND WIREMOLD EVOLUTION EFB86S WITH A EFB610BT-XX FLUSH STYLE SOLID COVER. (-XX DENOTES COLOR AND WILL BE DETERMINED BY THE ARCHITECT). THE EFB86S MUST PROVIDE: 1-HDBASE-T, 4-DATA, 2-DUPLEX FOR POWER, 3 MICROPHONE INPUTS, 1-MONITOR OUTPUT. THE EFB86S ACCEPTS STANDARD DEVICE PLATES. ROUTE (1) 3/4" CONDUIT FOR POWER & (1) 1 1/4" CONDUIT FOR DATA IN THE PLENUM BELOW. TURN UP IN WALL AND ROUTE TO ASSOCIATED LEVEL PLENUM. PROVIDE PULL STRING IN DATA CONDUIT. COORDINATE EXACT LOCATION WITH ARCHITECT, OWNER AND LOW VOLTAGE CONTRACTOR/INSTALLER PRIOR TO ROUGH-IN.

E3.20 PROPOSED LOCATION OF GENERATOR STATUS PANEL(GSP). FIELD COORDINATE FINAL LOCATION WITHIN ROOM WITH OWNER PRIOR TO ROUGH-IN.

E4.1 FOR GFCI RECEPTACLES LOCATED BEHIND EQUIPMENT, PROVIDE REMOTE TEST/RESET BUTTON ADJACENT TO EQUIPMENT IN ACCESSIBLE LOCATION.

E4.5 PROVIDE RECEPTACLE AT CEILING FOR CEILING MOUNTED PROJECTOR. CONFIRM ADDITIONAL REQUIREMENTS WITH FINAL SELECTED EQUIPMENT. FIELD COORDINATE EXACT LOCATION AND REQUIREMENTS WITH AV INSTALLER PRIOR TO ROUGH-IN. COORDINATE CONTROLS WITH OWNER AND AV INSTALLER AND PROVIDE ROUGH-IN CONNECTION AS REQUIRED.

E4.6 PROVIDE 120V POWER FOR AV RACK(S). FIELD COORDINATE EXACT LOCATION(S), INSTALLATION DETAILS AND ELECTRICAL REQUIREMENTS WITH AV INSTALLER/CONTRACTOR PRIOR TO ROUGH-IN. COORDINATE CONTROLS WITH OWNER AND AV INSTALLER/CONTRACTOR AND PROVIDE ROUGH-IN CONNECTIONS AS REQUIRED.

E4.12 FOR GFCI RECEPTACLES LOCATED BEHIND EDF, PROVIDE REMOTE TEST/RESET BUTTON 84" A.F.F IN ACCESSIBLE LOCATION. COORDINATE FINAL LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN RE: 13/E6.1

E4.13 PROVIDE 120V DEDICATED POWER FOR FLOOR SWEEPER.

E5.3 PROVIDE 120V POWER TO JUNCTION BOX FOR PROJECTOR SCREEN. COORDINATE EXACT LOCATION AND EQUIPMENT REQUIREMENTS WITH PROJECTOR SCREEN INSTALLER PRIOR TO ROUGH-IN. COORDINATE CONTROLS WITH OWNER, AV INSTALLER AND PROVIDE ROUGH-IN/CONNECTIONS FOR CONTROLS AS REQUIRED.

E5.4 PROVIDE 120V POWER TO JUNCTION BOX FOR MOTOR SHADES. COORDINATE EXACT LOCATION AND EQUIPMENT REQUIREMENTS WITH MOTOR SHADES INSTALLER PRIOR TO ROUGH-IN. COORDINATE CONTROLS WITH OWNER/ARCHITECT AND PROVIDE ROUGH-IN/CONNECTIONS FOR CONTROLS AS REQUIRED. POWER NEEDS TO BE PROVIDED FOR THE LOW WINDOWS AND HIGH WINDOWS. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND ARCHITECTURAL ELEVATIONS.

E5.19 PROVIDE 120V POWER TO JUNCTION BOX FOR LOCAL SOUND SPEAKER. COORDINATE EXACT LOCATION AND EQUIPMENT REQUIREMENTS WITH SOUND SPEAKER INSTALLER PRIOR TO ROUGH-IN. COORDINATE CONTROLS WITH OWNER, AV INSTALLER AND PROVIDE ROUGH-IN/CONNECTIONS FOR CONTROLS AS REQUIRED.

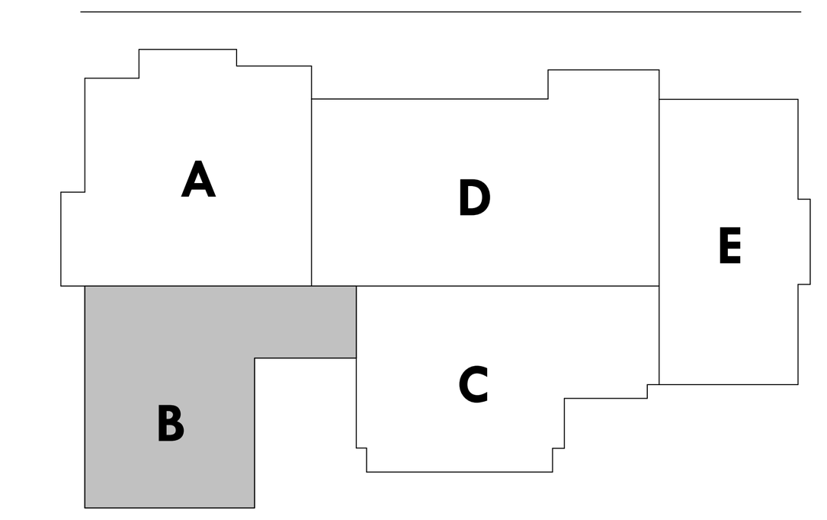
NOTE TO ELECTRICAL CONTRACTOR:
ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT, OUTLET BOXES, JUNCTION BOXES FOR ALL TECHNOLOGY, LOW VOLTAGE, ACCESS CONTROL SECURITY, SURVEILLANCE, AND OTHER DIVISION 27/28 SCOPE. REFER TO DIVISION 27/28 DRAWINGS AND SPECIFICATIONS FOR ALL WORK REQUIRED. OMISSION OF THIS SCOPE FROM DIV 26 SCOPE OF WORK IS PROHIBITED.

1 ELECTRICAL POWER PLAN AREA B

EP2.1B 1/8" = 1'-0"

TN PN

KEY PLAN



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EP2.1B

ELECTRICAL POWER PLAN AREA B

TECHNOLOGY LEGEND

GROUP	SYMBOL	DESCRIPTION
DEVICES	▽	INDICATES THE LOCATION OF A NEW TECHNOLOGY OUTLET. CONTRACTOR TO PROVIDE FACEPLATE WITH A MINIMUM OF 4-PORTS AT EACH LOCATION UNLESS OTHERWISE NOTED. ELECTRICAL CONTRACTOR TO PROVIDE A DOUBLE GANG BACK BOX WITH A SINGLE GANG REDUCER RING AND A 1" EMT CONDUIT FROM THE BOX TO THE NEAREST ACCESSIBLE CEILING. SOME EXISTING BUILDINGS MAY REQUIRE SURFACE MOUNTED RACEWAY. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL RACEWAY AS SPECIFIED AND DESIGNATE IN THE ELECTRICAL CONTRACT DOCUMENTS. SYSTEM INSTALLER TO PROVIDE AND INSTALL A PLASTIC PROTECTIVE BUSHING, ON EACH CONDUIT STUB-OUT, TO PREVENT CABLE DAMAGE.
		INDICATES THE LOCATION OF A FLOOR MOUNTED TECHNOLOGY OUTLET. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL A FLOOR BOX WITH (1) 1" CONDUIT PER EVERY (6) CABLES INSTALLED. ALL CONDUITS SHALL ROUT FROM THE FLOOR BOX, DIRECTLY TO THE WALL INDICATED AND STUB-UP INTO THE NEAREST ACCESSIBLE PLENUM CEILING
		INDICATES THE LOCATION OF A CEILING MOUNTED OUTLET. CONTRACTOR SHALL MOUNT THIS OUTLET AT +12" ABOVE THE CEILING AND COORDINATE ALL FINAL LOCATIONS WITH OTHER TRADES ON THE PROJECT TO VERIFY THAT THE LOCATION OF THE OUTLET MAINTAINS 12" OF CLEARANCE FROM THE FRONT OF THE FACEPLATE FOR OWNER ACCESS. ELECTRICAL CONTRACTOR SHALL ROUTE (1) 1" CONDUIT FROM THE BUILDING STRUCTURE TO A SINGLE GANG BACK BOX MOUNTED AT 5' OR LESS ABOVE THE FINISHED CEILING. SECURE CONDUIT AND BACK BOX TO INSURE MINIMAL SWAY MOVEMENT.
	'D#'	DESIGNATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR THE USE OF A NETWORK CONNECTION. THE '#' SHALL BE REPLACED WITH NUMERIC TEXT THAT IDENTIFIES THE TOTAL NUMBER OF CATEGORY 6, NETWORK CABLES THAT ARE TO BE INSTALLED AT THE TECHNOLOGY OUTLET LOCATION. CONTRACTOR TO PROVIDE AND INSTALL CATEGORY 6 NETWORK CABLES, CATEGORY 6 CONNECTORS, STAINLESS STEEL FACEPLATES WITH IDENTIFICATION WINDOWS, LABELS, BLANK INSERTS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED OUTLET LOCATION. ALL FACEPLATES PROVIDED SHALL CONTAIN A MINIMUM 4-PORTS AND SHALL BE APPROPRIATELY SIZED TO ACCOMMODATE THE NUMBER OF CIRCUITS BEING INSTALLED AT THIS TECHNOLOGY OUTLET LOCATION. MAXIMUM OF SIX(6) DATA CABLES PER OUTLET.
	'W'	DESIGNATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR THE USE OF A WALL MOUNTED TELEPHONE CONNECTION. CONTRACTOR TO PROVIDE AND INSTALL (1) CATEGORY 6 NETWORK CABLE, (1) CATEGORY 6 CONNECTOR, STAINLESS STEEL WALL TELEPHONE FACEPLATE, LABELS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED CIRCUIT AT EACH LOCATION SHOWN. CONTRACTOR SHALL MOUNT THIS OUTLET AT +42" AFF AND COORDINATE ALL FINAL LOCATIONS WITH OTHER TRADES ON THE PROJECT TO VERIFY THAT THE LOCATION OF THE OUTLET MAINTAINS 8" OF CLEARANCE ON ALL FOUR SIDES OF THE BACK BOX. OUTLETS SHALL REMAIN CLEAR OF ROOM DOORS, CABINET DOORS, APPLIANCE DOORS, AND SLIDING DRAWERS.
	'AP-1'	DESIGNATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR THE USE OF A WIRELESS ACCESS POINT CONNECTION. CONTRACTOR TO PROVIDE AND INSTALL (1) CATEGORY 6A NETWORK CABLE, (1) CATEGORY 6A CONNECTOR, STAINLESS STEEL FACEPLATE WITH IDENTIFICATION WINDOWS, LABELS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED CIRCUIT AT EACH LOCATION SHOWN. REFERENCE SPECIFICATIONS FOR PATCH CABLE REQUIREMENTS.
		INDICATES THE LOCATION OF AN IP VIDEO SURVEILLANCE CAMERA. CONTRACTOR TO PROVIDE AND INSTALL CATEGORY 6A NETWORK CABLES, CATEGORY 6A CONNECTORS, STAINLESS STEEL FACEPLATES WITH IDENTIFICATION WINDOWS, LABELS, BLANK INSERTS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED OUTLET LOCATION. ALL FACEPLATES PROVIDED SHALL SHALL BE APPROPRIATELY SIZED TO ACCOMMODATE THE NUMBER OF CIRCUITS BEING INSTALLED AT THIS OUTLET LOCATION. REFERENCE SPECIFICATIONS FOR PATCH CABLE REQUIREMENTS.
	'B'	INDICATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR FUTURE USE. CONTRACTOR TO PROVIDE STAINLESS STEEL, SINGLE-GANG WALL PLATE AT ALL LOCATIONS.

NOTES:
REFERENCE TECHNOLOGY GENERAL NOTES, PLAN KEYED NOTES, AND ALL OTHER SYSTEM LEGENDS/NOTES. THE STRUCTURED CABLING SYSTEM CONTRACTOR SHALL PROVIDE AND INSTALL CATEGORY 6 CABLE TO ALL SYSTEMS' EQUIPMENT REQUIRING NETWORK CONNECTIVITY.

1

VIDEO SURVEILLANCE LEGEND

GROUP	SYMBOL	DESCRIPTION
DEVICES		WALL MOUNTED VIDEO SURVEILLANCE CAMERA.
		CEILING MOUNTED VIDEO SURVEILLANCE CAMERA.
	VRS	VIDEO RECORDING SERVER. REFERENCE SPECIFICATIONS FOR INFORMATION CONCERNING ANALOG OR IP BASED TYPE SYSTEM.
	#MU	INDICATES THE LOCATION OF A VIDEO SURVEILLANCE MAIN

NOTES:
1. REFERENCE VIDEO SURVEILLANCE SCHEDULE AND DIVISION 28 SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

1

INTRUSION DETECTION LEGEND

GROUP	SYMBOL	DESCRIPTION
DEVICES	IDP	DESIGNATES THE LOCATION OF THE INTRUSION DETECTION SYSTEM, CONTROL PANEL, ELECTRICAL CONTRACTOR TO PROVIDE 120V POWER TO PANEL
	DC	FLUSH MOUNTED MAGNETIC DOOR CONTACT.
	SDC	SURFACE MOUNTED MAGNETIC DOOR CONTACT.
	ODC	OVERHEAD DOOR, SURFACE MOUNTED DOOR CONTACT.
	KP	INTRUSION DETECTION SYSTEM ARM/DISARM KEYPAD.
	M	STANDARD RANGE WALL MOUNTED MOTION DETECTOR.
	M	MEDIUM RANGE WALL MOUNTED MOTION DETECTOR.
	M	LONG RANGE WALL MOUNTED MOTION DETECTOR.
	M	CEILING MOUNTED, 360° MOTION DETECTOR.
	SS	INTRUSION SYSTEM SPEAKER STROBE
	DB	DURESS BUTTON
	WSR	WIRELESS SECURITY RECEIVER. ELECTRICAL CONTRACTOR TO PROVIDE ONE (1) SINGLE GANG BACK BOX WITH A 1" CONDUIT ROUTING TO THE NEAREST ACCESSIBLE CEILING. MOUNT AT 12" BELOW THE FINISHED CEILING, BUT DO NOT EXCEED 12'-0" AFF.
	GB	CEILING MOUNTED GLASS BREAK DETECTOR

NOTES:
1. REFERENCE ACCESS CONTROL SCHEDULE, DIVISION 8 AND DIVISION 28 SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

1

ACCESS CONTROL LEGEND

GROUP	SYMBOL	DESCRIPTION
DEVICES	CR	WALL OR MULLION MOUNTED ACCESS CONTROL PROXIMITY CARD READER.
	CR	ACCESS CONTROL PROXIMITY CARD READER THAT IS INTEGRATED INTO THE DOOR HARDWARE.
	DR	DOOR RELEASE BUTTON
	PIR	MOTION REQUEST TO EXIT DEVICE
	ACP	DESIGNATES THE LOCATION OF THE ACCESS CONTROL SYSTEM, CONTROL PANEL. ELECTRICAL CONTRACTOR TO PROVIDE 120V. POWER TO PANEL. PROVIDE NETWORK CABLE TO PANEL AND COORDINATE WITH THE OWNER'S TECHNOLOGY DEPARTMENT ON ACQUIRING AN IP ADDRESS.
	DS	WALL OR MULLION MOUNTED, 2-WAY AUDIO/VIDEO INTERCOM DOOR STATION.
	DS	DOOR MOUNTED, 2-WAY AUDIO/VIDEO INTERCOM DOOR STATION.
	MS	2-WAY AUDIO/VIDEO INTERCOM MASTER STATION.
	PB	ADA AUTO DOOR OPEN BUTTON. SHOWN FOR REFERENCE ONLY, BUTTON AND AUTO DOOR OPERATOR PROVIDED AND INSTALLED BY THE DOOR SYSTEM INSTALLER.
	DO	AUTO DOOR OPERATOR. OPERATOR TO BE PROVIDED AND INSTALLED BY THE DOOR SYSTEM INSTALLER.
	LA	WALL MOUNTED, LOCAL ALARM SOUNDER.
	DC	DPDT MAGNETIC DOOR CONTACT/DOOR POSITION SENSOR. FLUSH MOUNTED IN DOOR FRAME, UNLESS NOTED OTHERWISE

NOTES:
1. REFERENCE ACCESS CONTROL SCHEDULE, DETAILS, AND DIVISION 28 SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

AUDIO/VIDEO LEGEND

GROUP	SYMBOL	DESCRIPTION
DEVICES	#MP'	INDICATES THE LOCATION OF A VIDEO PROJECTOR # TO BE REPLACED WITH "C" OR "W". "C" INDICATES THAT THE DEVICE IS A CEILING MOUNTED DEVICE AND "W" INDICATES IT IS TO BE WALL MOUNTED. CONTRACTOR TO PROVIDE AND INSTALL A PROJECTOR, CEILING OR WALL MOUNTING KIT, AND PATCH CABLES AS REQUIRED TO CONNECT AT BOTH ENDS.
	'AV-*#'	INDICATES THAT THE DESIGNATED TECHNOLOGY OUTLET IS INTENDED FOR AN AUDIO/VIDEO (A/V) INPUT. CONTRACTOR TO PROVIDE AND INSTALL A FLOOR MOUNTED OR WALL MOUNTED BOX AS INDICATED. (2) 1.25" CONDUITS FROM THE BOX TO THE NEAREST, PLENUM ACCESSIBLE CEILING WITHIN THE SAME ROOM. ALL FLOOR AND WALL MOUNTED BOXES SHALL BE A MINIMUM OF 2-GANGS. *# - WHEN REPLACED WITH A '1' (AV-1) ONLY, THE OUTLET SHALL BE A STANDALONE, LOCAL INPUT TIED TO A LOCAL VIDEO DISPLAY (FSD, CMP, WMP, AV-2, ETC.). THIS OUTLET WILL NOT BE ASSOCIATED WITH ANY SYSTEM FOR ROUTING TO DISPLAYS LOCATED IN ANY OTHER PORTION OF THE PROJECT. IF NOT REPLACED WITH A '1' SEE THE NOTES AT THE BOTTOM OF THE LEGEND FOR ADDITIONAL INSTRUCTIONS.
	'FSD-*#'	INDICATES THE LOCATION OF A FLAT PANEL VIDEO DISPLAY. CONTRACTOR TO PROVIDE AND INSTALL TWO (2) CATEGORY 6 UTP NETWORK CABLE TO ALL LOCATIONS SHOWN ON THE ENTIRE PROJECT. *# - WHEN REPLACED WITH A '1' (FSD-1) ONLY, THE OUTLET SHALL BE A STANDALONE AND ONLY HAVE THE CATEGORY 6 CABLE ROUTED TO IT, FROM THE MDF/IDF SERVING THE DEVICES AREA ROOM.PROVIDE 65" DISPLAY *# - WHEN REPLACED WITH A '2' (FSD-2) ONLY, THE OUTLET SHALL HAVE THE CATEGORY 6 CABLE ROUTED TO IT, FROM THE MDF/IDF SERVING THE DEVICES AREA, AND THE CABLING FROM THE ASSOCIATED AV-1. PROVIDE 65" DISPLAY *# - WHEN REPLACED WITH A '3' (FSD-3) ONLY, THE OUTLET SHALL BE A STANDALONE AND ONLY HAVE THE CATEGORY 6 CABLE ROUTED TO IT, FROM THE MDF/IDF SERVING THE DEVICES AREA ROOM.PROVIDE 55" DISPLAY EACH FSD OUTLET SHALL BE A 2-GANG BOX AND TWO (2) 1.25" CONDUITS STUBBING INTO THE ROOMS ACCESSIBLE CEILING. PROVIDE ONE DOUBLE-GANG FACEPLATE WITH TWO (2) DECORA PORTS. PROVIDE A DECORA STYLE INSERT THAT ACCEPTS THE STYLE OF DATA JACK BEING USED FOR STRUCTURED CABLING. WHEN THERE IS A LOCAL A/V INPUT ASSOCIATED WITH THE DISPLAY, PROVIDE A DECORA INSERT THAT CONFORMS WITH THE SYSTEMS SPECIFIED. OTHERWISE PROVIDE A BLANK INSERT IN THE SECOND PORT.
	'IVD'	INDICATES THE LOCATION OF AN INTERACTIVE VIDEO DISPLAY. REFERENCE SPECIFICATION FOR MORE INFORMATION
	A-MIC	SCHOOL COMMUNICATION SYSTEM MICROPHONE
	ACS	SCHOOL COMMUNICATION SYSTEM ADMIN CONTROL STATION/PHONE
	S *#	INDICATES THE THE LOCATION OF A LOCAL SOUND REINFORCEMENT/PRESENTATION SPEAKER. *# - WHEN REPLACED WITH AN 'L', THE SPEAKER SHALL BE FOR LOCAL INSTRUCTIONAL PRESENTATION AUDIO AND POWERED BY THE SPECIFIED CLASSROOM PRESENTATION AMPLIFIER. *# - WHEN REPLACED WITH 'SM', THE SPEAKER SHALL BE DEDICATED TO A SPEECH PRIIVACY/SOUND MASKING SYSTEM.
	AVC *#	INDICATES THE LOCATION OF AN AUDIO/VIDEO CONTROL PLATE. RACEWAY SHALL CONSIST OF ONE (1) A BACK BOX WITH A 1" CONDUIT ROUTING INTO THE ACCESSIBLE CEILING SPACE WITHIN THE SAME ROOM. AV SYSTEM INSTALLER TO COORDINATE THE CONTROL BACK BOX SIZE REQUIREMENT WITH THE PROJECT'S ELECTRICAL CONTRACTOR.

NOTES:
A. IN THE EVENT THAT '*#' IS NOT DEFINED IN THE OUTLET DESCRIPTION, THE DEVICE SHALL BE CONSIDERED A STANDALONE DEVICE, SERVING THE SYSTEM WITHIN THE SAME SPACE OR THE FOLLOWING SHALL APPLY:

*# - UNLESS SPECIFICALLY NOTED OTHERWISE, THE FOLLOWING SHALL APPLY TO EACH DEVICE SHOWN ON THE ENTIRE PROJECT:

* SHALL BE REPLACED WITH ALPHABETICAL CHARACTERS THAT SHALL INDICATE THE SPECIFIC VENUE THAT THE DEVICE IS ASSOCIATED WITH.

SHALL BE REPLACED WITH A NUMERIC VALUE THAT SHALL IDENTIFY THE SPECIFIC DEVICE WITHIN THE SPECIFIC VENUE.

B. THE AUDIO/VIDEO SYSTEM INTEGRATOR SHALL COORDINATE ALL BOX AND CONDUIT SIZE REQUIREMENTS PRIOR TO ROOUGH-IN BY THE PROJECTS ELECTRICAL CONTRACTOR.

C. REFERENCE SCOPE MATRIX AND PROJECT SPECIFICATIONS FOR INSTRUCTIONS REGARDING THE PROVIDING AND INSTALLATION OF VIDEO DISPLAYS, PROJECTORS, SCREENS, MOUNTS, AND LIFTS.

TYPICAL SUBSCRIPTS LEGEND

TEXT	DESCRIPTION
'WM'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE WALL MOUNTED AT SPECIFIED HEIGHT OR IN COMPLIANCE WITH CODE REQUIREMENTS. ALL WALL MOUNTED HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN.
'WP'	INDICATES THAT THE DESIGNATED DEVICE SHALL BE WEATHER PROOF AND RATED FOR EXTERIOR CONDITIONS INSTALLATION.
'AC'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE INSTALLED ABOVE THE COUNTERTOP. A NUMERIC VALUE SHALL REPLACE THE '#' SYMBOL AND SHALL DESIGNATE THE SPECIFIC HEIGHT ABOVE COUNTER. ALL HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN.
'AFF'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE INSTALLED ABOVE THE FINISHED FLOOR. A NUMERIC VALUE SHALL REPLACE THE '#' SYMBOL AND SHALL DESIGNATE THE SPECIFIC HEIGHT ABOVE FINISHED FLOOR. ALL HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN.
'AG'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE INSTALLED ABOVE THE GRADE LEVEL. A NUMERIC VALUE SHALL REPLACE THE '#' SYMBOL AND SHALL DESIGNATE THE SPECIFIC HEIGHT ABOVE GRADE. ALL HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN.
'SM'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE SURFACE MOUNTED. CONTRACTOR TO PROVIDE ALL MATERIALS REQUIRED FOR A COMPLETE, SURFACE MOUNTED SOLUTION. ALL SURFACE MOUNTED PRODUCTS SHALL BE APPROVED BY THE PROJECT'S ARCHITECT PRIOR TO PROCUREMENT AND/OR INSTALLATION.
'UC'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE MOUNTED ON THE UNDERSIDE OF THE ELEVATED CANOPY.
'UF'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE INSTALLED UNDER A RAISED FLOOR SYSTEM.
'CM'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE CORNER MOUNTED AT SPECIFIED HEIGHT. ALL WALL MOUNTED HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN.

GENERAL NOTES

1. ALL 120V POWER REQUIRED FOR THE FUNCTIONALITY OF EACH SYSTEM SHALL BE A DEDICATED CIRCUIT AND 0N EMERGENCY POWER WHEN AVAILABLE. PROJECTS ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER TO MAIN CONTROL PANELS, REMOTE POWER SUPPLIES AND ALL HEAD END EQUIPMENT. SYSTEM INSTALLERS SHALL COORDINATE LOCATIONS AND CONNECTIONS WITH THE PROJECT'S ELECTRICAL CONTRACTOR.
2. THE PROJECT'S ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL IN CONDUITS, BACK BOXES, JUNCTION BOXES, RACEWAYS, AND SLEEVES REQUIRED TO ESTABLISH CLEAR PATHWAYS FOR ALL SYSTEMS. ALL CONDUITS, SLEEVES, BOXES, AND RACEWAYS SHALL BE PROPERLY SIZED TO MAINTAIN A 40% MAXIMUM FILL RATIO.
3. ALL EXPOSED SYSTEM'S WIRING OR WIRING ROUTING ACROSS NON ACCESSIBLE CEILINGS SHALL BE ROUTED IN CONDUIT, PROVIDED AND INSTALLED BY THE PROJECT'S ELECTRICAL CONTRACTOR. SIZE CONDUIT AS REQUIRED TO ROUTE SYSTEMS WITH 40% CABLE FILL RATIO. MINIMUM CONDUIT SIZE SHALL BE 3/4".
4. EACH SYSTEM INSTALLER SHALL BE RESPONSIBLE FOR ENSURING ALL EXTERIOR WALL PENETRATIONS ARE PROPERLY SEALED TO PREVENT ANY MOISTURE FROM ENTERING BUILDING.
5. NO CONDUITS SHALL BE INSTALLED ON THE EXTERIOR OF THE BUILDING. IF EXTERIOR CONDUITS ARE REQUIRED FOR A COMPLETE INSTALLATION, EACH SYSTEM CONTRACTOR SHALL COORDINATE WITH THE PROJECTS CONSULTANT PRIOR TO ANY ROUGH-IN.
6. EACH SYSTEM INSTALLER SHALL PROVIDE AND INSTALL PROTECTIVE BUSHINGS ON ALL CONDUIT STUB OUTS AND SLEEVES TO PREVENT CABLE DAMAGE. BUSHING TO BE INSTALLED PRIOR TO CABLE INSTALLATION. CUTTING BUSHING AND INSTALLING AFTER CABLE IS INSTALLED WILL NOT BE EXCEPTED.
7. ALL CABLE SHALL BE ROUTED DOWN CORRIDORS, PARALLEL AND PERPENDICULAR TO THE BUILDING WALLS AND STRUCTURE. CABLE TO EACH DEVICE SHALL BRANCH OFF OF A MAIN CORRIDOR TRUNK. ROUTING CABLES THROUGH CLASSROOMS, OFFICES, STORAGE ROOMS, RESTROOMS OR ANY TYPE OF ROOM OTHER THAN A CORRIDOR WILL NOT BE ACCEPTED. ENTER ALL ROOMS ABOVE THE ASSOCIATED ROOM DOORWAY.

LOCAL SOUND SYSTEM LEGEND

GROUP	SYMBOL	DESCRIPTION
DEVICES	S *#	VENUE SPECIFIC LOCAL SOUND SYSTEM SPEAKER. *# TO BE REPLACED WITH ALPHANUMERIC TEXT INDICATING THE ASSOCIATED VENUE AND SPEAKER NUMBER.
	LSC *#	VENUE SPECIFIC LOCAL SOUND SYSTEM CONTROL PLATE. *# TO BE REPLACED WITH ALPHANUMERIC TEXT INDICATING THE ASSOCIATED VENUE AND CONTROL PLATE NUMBER.
	M *#	VENUE SPECIFIC LOCAL SOUND SYSTEM MICROPHONE INPUT. *# TO BE REPLACED WITH ALPHANUMERIC TEXT INDICATING THE ASSOCIATED VENUE AND MIC INPUT NUMBER.
	H *#	VENUE SPECIFIC LOCAL SOUND SYSTEM HANGING MICROPHONE. *# TO BE REPLACED WITH ALPHANUMERIC TEXT INDICATING THE ASSOCIATED VENUE AND MIC NUMBER.
	ABM *#	VENUE SPECIFIC LOCAL SOUND SYSTEM 3.5MM AUXILIARY INPUT AND BLUETOOTH MIXER. *# TO BE REPLACED WITH ALPHANUMERIC TEXT INDICATING THE ASSOCIATED VENUE AND MIXER NUMBER. CONTRACTOR TO PROVIDE AND INSTALL A RECESSED ENCLOSURE WITH FLUSH MOUNTED, LOCKABLE DOOR. DEVICE TO BE MOUNTED AT +42" AFF.
	RACK	INDICATED THE LOCATION OF THE VENUE SPECIFIC LOCAL SOUND SYSTEM HEAD END RACK. AMPLIFIERS, DSPS, AND ALL OTHER HEAD END EQUIPMENT SHALL BE INSTALLED IN THIS RACK/CABINET.
	WA	WIRELESS MICROPHONE ANTENNA. REFERENCE SPECIFICATIONS FOR MORE INFORMATION.
	ALA	ASSISTED LISTENING ANTENNA. REFERENCE SPECIFICATIONS FOR MORE INFORMATION.

NOTES:
1. REFERENCE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

SUBSCRIPTS LEGEND - EXISTING DEVICES

TEXT	DESCRIPTION
'E'	INDICATES THAT THE DEVICE IS EXISTING TO REMAIN. CONTRACTOR TO REMOVE DEVICE AND PLACE IN THE SAME LOCATION AS NEEDED.
'D'	INDICATES THAT THE DEVICE IS EXISTING AN IS TO BE REMOVED. CONTRACTOR TO REMOVE THE DEVICE AND RETURN TO OWNER.
'R'	INDICATES THAT THE DEVICE IS EXISTING AND SHALL BE REPLACED. REFERENCE NEW SYSTEM LAYOUT FOR EXACT LOCATIONS.
'RR'	INDICATES THAT THE DEVICE IS EXISTING AND SHALL BE REMOVED AND RELOCATED TO A LOCATION INDICATED ON THE DRAWINGS. REFERENCE NEW SYSTEM LAYOUT FOR EXACT LOCATIONS.

COMMUNICATIONS

ACS PUBLIC ADDRESS ADMIN PHONE

DEFAULT ELEVATION (UNLESS INDICATED OTHERWISE) TO CENTER OF ROUGH-IN: 42" AFF

VC VOLUME CONTROL - WALL MOUNTED
CB INTERCOM/PA SYSTEM CALL-IN OR CALL-BACK DEVICE

DEFAULT ELEVATION (UNLESS INDICATED OTHERWISE) TO CENTER OF ROUGH-IN: 120" AFF OR 12" BELOW CEILING, WHICHEVER IS LOWER

S L INTERCOM/PA SPEAKER.
"L" LOCAL SOUND REINFORCEMENT

PA SPEAKERS DEVICES:
S PA CEILING MOUNTED INTERCOM/PA SPEAKER
S WALL MOUNTED INTERCOM/PA SPEAKER

1

TECHNOLOGY GENERAL NOTES

1. CONTRACTOR SHALL COORDINATING WITH DBR ENGINEERING PRIOR TO THE INSTALLATION OF RACKS AND RACK EQUIPMENT. NO RACKS SHALL BE PERMANENTLY INSTALLED WITHOUT WRITTEN APPROVAL OF THE PROPOSED LOCATIONS.
2. THE SELECTED, INSTALLING CONTRACTOR MUST BE A CERTIFIED INTEGRATOR/ INSTALLER AUTHORIZED BY THE SPECIFIED SYSTEM MANUFACTURER TO INSTALL THE CABLE PLANT AND CONNECTIVITY PRODUCTS. REFER TO SPECIFICATIONS FOR PRODUCT TYPE AND DESCRIPTION.
3. SYSTEM WIRING AND EQUIPMENT INSTALLATION SHALL BE IN ACCORDANCE WITH GOOD ENGINEERING PRACTICES AS ESTABLISHED BY ANSI/EIA/TIA, BICSI, AND THE NEC.
4. ALL WIRING SHALL MEET ALL STATE AND LOCAL ELECTRICAL CODES.
5. ALL TELECOMMUNICATIONS SYSTEMS EQUIPMENT AND MOUNTING LOCATIONS SHALL BE IN COMPLIANCE WITH ADA ACCESSIBILITY STANDARDS.
6. ALL INDUSTRY STANDARD CATEGORY 6 CABLING PRACTICES MUST BE FOLLOWED FOR ALL DATA CABLING.
7. ALL DATA CABLES ARE TO BE INSTALLED WITH A MINIMUM OF 12 INCHES OF SEPARATION FROM AC POWER CABLES, INTERCOM, FIRE ALARM, SECURITY CABLES IN ANY PARALLEL OPEN WIRE RUN.
8. ALWAYS CROSS OTHER SYSTEM CABLES AT A 90 DEGREE ANGLE.
9. ALL CABLES AND TERMINATION COMPONENTS SHALL BE MACHINE LABELED AT BOTH ENDS. LABEL ALL CABLES PER TS DRAWINGS AND/OR SPECIFICATIONS. FINAL CABLE/OUTLET IDENTIFICATION LABELS SHALL BE COORDINATED WITH THE OWNER AND DBR.
10. CONTRACTOR TO PROVIDE LIGHTNING PROTECTION ON ALL COMMUNICATION CABLE BETWEEN BUILDINGS.
11. ALL EXPOSED CABLING ROUTED IN PLENUM SHALL BE PLENUM-RATED. ALL NON PLENUM-RATED CABLING INSTALLED IN PLENUM SPACES SHALL BE INSTALLED IN CONDUIT.
12. NO TERMINATION OR SPLICES SHALL BE INSTALLED IN OR ABOVE CEILINGS UNLESS NOTED NOTED OTHERWISE.
13. CONTRACTOR SHALL MAINTAIN WALL RATING WITH PROPER FIRE BLOCKING.
14. ALL CABLE INSTALLED SHALL ROUTE TO THE CENTER OF THE ROOM IN WHICH IT SERVES AND THEN TO THE OUTLET LOCATION IT IS INTENDED FOR. EACH CABLE SHALL HAVE A 10' SERVICE LOOP AT THE CENTER OF EACH ROOM AND A 3' SERVICE LOOP ABOVE EACH OUTLET LOCATION.
15. THE SYSTEM INSTALLER SHALL PROPERLY SUPPORT ALL INSTALLED SYSTEM CABLING FROM A PANDUIT J-MOD CABLE SUPPORT SYSTEMS AS DETAILED IN SPECIFICATIONS. NO CABLING SHALL BE ROUTED AND TIED DIRECTLY TO BUILDING STEEL, CEILING GRID SUPPORT, CONDUIT, PIPING, OR DUCTWORK. PANDUIT J-MOD SUPPORT SYSTEM SHALL BE DIRECTLY CONNECTED TO THE BUILDING'S STEEL JOIST. IN LOCATION WHERE THE BOTTOM OF THE JOIST IS MORE THAN 5' ABOVE THE CEILING, THE SYSTEM INSTALLER SHALL PROVIDE AND INSTALL THREADED ROD AND ALL REQUIRED MATERIALS TO CONNECT THE THREADED ROD TO THE BUILDING STEEL AND THE CABLE SUPPORT SYSTEM TO THE THREADED ROD. CABLE PATHWAY SHALL NOT BE HIGHER THAN 5' ABOVE THE CEILING AT ANY LOCATIONS.
16. CONTRACTOR TO PROVIDE AND INSTALL ALL REQUIRED CABLING AND COMPONENTS TO FURNISH TWO (2) ANALOG TELEPHONE CABLES TO THE FIRE ALARM SYSTEM. CONTRACTOR TO COORDINATE WITH THE SYSTEM INSTALLER FOR EXACT LOCATIONS AND TERMINATION INSTRUCTIONS PRIOR TO INSTALLATION.
17. CONTRACTOR TO PROVIDE AND INSTALL (1) CATEGORY 6 CABLE TO THE BUILDING'S ACCESS CONTROL HEAD END PANEL. TERMINATION OF THIS CABLE SHALL BE COORDINATED WITH THE SYSTEM INSTALLER.
18. CONTRACTOR TO PROVIDE AND INSTALL (1) CATEGORY 6 CABLE TO THE BUILDING'S INTRUSION DETECTION PANEL. TERMINATION OF THIS CABLE SHALL BE COORDINATED WITH THE SYSTEM INSTALLER.
19. PROVIDE AND INSTALL ONE (1) CATEGORY 6 CABLE TO EACH LIGHTING CONTROL HUB ON THE ENTIRE PROJECT. COORDINATE EXACT QUANTITY AND LOCATIONS WITH THE LIGHTING CONTROL SYSTEM INSTALLER. CONTRACTOR TO ASSUME A MINIMUM OF FIVE (5) PER PROJECT.
20. CONTRACTOR TO PROVIDE AND INSTALL ONE (1) CATEGORY 6 DATA CIRCUITS TO EACH PROJECTOR AND LCD ON THE ENTIRE PROJECT.
21. PROVIDE AND INSTALL ONE (1) CATEGORY 6 DATA CIRCUIT TO THE LOCAL AIR UNIT CONTROLLER IN EACH MDF AND IDF.
22. PROVIDE AND INSTALL ONE (1) CATEGORY 6 DATA CIRCUIT TO EACH ACCESS CONTROL VIDEO DOOR STATION ON THE ENTIRE PROJECT. COORDINATE EXACT LOCATION AND TERMINATION REQUIREMENTS WITH THE DOOR STATION INSTALLER, PRIOR TO INSTALLATION. 22.

SECURITY GENERAL NOTES

1. THE SECURITY SYSTEM INSTALLERS SHALL BE RESPONSIBLE FOR CONNECTING ALL APPLICABLE SYSTEM EQUIPMENT TO THE OWNER'S NETWORK.
2. HE SYSTEM INSTALLER SHALL PROPERLY SUPPORT ALL INSTALLED SYSTEM CABLING FROM AN APPROVED CABLE SUPPORT SYSTEM AS DETAILED IN SPECIFICATIONS. NO CABLING SHALL BE ROUTED AND TIED DIRECTLY TO BUILDING STEEL, CEILING GRID SUPPORT, CONDUIT, PIPING, OR DUCTWORK. THE CABLE SUPPORT SYSTEM SHALL BE DIRECTLY CONNECTED TO THE BUILDING'S STEEL JOIST. AT LOCATIONS WHERE THE BOTTOM OF THE JOIST IS MORE THAN 5' ABOVE THE CEILING, THE SYSTEM INSTALLER SHALL PROVIDE AND INSTALL THREADED ROD AND ALL REQUIRED MATERIALS TO CONNECT THE THREADED ROD TO THE BUILDING STEEL AND THE CABLE SUPPORT SYSTEM TO THE THREADED ROD. CABLE PATHWAY SHALL NOT BE HIGHER THAN 5' ABOVE THE CEILING AT ANY LOCATIONS.
3. ECURITY CAMERA SYSTEM INSTALLER SHALL PROVIDE A CEILING MOUNTED INSTALLATION KIT RECOMMENDED BY THE MANUFACTURER OF THE CAMERA. EACH CEILING MOUNTED CAMERA KIT SHALL HAVE A SUPPORT WIRE ATTACHED TO THE BUILDING'S STRUCTURE TO PREVENT THE CAMERA FROM DROPPING TO THE FLOOR AT ANY TIME. AT NO POINT SHALL THE WEIGHT OF THE CEILING MOUNTED SECURITY CAMERA BE SUPPORTED BY THE CEILING GRID SYSTEM OR CEILING TILES. ALL CEILING MOUNTED CAMERAS SHALL BE FLUSH MOUNTED.
4. ALL EXTERIOR AND WALL MOUNTED CAMERA LOCATIONS AND MOUNTING HEIGHTS MUST BE COORDINATED WITH THE OWNER PRIOR TO ROUGH-IN. COORDINATION MEETINGS SHALL BE SCHEDULED THROUGH THE ARCHITECT'S PROJECT MANAGER.
5. PROVIDE AND INSTALL MAGNETIC DOOR CONTACT AT ALL ROOF HATCHES ON THE ENTIRE PROJECT. CONTACTS TO BE CONNECTED TO THE BUILDINGS INTRUSION DETECTION SYSTEM.
6. CONTRACTOR TO PROVIDE AND INSTALL A MONITOR RELAY AND ALL REQUIRED MATERIALS TO CONNECT THE RELAY TO THE FREEZER/COOLER TEMPERATURE GAUGE AND BACK TO THE INTRUSION DETECTION SYSTEM, THE INTRUSION DETECTION SYSTEM SHALL BE PROGRAMMED TO NOTIFY THE OWNER'S DESIGNATED PERSONNEL IN THE EVENT OF EXTENSIVE CHANGE IN TEMPERATURE.

NOTES TO CONTRACTOR

1. EVERY SYMBOL SHOWN ON LEGEND MAY NOT APPEAR ON DRAWINGS. REFER TO GENERAL ELECTRICAL NOTES FOR WALL-MOUNTED DEVICE MOUNTING HEIGHTS.
2. REFERENCE SPECIFICATIONS FOR MATERIALS AND METHODS.
3. COMPLETE INSTALLATION OF ALL PRODUCTS SHALL BE IN COMPLIANCE WITH ALL CODES, INDUSTRY STANDARDS, COMMON PRACTICES AND MANUFACTURER'S INSTRUCTIONS.
4. ALL EXTERIOR AND WALL MOUNTED CAMERA LOCATIONS AND MOUNTING HEIGHTS MUST BE COORDINATED WITH THE OWNER PRIOR TO ROUGH-IN. COORDINATION MEETINGS SHALL BE SCHEDULED THROUGH THE ARCHITECT'S PROJECT MANAGER.

RESPONSIBILITY MATRIX

SCOPE OF WORK	RESPONSIBILITY		
DIV 27 - COMMUNICATIONS			
TECHNOLOGY SCOPE	OFOI	OFCI	CFCI
STRUCTURED CABLING			X
CABLE TRAY IN MDF/IDF			X
TELECOM GROUNDING SYSTEM			X
BACK BOXES, CONDUITS/SLEEVES			X
EQUIPMENT RACKS/CABINETS			X
WIRELESS ACCESS POINTS	X		
NETWORK SWITCHES	X		
UPS AND PDU	X		
TELEPHONES	X		
WORKSTATION PC	X		
AUDIO-VIDEO SYSTEM	OFOI	OFCI	CFCI
LOCAL SOUND SYSTEM			X
CEILING/WALL PROJECTORS			X
PROJECTOR MOUNTS			X
65' CLEAR TOUCH INTERACTIVE DISPLAY (TV) & CART			X
FLAT PANEL DISPLAY (TV)			X
FLAT PANEL DISPLAY (TV) MOUNTS			X
PROJECTION SCREENS			X
DIGITAL SIGNAGE PLAYER	X		
AV SWITCHER			X
AV CONTROL PANEL			X
AV EQUIPMENT CABINETS			X
AV CABLING			X
NETWORK CABLING REQUIRED			X
PORTABLE PROJECTORS/TV			X
LECTERN	X		
BACK BOXES, CONDUITS/SLEEVES			X
DIV 28 - SECURITY SYSTEMS			
VIDEO SURVEILLANCE SYSTEM	OFOI	OFCI	CFCI
CAMERAS AND LICENSES			X
CAMERA MOUNTS			X
CAMERA NETWORK CABLING			X
PoE SWITCHES	X		
VMS SERVERS	X		
VIEWING STATION	X		
BACK BOXES, CONDUITS/SLEEVES			X
EQUIPMENT RACKS/CABINETS			X
ACCESS CONTROL SYSTEM	OFOI	OFCI	CFCI
CARD READERS			X
DOOR CONTACTS			X
ELECTRIFIED LOCKS			X
REX INSIDE DOOR			X
PUSH TO EXIT			X
PIR SENSORS			X
LOW VOLTAGE POWER SUPPLY			X
ACCESS CONTROL PANELS			X
EQUIPMENT RACKS/CABINETS			X
BACK BOXES, CONDUITS/SLEEVES			X
COMPOSITE CABLING			X
NETWORK CABLING REQUIRED			X
CREDENTIAL CARDS	X		
BADGE PRINTERS	X		
INTRUSION DETECTION SYSTEM	OFOI	OFCI	CFCI
MOTION SENSORS			X
GLASS BREAK SENSORS			X
ALARM/DISALARM KEY PAD			X
INTRUSION DETECTION PANEL(IDP)			X
DOOR CONTACTS			X
DATA CABLING TO IDP			X
PHONE OR INTERNET SERVICES	X		
INTRUSION ALARM CABLING			X
BACK BOXES, CONDUITS/SLEEVES			X
INTERCOMMUNICATION SYSTEM	OFOI	OFCI	CFCI
HEADEND EQUIP. /AMPLIFIERS			X
SPEAKERS			X
NETWORK CABLING REQUIRED			X
ADMIN PHONE/ MICROPHONES			X
UPS/PDU			X
BACK BOXES, CONDUITS/SLEEVES			X

1

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BRW

REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
Bicsi
Michael Quirl
BICSI ID # 157703
EXPIRES 12-31-26
RCDD
9/27/2024

DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 230393.000

BM	RA/RM	MS/LB	JL/TN	AD

DATE	SEPTEMBER 9, 2024
DRAWN BY	DBR
CHECKED BY	DBR QC
BRW PROJECT NUMBER	223117.00

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

NO.	REVISION	DATE
1	Addendum 2	10.02.2024

T0.1

TECHNOLOGY SYMBOL LEGEND

TECHNOLOGY KEYED NOTES

T2.9 PROVIDE A 24" W X 36" L X 36" D COMMUNICATIONS HANDHOLE OF HS-20 RATING WITH LOCKABLE COVER STENCILED WITH "COMMUNICATIONS" MOUNTED FLUSH WITH FINISHED GRADE.

T2.10 PROVIDE A 48" W X 48" L X 36" D COMMUNICATIONS HANDHOLE OF HS-20 RATING WITH LOCKABLE COVER STENCILED WITH "COMMUNICATIONS" MOUNTED FLUSH WITH FINISHED GRADE.

T2.12 PROVIDE ONE (2) 1-INCH CONDUIT TO LOCATION OF MARQUEE SIGN. CONFIRM LOCATION OF SIGN WITH ARCHITECT PRIOR TO INSTALL. LABEL AND CAP CONDUITS FOR FUTURE USE.

T2.16 PROVIDE ONE (1) 4" SCHEDULE 40 PVC AND (1) 4" SCHEDULE 40 PVC W/ MAXCELL EDGE FABRIC INNERDUCT FOR REDUNDANT FIBER ENTRY.

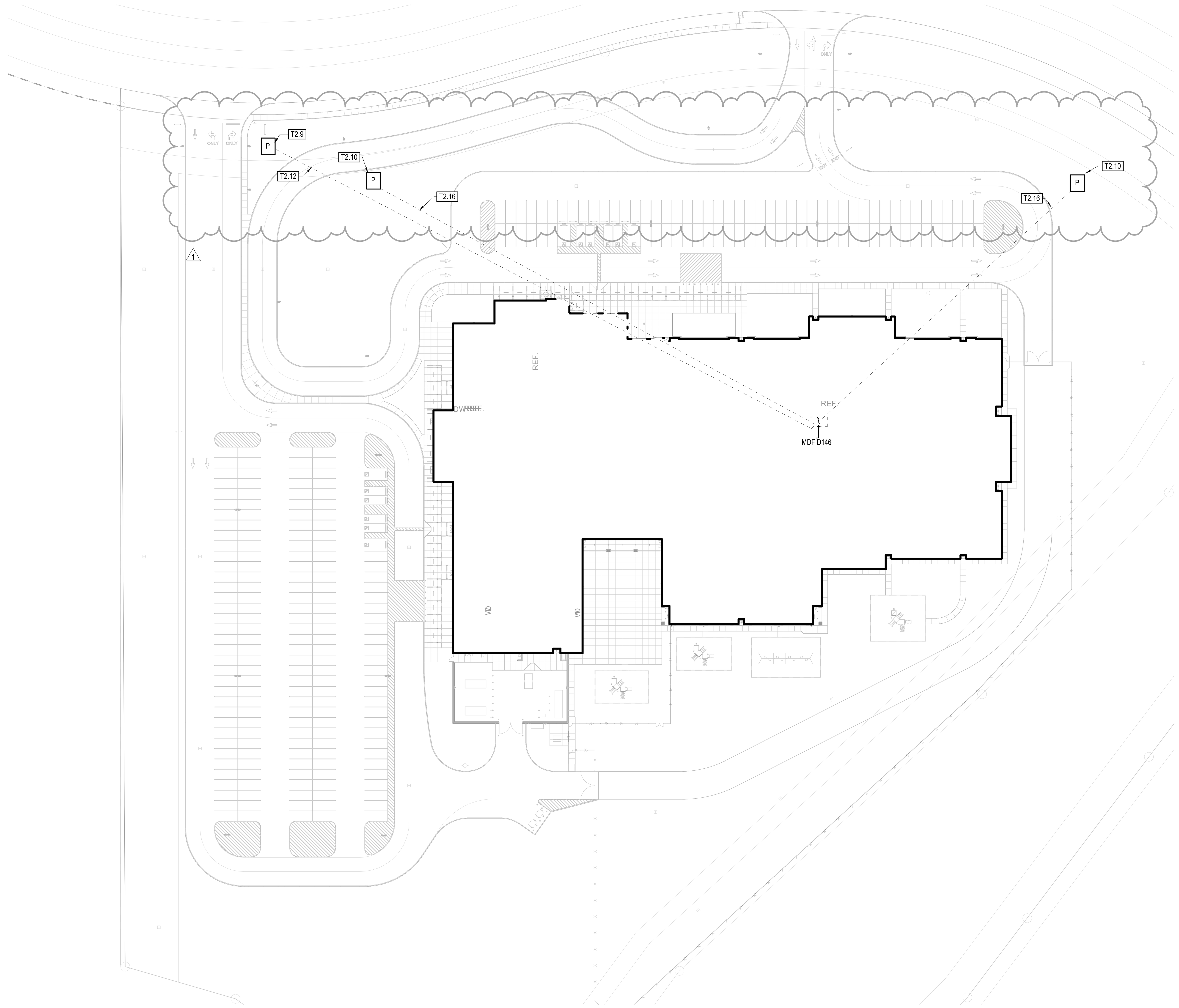
GENERAL SITE PLAN NOTES:

A. THE CONTRACTOR SHALL REFERENCE ALL OTHER TRADES' CONSTRUCTION DOCUMENTS FOR FULL EXTENT OF THE SITE WORK TO BE PERFORMED, AND FIELD VERIFY THE EXISTING JOB-SITE CONDITIONS BEFORE BIDDING. NO CHANGE ORDER IS ALLOWED FOR INCREASED COST ASSOCIATED WITH CONDITIONS WHICH COULD HAVE BEEN DETERMINED BY EXAMINING THE SITE AND WHOLE PROJECT DOCUMENTS BEFORE SUBMISSION OF PROPOSALS AND/OR BEFORE A CONTRACT IS AWARDED.

B. ALL CONDUIT AND CABLE RUNS SHOWN ARE DIAGRAMMATIC AND FOR DESIGN INTENT ONLY. CONTRACTOR SHALL COORDINATE WITH INCOMING SERVICE PROVIDERS AND OTHER TRADES (ELECTRICAL, CIVIL, ETC.) FOR THE EXACT ROUTE AND SHARED TRENCHES, IF APPLICABLE. CONTRACTOR SHALL MAKE ANY FIELD ADJUSTMENT TO THE ROUTE AS NECESSARY, AT NO ADDITIONAL COST TO THE PROJECT OR OWNER, TO AVOID COLLISION AND MEET THE PROJECT REQUIREMENTS.

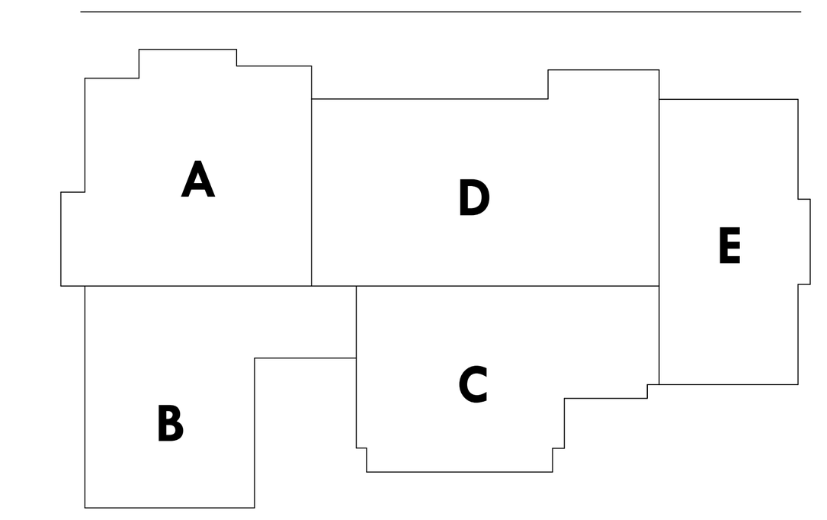
C. ONLY SWEEP BENDS ARE ALLOWED FOR ALL OSP COMMUNICATIONS CONDUITS. ALL UNDERGROUND CONDUITS SHALL ENTER THE COMMUNICATIONS MANHOLE/HANDHOLE FROM THE SIDE WALLS AND BE PROPERLY SEALED TO PREVENT WATER INFILTRATION.

D. ALL UNDERGROUND COMMUNICATIONS CONDUITS SHALL BE BURIED AT MINIMUM 3 FEET FROM FINISHED GRADE, AND SLOPE AWAY FROM BUILDING, UNLESS OTHERWISE NOTED.



1 TECHNOLOGY SITE PLAN
T1.1 1" = 50'-0"
TN PN

KEY PLAN



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BICSI ID # 157703
EXPIRES 12-31-26
RCDD
4/27/2024

DBR
713.914.0888 p
https://www.dbrinc.com
TBPE Firm Registration No. 2234
DBR Project # 230393.000

DATE	SEPTEMBER 9, 2024
DRAWN BY	DBR
CHECKED BY	DBR QC
BRW PROJECT NUMBER	223117.00

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

NO.	REVISION	DATE
1	Addendum 2	10.02.2024

T1.1

TECHNOLOGY SITE PLAN

TECHNOLOGY KEYED NOTES

T3.7 PROVIDE (1) 1-1/2" CONDUIT FOR EXTERIOR WALL MOUNTED ANTENNA. CONDUIT STUB OUT.

T4.1 DATA OUTLET RESERVED FOR BUILDING AUTOMATION SYSTEM EQUIPMENT. TERMINATE CABLE TO A BISCUIT JACK AND COORDINATE WITH BAS INSTALLATION CONTRACTOR FOR EXACT MOUNTING HEIGHT AND LOCATION.

T4.7 DATA AT 14' AFF FOR LU HEART (HEAD END CONTROLLER)

T4.8 ABOVE CEILING DATA FOR MARQUEE ANTENNA.

T4.9 PROVIDE (1) DATA CABLE FOR FUTURE CAMERA WITH 25' OF COILED SERVICE LOOP. PROVIDE DATA CABLE AND BISCUIT BOX.

T4.12 PREPARE DOOR FOR FUTURE DOOR MOUNTED CARD READERS. CONTRACTOR SHALL PROVIDE CONDUIT ROUGH IN REQUIRED. COORDINATE CONDUIT INSTALLATION WITH DIV. 8 CONTRACTOR.

T4.18 PROVIDE HDBASET TRANSMITTER AND RECEIEVER KIT. PROVIDE OSP RATED CAT6 CABLING FOR INTERCONNECTING BETWEEN TRANSMITTER AND RECEIVER.

T5.12 MOUNT BELOW CANOPY. MUST MAINTAIN VIEW UNDER CANOPIES. FIELD COORDINATE FINAL ELEVATION PRIOR TO ROUGH IN.

T5.13 INDICATES LOCATION OF A/V SYSTEM ENCLOSURE. PROVIDE A IN WALL 14"X14" JUNCTION BOX. ALL CONDUIT IS TO ROUTE IN WALL TO JUNCTION BOX . COORDINATE REQUIRED CONDUITS WITH A/V AND CABLING CONTRACTOR. SURFACE MOUNTED CONDUIT WILL NOT BE ACCEPTED

T5.17 INSTALL GYMNASIUM AUDIO INPUT PLATE (AV-I) AV HDMI PLATE (AV-1) MICROPHONE INPUT PLATE (MIC) IN RECESSED 4-GANG BACK BOX

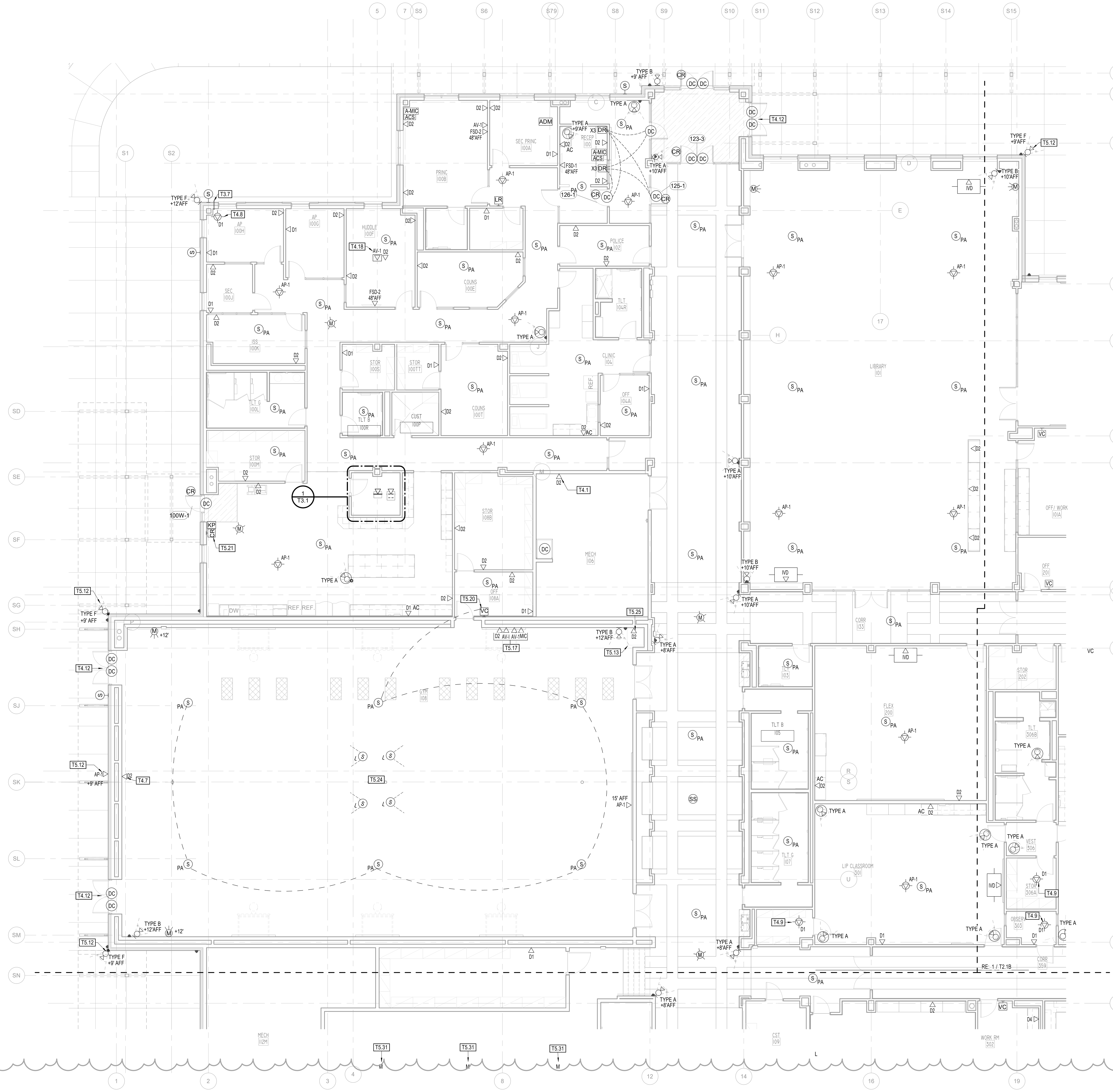
T5.20 VOLUME CONTROL SHALL CONTROL GYM PUBLIC ADDRESS SPEAKERS.

T5.21 INTRUSION SYSTEM ARMING CARD READER.

T5.24 GYMNASIUM LOCAL SOUND SPEAKERS ARE TO BE SECURED FROM STRUCTURE, ANGLED AS TO PROVIDE COMPLETE COVERAGE OF THE GYMNASIUM. FIELD COORDINATE EXACT LOCATION

T5.25 DATA DROP IS TO BE INSTALLED INSIDE AV ENCLOSURE COORDINATE LOCATION WITH AV INSTALLER.

T5.31 PROVIDE HANGING MICROPHONES. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH IN

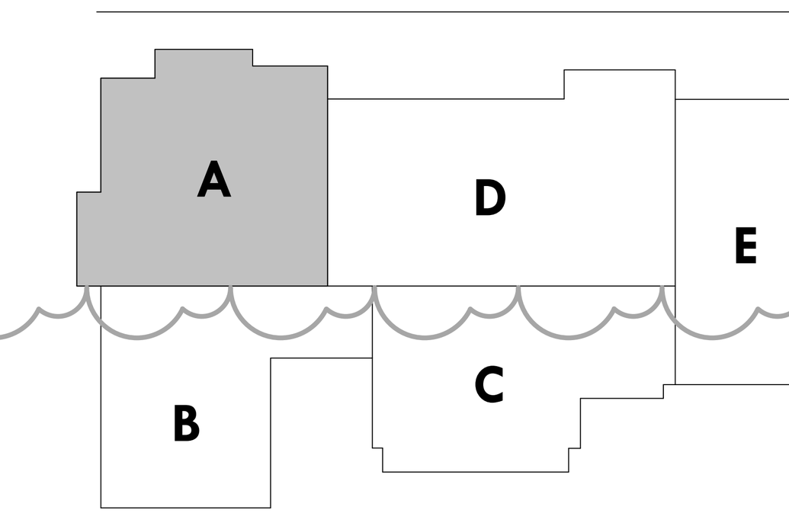


GENERAL FLOOR PLAN NOTES:

1. ALL TECHNOLOGY DEVICES, OUTLETS AND CABLE/CONDUIT PATHWAYS SHOWN ARE DIAGRAMMATIC ONLY AND ARE NOT MEANT TO SHOW THE EXACT LOCATION OR ROUTE. CONTRACTOR SHALL VERIFY WITH ARCHITECT AND OWNER FOR EXACT ROUTE, MOUNTING HEIGHT, AND LOCATION BEFORE INSTALLATION, AND SHALL COORDINATE WITH OTHER TRADES TO MAKE ANY FIELD ADJUSTMENTS AS NECESSARY TO AVOID COLLISIONS AND MEET THE PROJECT REQUIREMENTS.
2. CONDUITS AND BACKBOXES, SIZED PER DIV 27/28 SPECIFICATIONS, SHALL BE PROVIDED (BY DIV 26) FOR ALL TECHNOLOGY SYSTEM DEVICES MOUNTED ON WALL, FLOOR, AND OPEN OR SOLID FINISH CEILING. CONDUITS/SLEEVES SHALL BE PROVIDED FOR ALL CABLES ROUTED IN WALLS, OR THROUGH FULL HEIGHT PARTITIONS, OR THROUGH INACCESSIBLE CEILING PLENUM, OR THROUGH SPACES WITH EXPOSED CEILING DECK.
3. CABLES FOR DIFFERENT APPLICATIONS (DATA, AUDIO, VIDEO, SECURITY, ETC.) OR OF DIFFERENT MEDIA TYPE (COAX, UTP, ETC.) SHALL BE ROUTED IN SEPARATE PATHWAYS IN J-HOOKS, CONDUITS, SLEEVES, CORES, ETC. THROUGHOUT THE ENTIRE PATHWAY.
4. BUSHINGS SHALL BE INSTALLED AT EACH END OF THE CONDUITS BEFORE CABLES BEING PULLED THROUGH. PROVIDE PULL STRING IN EACH CONDUIT INSTALLED AND LEAVE ONE FOR FUTURE PULLING AFTER CABLE INSTALLATION IS COMPLETE.
5. NO NETWORK DATA CABLE RUN SHALL EXCEED 295 FEET IN TOTAL LENGTH INCLUDING UP/DOWN AND SERVICE LOOPS WITHOUT PRIOR APPROVAL FROM THE ARCHITECT AND ENGINEER. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES FOR PROPER PATHWAY PLANNING.
6. ANY CATEGORY 6/6A CABLING ROUTING UNDER THE BUILDING SLAB SHALL BE OSP RATED.CONTRACTOR IS TO TRANSITION PLENUM RATED CABLING TO OSP WITHIN 10' OF COUNDUIT ROUTING UNDER THE BUILDING SLAB.
7. ALL EXTERIOR DOORS NEED TO BE PREPPED FOR FUTURE CARD READERS.
8. ALL CEILING MOUNTED CAMERAS SHALL BE SECURED TO CEILING TILE USING TOGGLE BOLTS.
9. EXTERIOR CARD READERS SHALL DISARM INTRUSION SYSTEM, COORDINATE EXACT ZONING AND PROGRAMMING REQUIREMENTS WITH OWNER.

CONTRACTOR SHALL WALK EACH CAMERA LOCATION WITH THE OWNER PRIOR TO INSTALLATION. OWNER IS TO PROVIDE FINAL APPROVAL.

KEY PLAN



1 TECHNOLOGY PLAN AREA A (T2.1A)
1/8" = 1'-0"

BROWN REYNOLDS WATFORD ARCHITECTS
4501 MAGNOLIA COVE DRIVE
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BICSI Michael Quirt BICSI ID # 157703 EXPIRES 12-31-26 RCDD 4/27/2024

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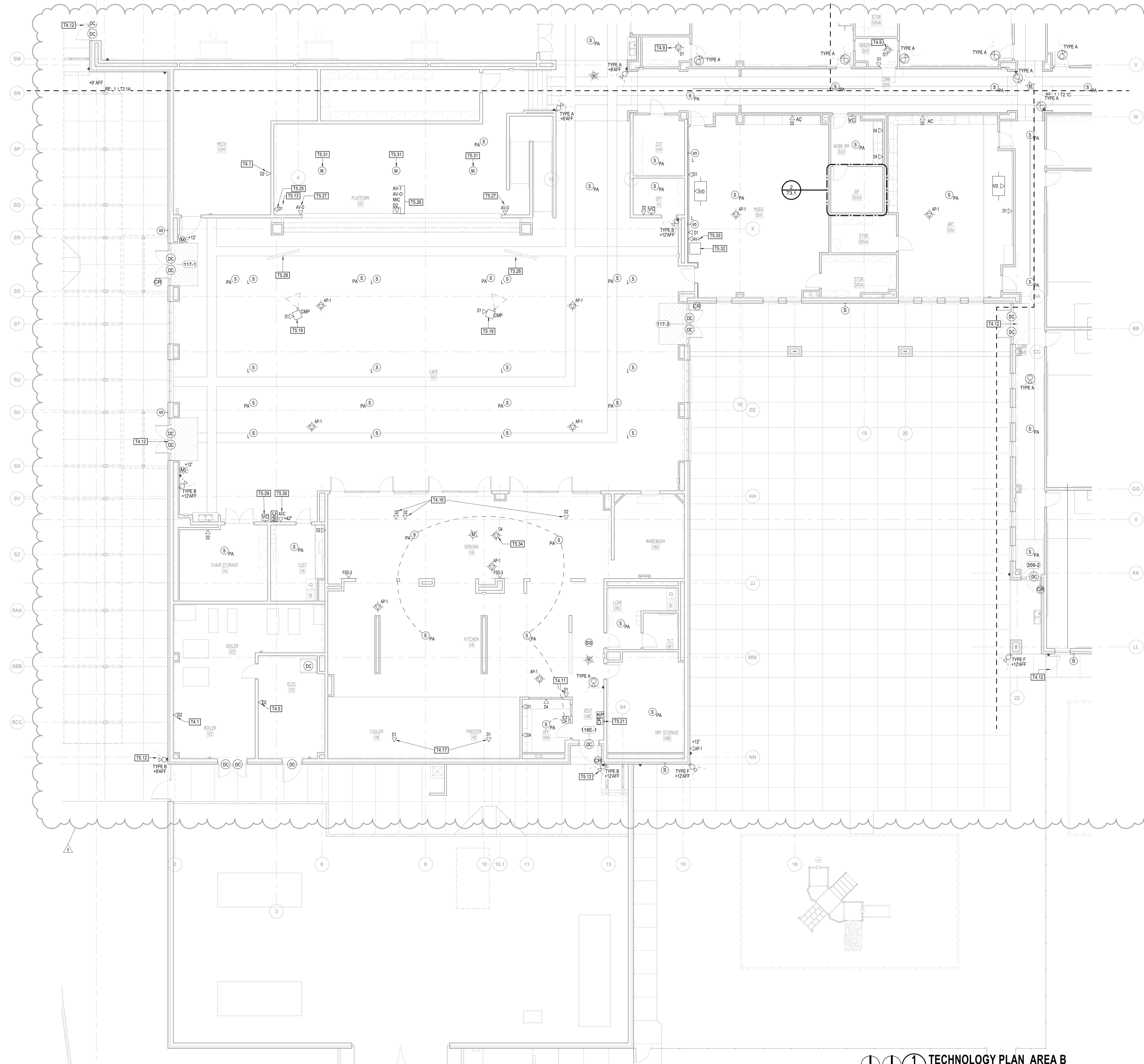
T2.1A
TECHNOLOGY PLAN AREA A



1 TECHNOLOGY PLAN AREA B
1/8" = 1'-0"

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T4.5 DATA OUTLET RESERVED FOR LIGHTING CONTROL SYSTEM. COORDINATE EXACT LOCATION WITH OWNER.

T4.9 PROVIDE (1) DATA CABLE FOR FUTURE CAMERA WITH 25' OF COILED SERVICE LOOP. PROVIDE DATA CABLE AND BISCUIT BOX.

T4.11 DATA FOR FREEZER/COOLER MONITORING. SHALL BE INSTALLED 12" BELOW CEILING.

T4.12 PREPARE DOOR FOR FUTURE DOOR MOUNTED CARD READERS. CONTRACTOR SHALL PROVIDE CONDUIT ROUGH IN REQUIRED. COORDINATE CONDUIT INSTALLATION WITH DIV. 8 CONTRACTOR.

T4.16 PROVIDE 1" CONDUIT AND CABLING FROM POINT OF SALE (POS) BACK TO NEAREST IDF ROOM. COORDINATE EXACT LOCATION WITH FOOD SERVICE DRAWINGS.

T4.17 1 DATA, PROVIDE 25' SERVICE LOOP WITH BISCUIT BOX FOR EACH CABLE (FOR FREEZER AND COOLER)

T5.12 MOUNT BELOW CANOPY. MUST MAINTAIN VIEW UNDER CANOPIES. FIELD COORDINATE FINAL ELEVATION PRIOR TO ROUGH IN.

T5.13 INDICATES LOCATION OF A/V SYSTEM ENCLOSURE. PROVIDE A IN WALL 14"X14" JUNCTION BOX. ALL CONDUIT IS TO ROUTE IN WALL TO JUNCTION BOX . COORDINATE REQUIRED CONDUITS WITH A/V AND CABLING CONTRACTOR. SURFACE MOUNTED CONDUIT WILL NOT BE ACCEPTED

T5.19 CEILING MOUNTED PROJECTOR. REFERENCE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

T5.21 INTRUSION SYSTEM ARMING CARD READER.

T5.25 DATA DROP IS TO BE INSTALLED INSIDE AV ENCLOSURE COORDINATE LOCATION WITH AV INSTALLER.

T5.26 INSTALL STAGE AV HDMI PLATE (AV-1), MICROPHONE INPUT PLATE (MIC), DATA ,AND STAGE MONITOR SPEAKER XLR PLATE (AV-O) IN STAGE FLOOX BOX.

T5.27 INDICATES LOCATION OF STAGE MONITOR SPEAKER XLR PLATE (AV-O).

T5.28 PROVIDE 100"H X 160" W MOTORIZED PROJECTION SCREEN. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO INSTALL

T5.29 INDICATED VOLUME CONTROL IS TO ADJUST VOLUME OF CAFE PA SPEAKERS.

T5.30 INDICATES LOCATION OF BLU-10 AV CONTROLLER

T5.31 PROVIDE HANGING MICROPHONES. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH IN

T5.32 PROPOSED LOCATION OF MOBILE AV ENCLOSURE. COORDINATE LOCATION WITH OWNER/ARCHITECT.

T5.33 LEFT/RIGHT SPEAKER MIXER FEED PLATE.

T5.34 INDICATED ABOVE CEILING DATA DROP IS RESERVED FOR FUTURE CAMERAS. PROVIDE 40' SERVICE LOOP. CABLING ITS TO BE PURPLE IN COLOR

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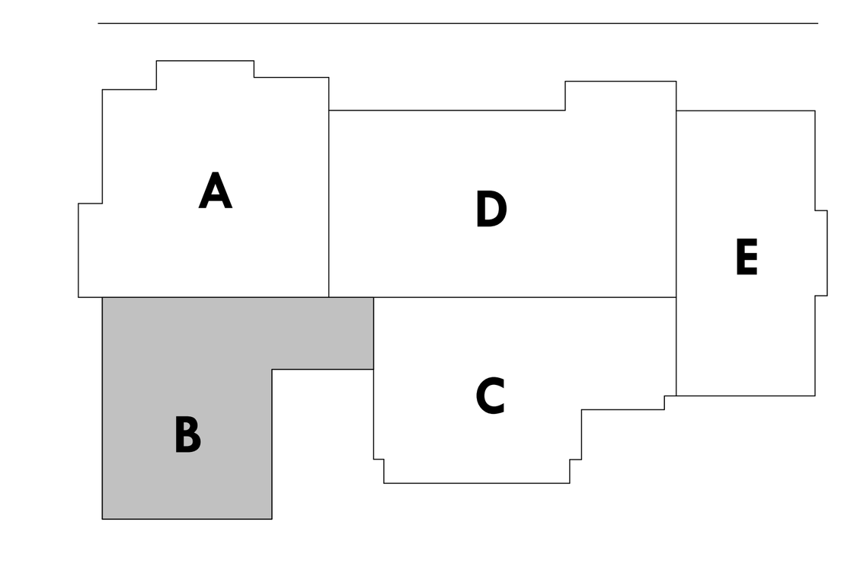
KEY PLAN



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REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER
Bicsi
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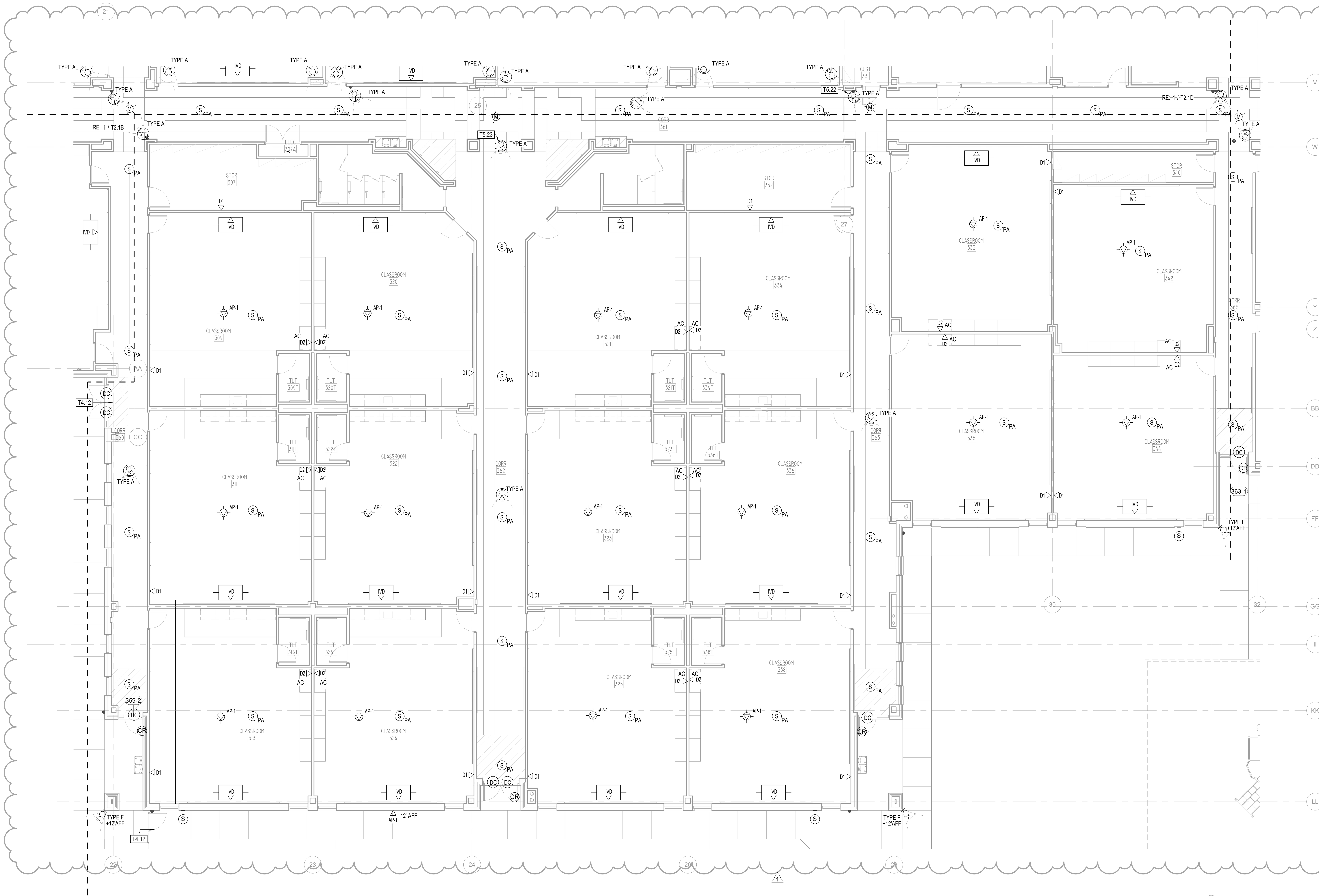
T2.1B

TECHNOLOGY PLAN
AREA B



TECHNOLOGY KEYED NOTES

T4.12 PREPARE DOOR FOR FUTURE DOOR MOUNTED CARD READERS. CONTRACTOR SHALL PROVIDE CONDUIT ROUGH IN REQUIRED. COORDINATE CONDUIT INSTALLATION WITH DIV. 8 CONTRACTOR.

T5.22 CAMERA SHALL BE CEILING MOUNTED IN CORNER TILE OF THE INTERSECTION.

T5.23 INSTALL UNDER FURDOWN

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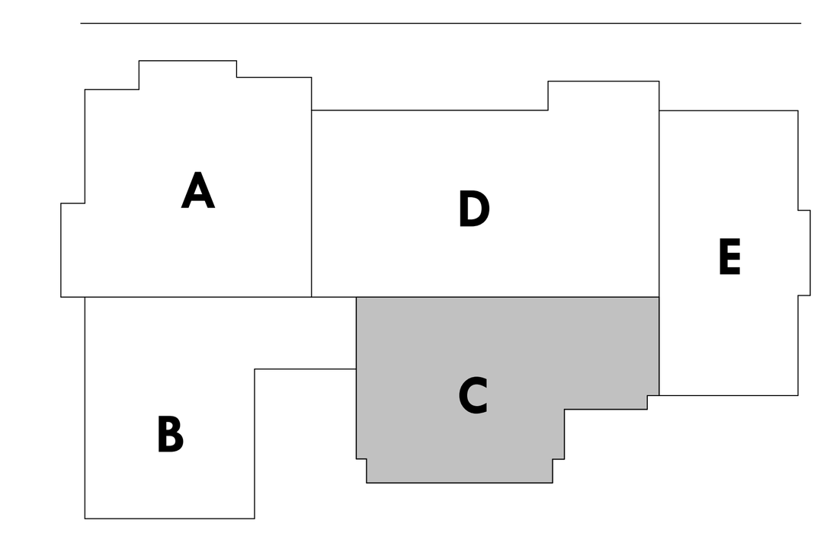

1 TECHNOLOGY PLAN AREA C (T2.1C)
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TN PN

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T2.1C

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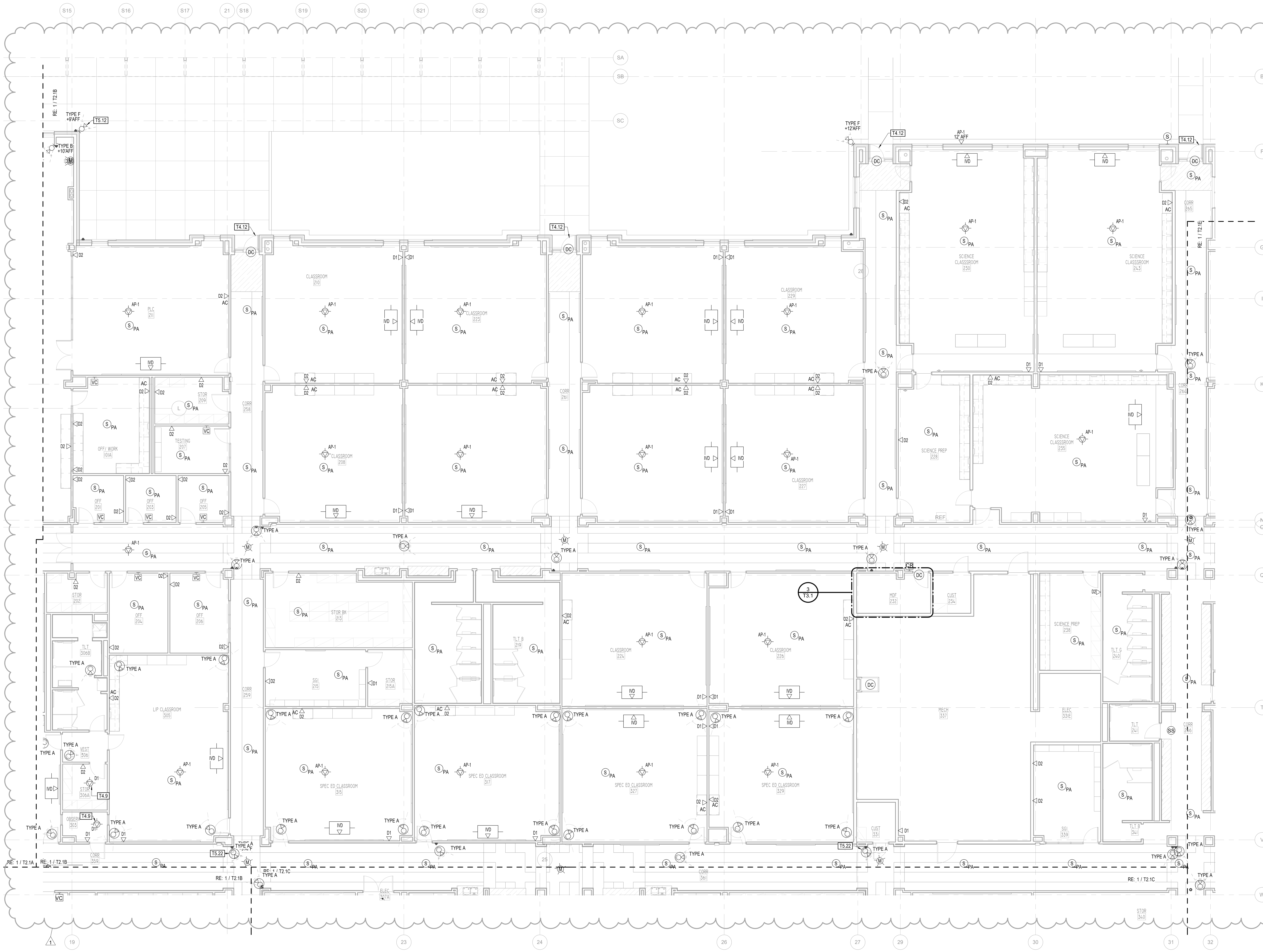

TECHNOLOGY KEYED NOTES

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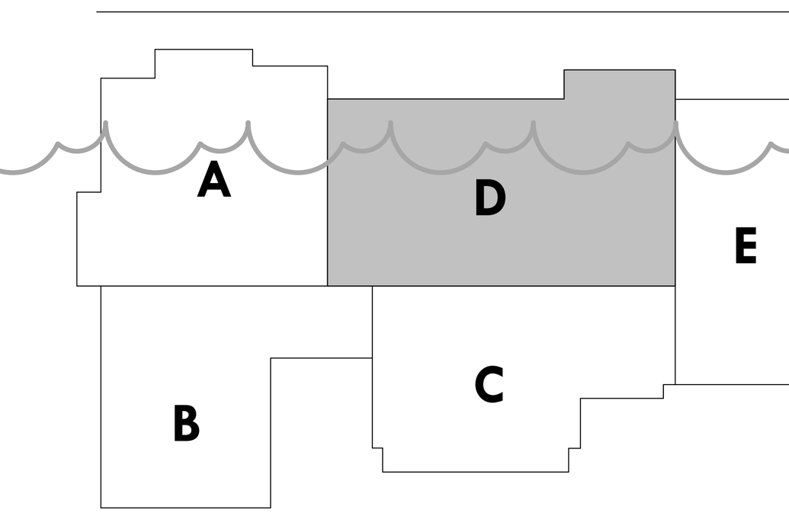

1 T2.1D **TECHNOLOGY PLAN AREA D**
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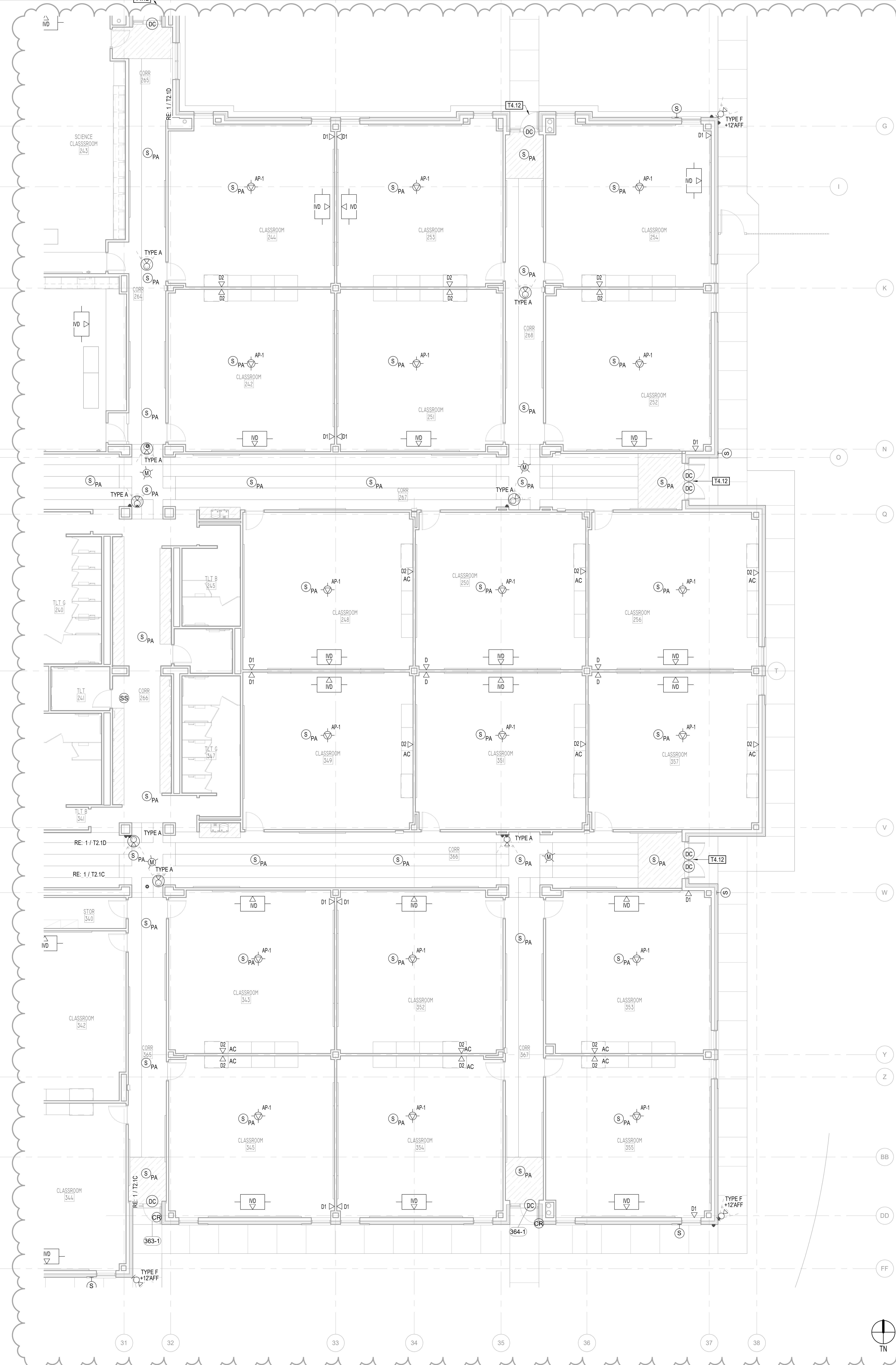

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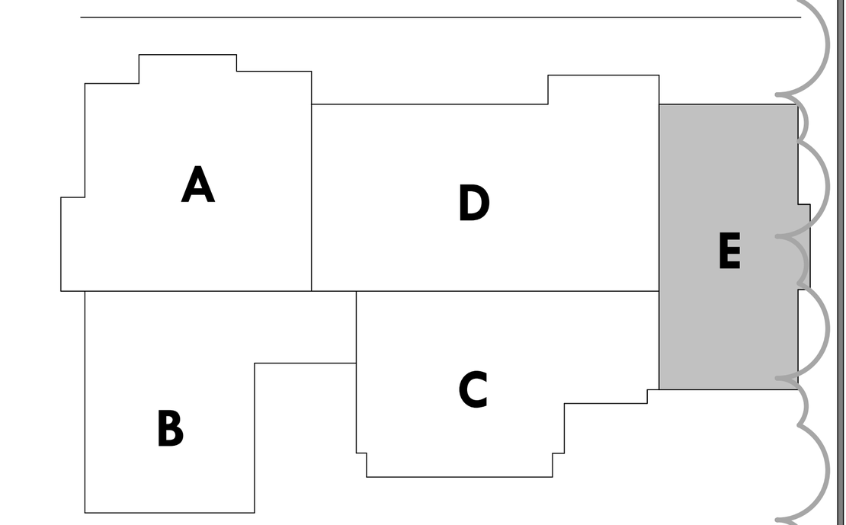

1 T2.1E **TECHNOLOGY PLAN AREA E**
1/8" = 1'-0"

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Michael Quirl
BICSI ID # 157703
EXPIRES 12-31-26
RCDD
9/27/2024

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TBPE Firm Registration No. 2234
DBR Project # 230393.000

BM	RA/RM	MS/LB	JL/TN	AD

DATE	SEPTEMBER 9, 2024
DRAWN BY	DBR
CHECKED BY	DBR QC
BRW PROJECT NUMBER	223117.00

NEW CANEY I.S.D.
NEW CANEY ELEMENTARY SCHOOL
19300 VIA CORSICA DRIVE
NEW CANEY, TX 77357

NO.	REVISION	DATE
1	Addendum 2	10.02.2024

T2.1E

TECHNOLOGY PLAN
AREA E

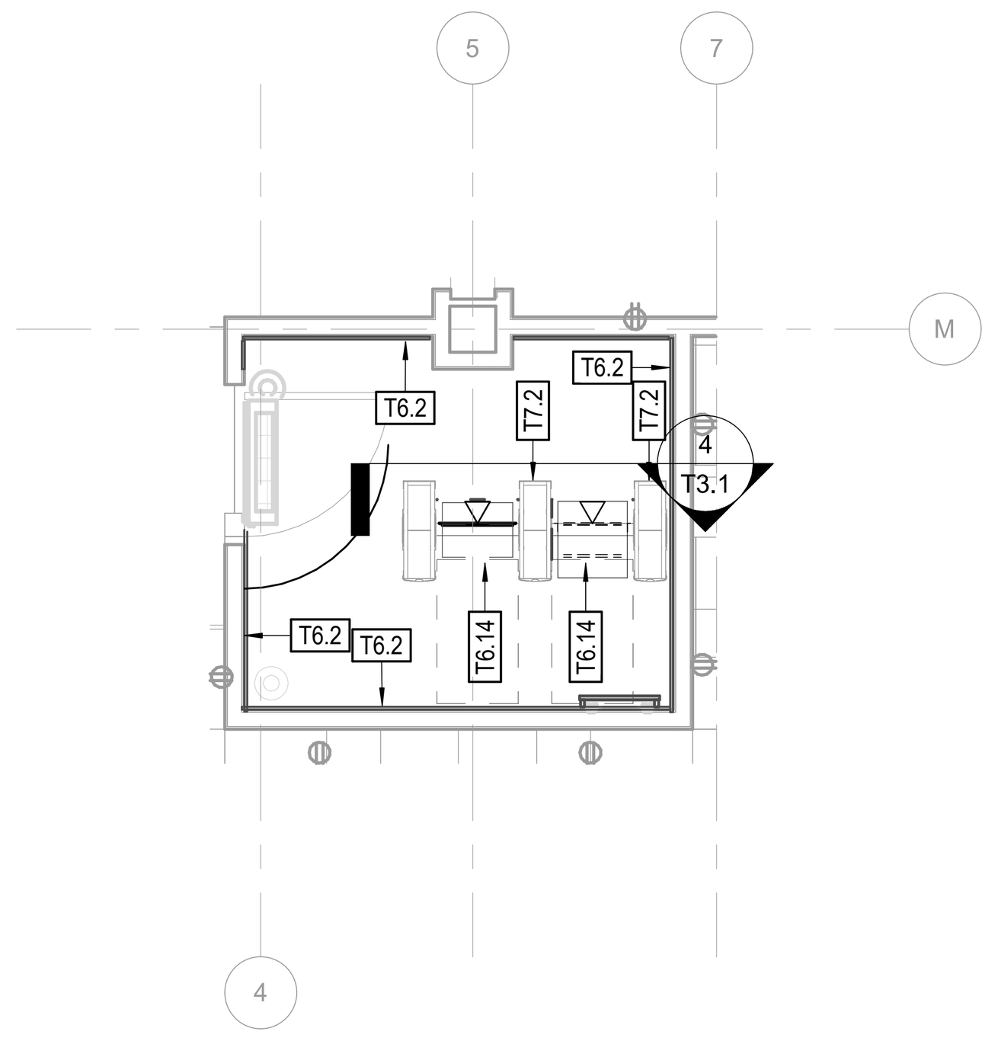
GENERAL ENLARGED PLAN NOTES:

1. CONTRACTOR SHALL VERIFY WITH OWNER IT ON THE EXACT PLACEMENT OF ALL EQUIPMENT RACK AND OVERHEAD CABLE TRAYS BEFORE COMMENCEMENT OF INSTALLATION WORK.
2. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES ON ANY OTHER EQUIPMENT, PIPING, CONDUITS NOT SHOWN ON THIS LAYOUT AND SUBMIT REQUEST FOR LAYOUT CHANGES, IF NECESSARY, TO ARCHITECT AND ENGINEER FOR REVIEW AND APPROVAL.
3. COORDINATE ALL RACK PLACEMENTS WITH GC AND OWNER. NO RACK OR CABLING UNDER AC UNITS OR WATER LINES.
4. NO WATER IS TO BE ROUTED ABOVE MDF/IDF ROOMS.

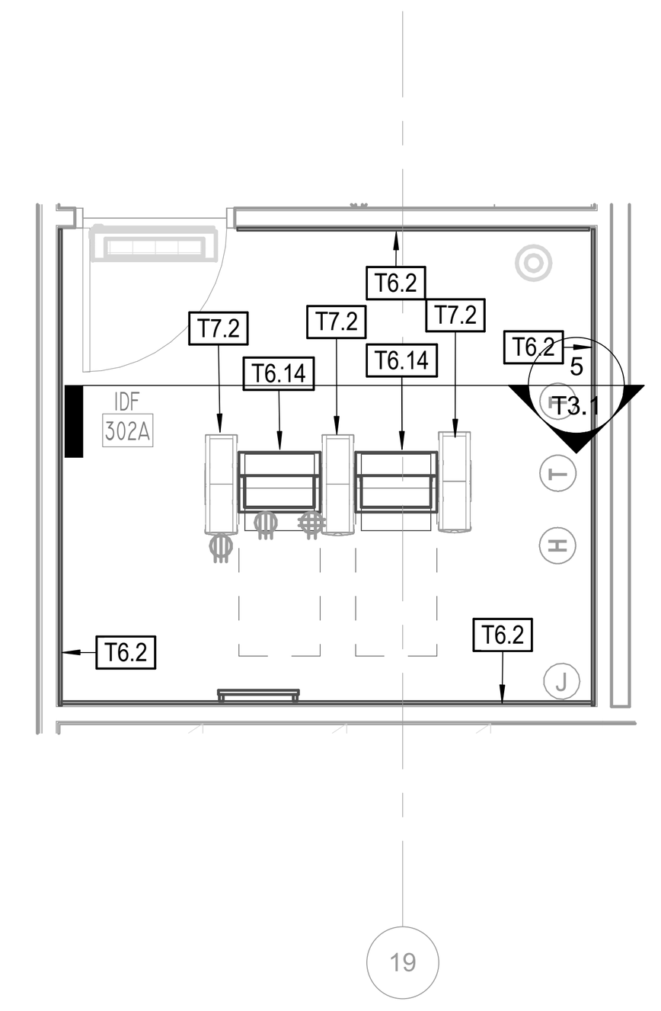
TECHNOLOGY KEYED NOTES

T4.13	DESIGNATED FOR FIRE ALARM SYSTEM.
T4.14	DESIGNATED FOR FIRE ALARM.
T4.15	DESIGNATED FOR PA SYSTEM.
T6.2	PROVIDE 3/4" GRADE A/C FIRE RESISTANT PLYWOOD ON WALL, WITH GRADE A SIDE FACING OUT. INSTALL PLYWOOD TO PROVIDE COVERAGE BETWEEN 6" AND 102" AFF ON WALL.
T6.14	PROVIDE 19" W X 84" H 2-POST EQUIPMENT RACK. (TYPICAL)
T7.2	PROVIDE 10" WIDE VERTICAL CABLE MANAGER. (TYPICAL)
T7.8	PROVIDE 2U 48 PORT PATCH PANEL. (TYPICAL)
T7.10	PROVIDE 1U FIBER TERMINATION PANEL. (TYPICAL)
T7.11	PROVIDE 2U FIBER TERMINATION PANEL. (TYPICAL)
T7.14	SPACE RESERVED FOR NETWORK SWITCHES.
T7.17	EQUIPMENT RACK IS RESERVED FOR SCHOOL COMMUNICATION SYSTEM COMPONENTS.

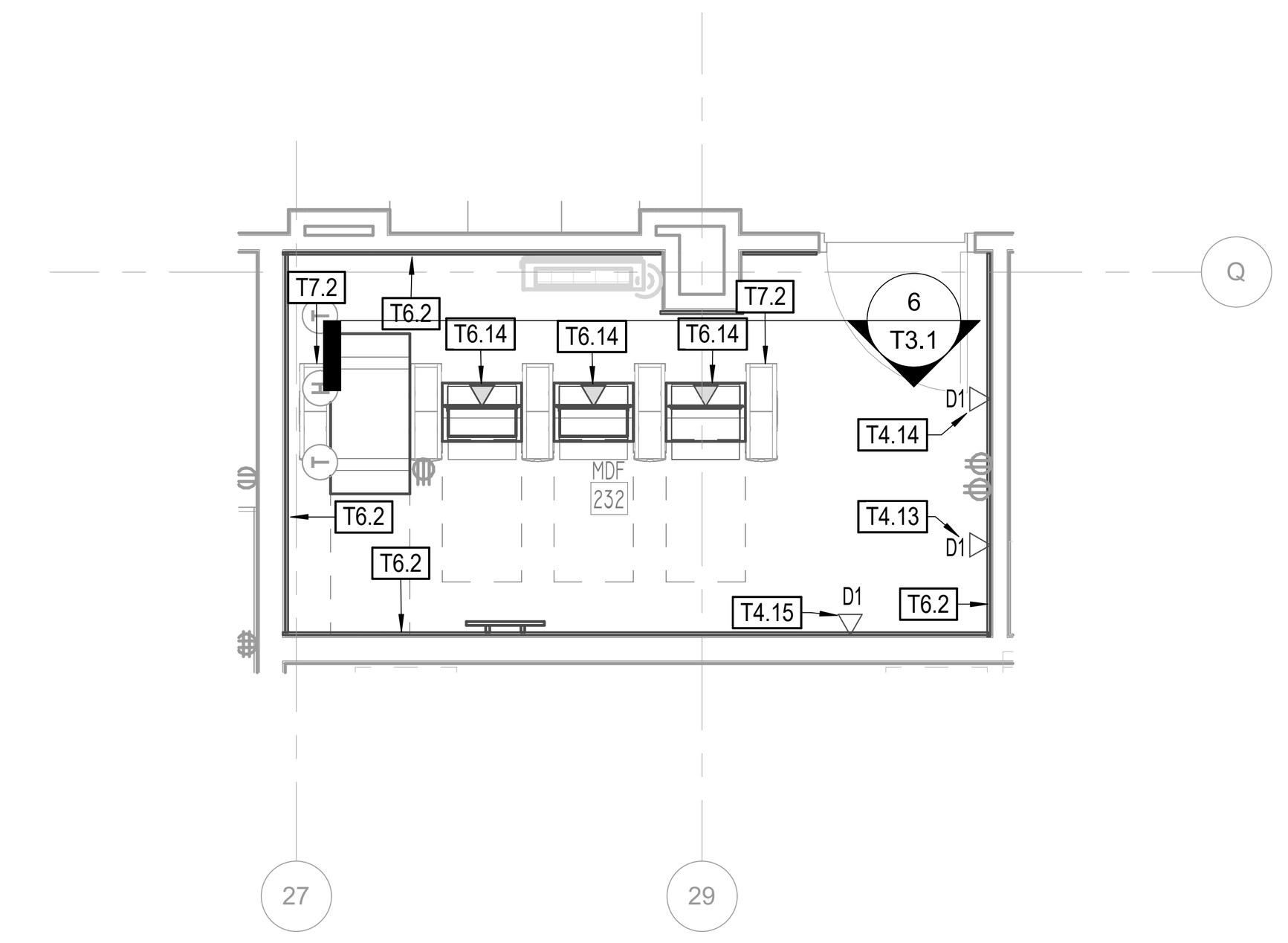
1



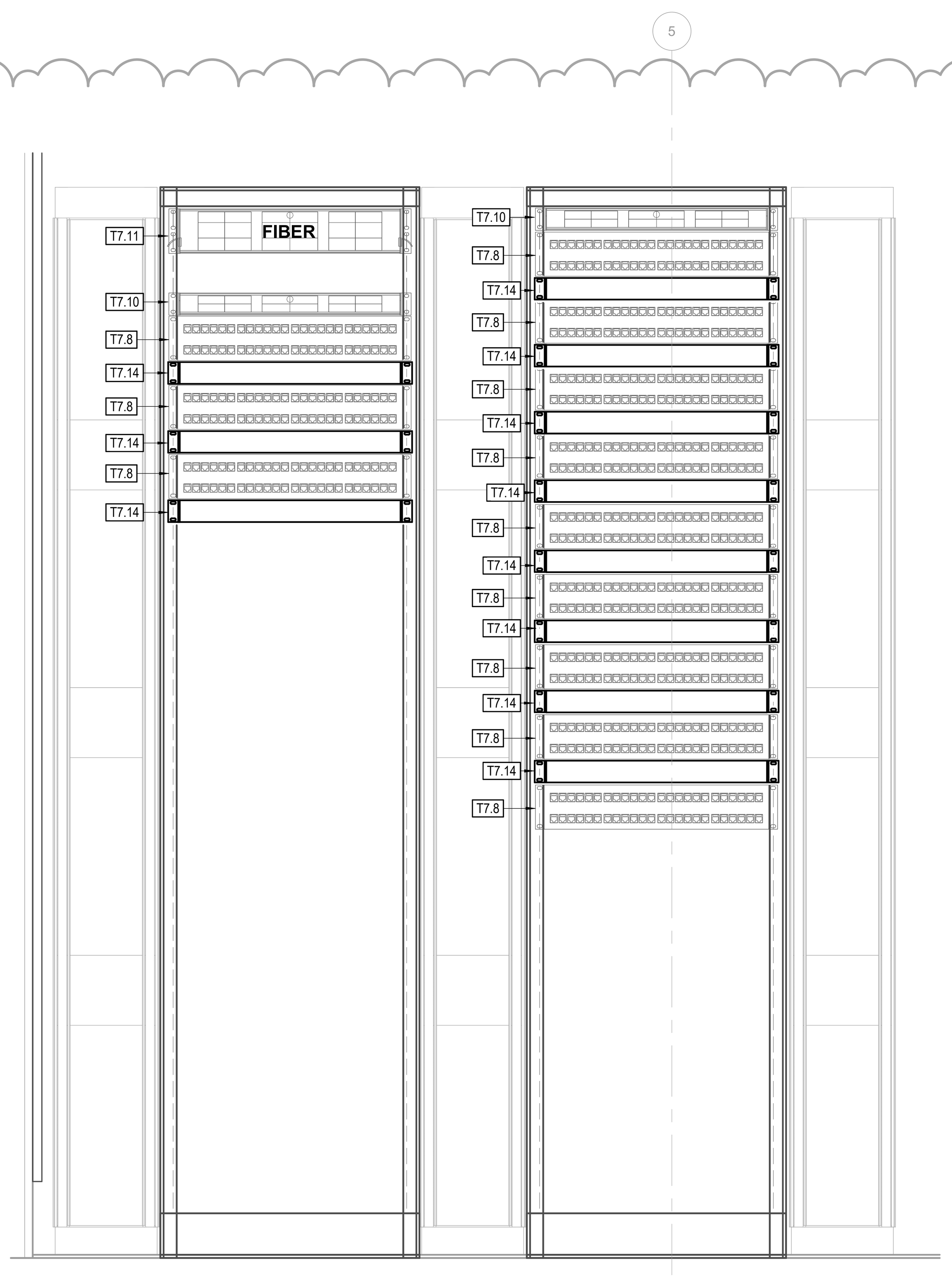
TN PN 1 T3.1 **AREA 'A1' - IDF 1**
1/4" = 1'-0"



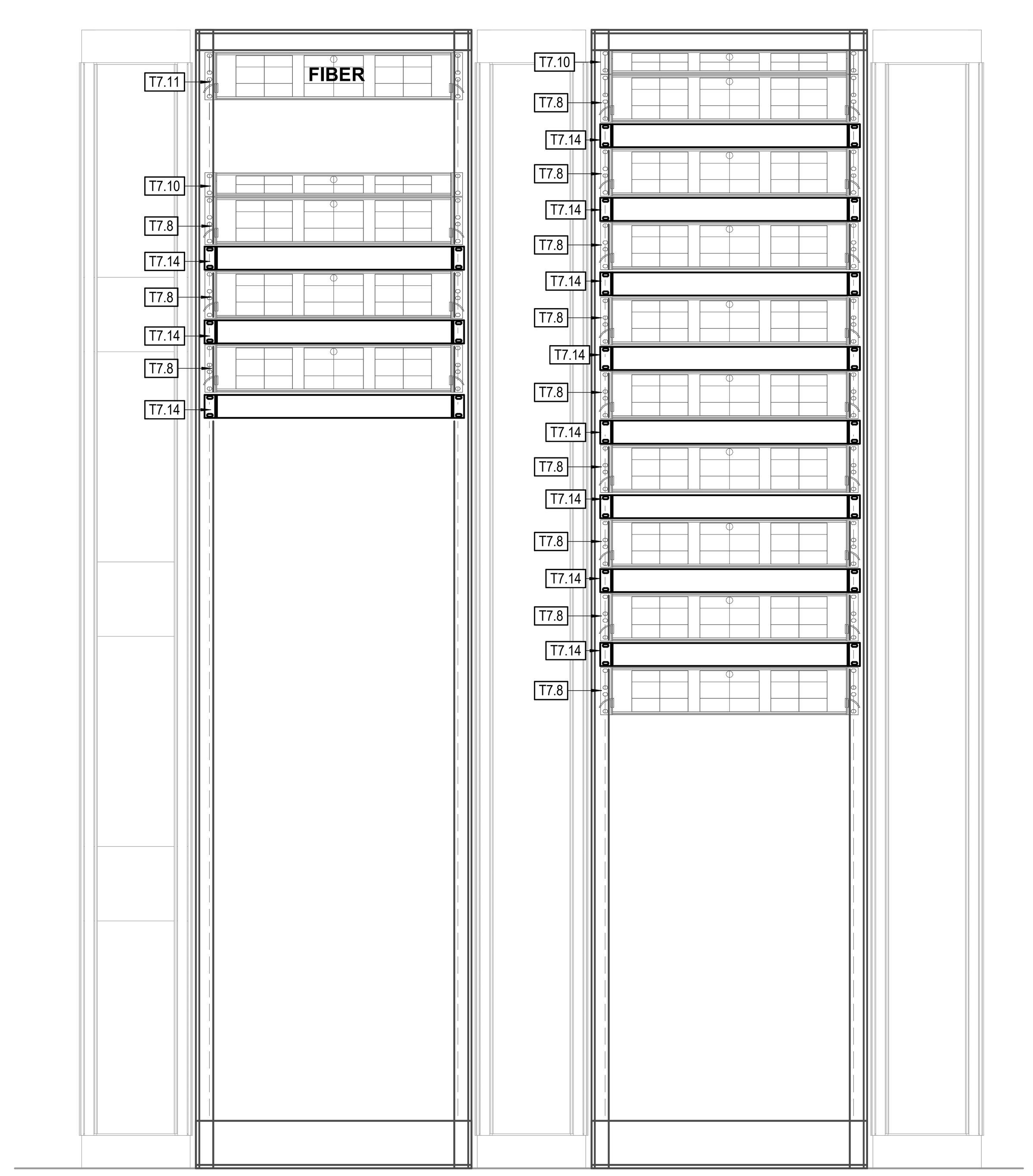
TN PN 2 T3.1 **AREA 'B1' - IDF 2**
1/4" = 1'-0"



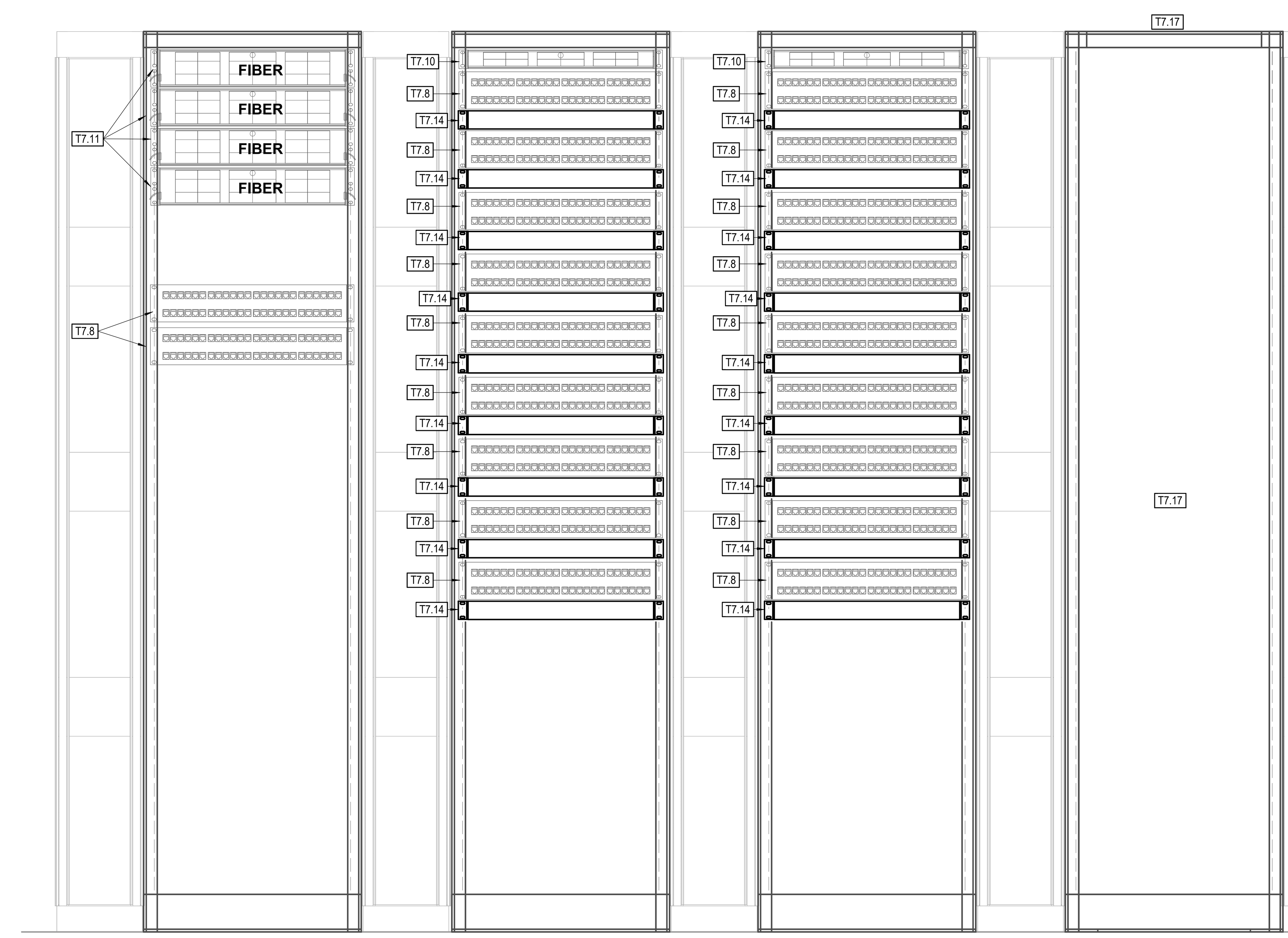
TN PN 3 T3.1 **AREA 'D1' - MDF**
1/4" = 1'-0"



4 T3.1 **IDF 1 - RACK ELEVATION**
1 1/2" = 1'-0"



5 T3.1 **IDF 2 - RACK ELEVATION**
1 1/2" = 1'-0"



6 T3.1 **MDF - RACK ELEVATION**
1 1/2" = 1'-0"

1

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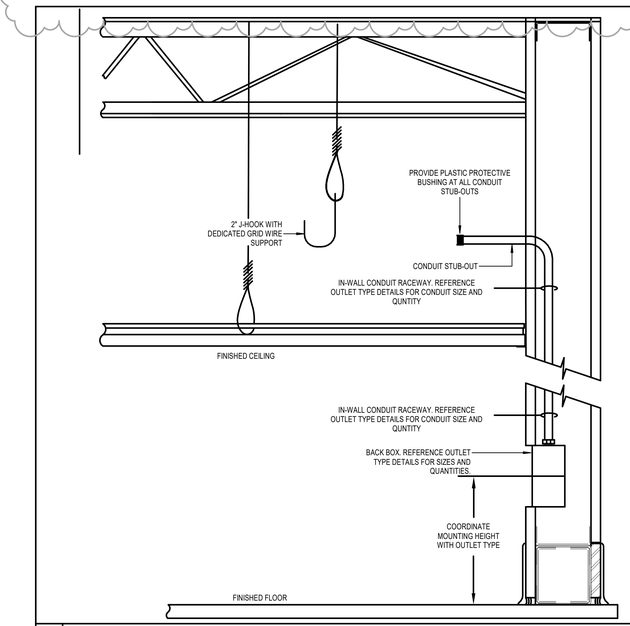
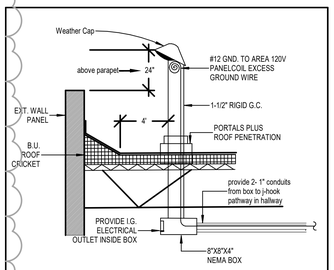
T3.1

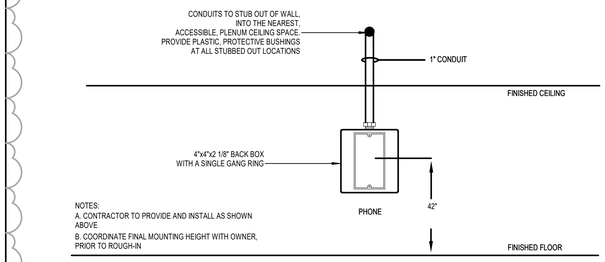
TECHNOLOGY ENLARGED



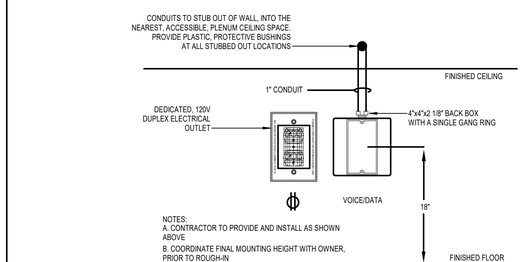
1 LOW VOLTAGE ELEVATION - IN-WALL RACEWAY
NOT TO SCALE



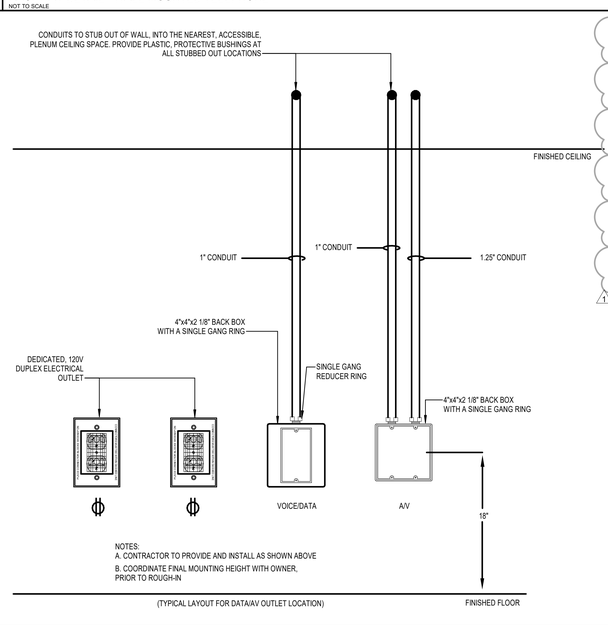
8 LOW VOLTAGE - TYPICAL ROOF PENETRATION
NOT TO SCALE



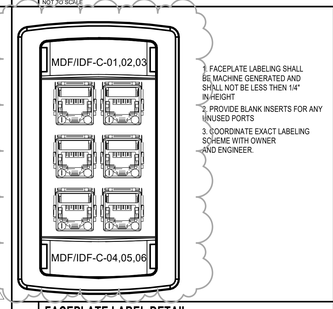
6 RACEWAY DETAIL - WALL MOUNTED TELEPHONE
NOT TO SCALE



7 RACEWAY DETAIL - TYPICAL VOICE/DATA OUTLET
NOT TO SCALE

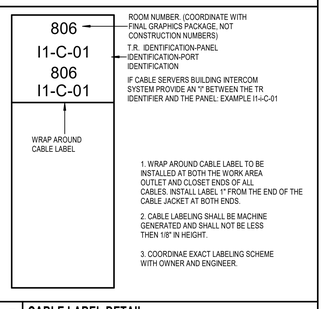


2 TYPICAL TEACHERS WORK AREA OUTLET
NOT TO SCALE



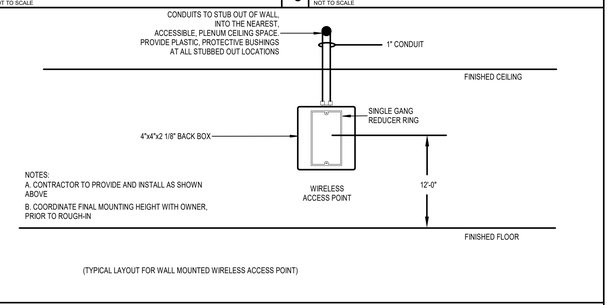
1. FACEPLATE LABELING SHALL BE MACHINE GENERATED AND SHALL NOT BE LESS THEN 1/4" IN HEIGHT
2. PROVIDE BLANK INSERTS FOR ANY UNUSED PORTS
3. COORDINATE EXACT LABELING SCHEME WITH OWNER AND ENGINEER.

4 FACEPLATE LABEL DETAIL
NOT TO SCALE



1. WRAP AROUND CABLE LABEL TO BE INSTALLED AT BOTH THE WORK AREA OUTLET AND CLOSET ENDS OF ALL CABLES. INSTALL LABEL 1" FROM THE END OF THE CABLE JACKET AT BOTH ENDS.
2. CABLE LABELING SHALL BE MACHINE GENERATED AND SHALL NOT BE LESS THEN 1/8" IN HEIGHT.
3. COORDINAE EXACT LABELING SCHEME WITH OWNER AND ENGINEER.

5 CABLE LABEL DETAIL
NOT TO SCALE



(TYPICAL LAYOUT FOR WALL MOUNTED WIRELESS ACCESS POINT)

3 RACEWAY DETAIL - WALL MOUNTED WIRELESS AP
NOT TO SCALE

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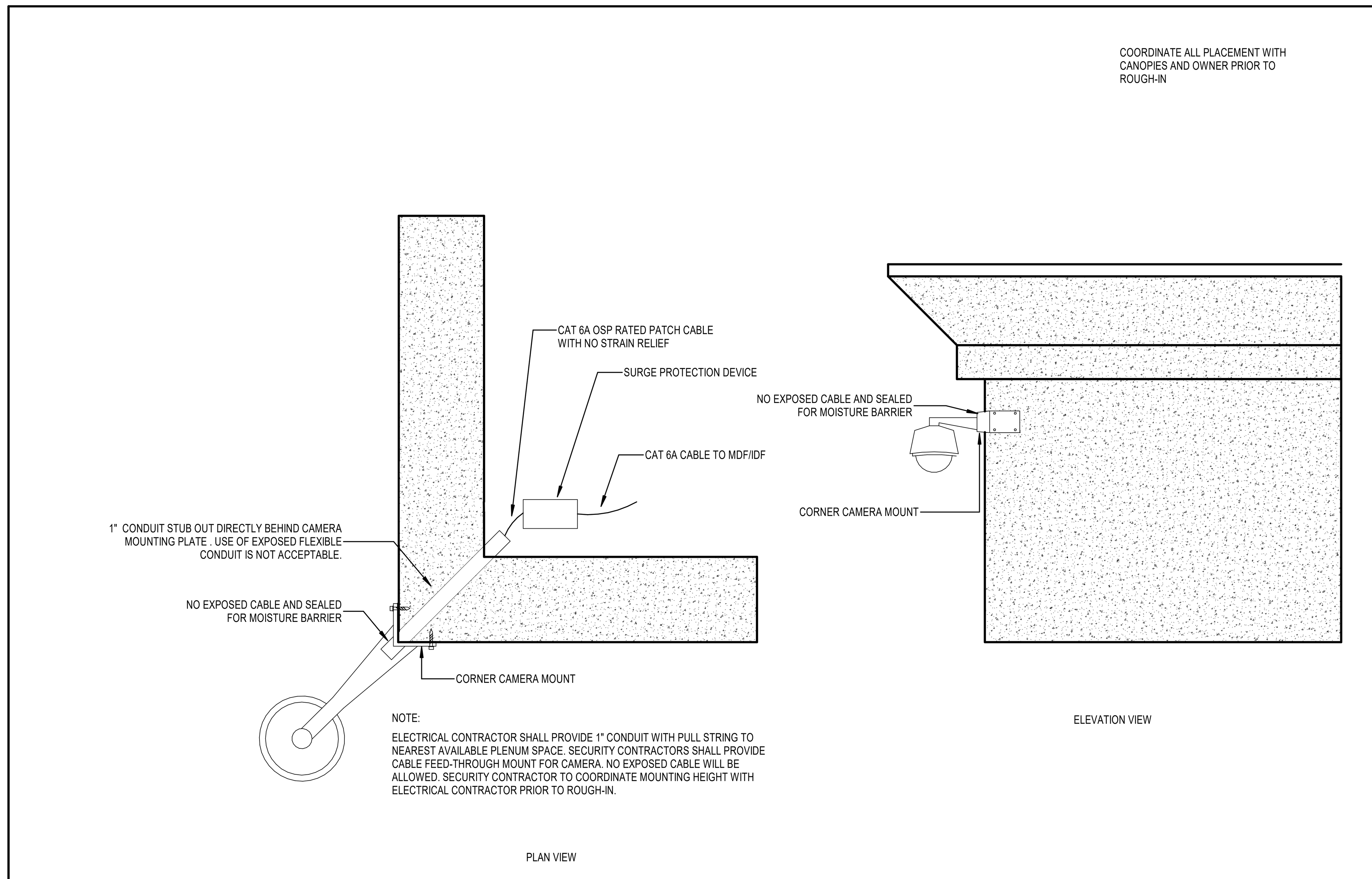
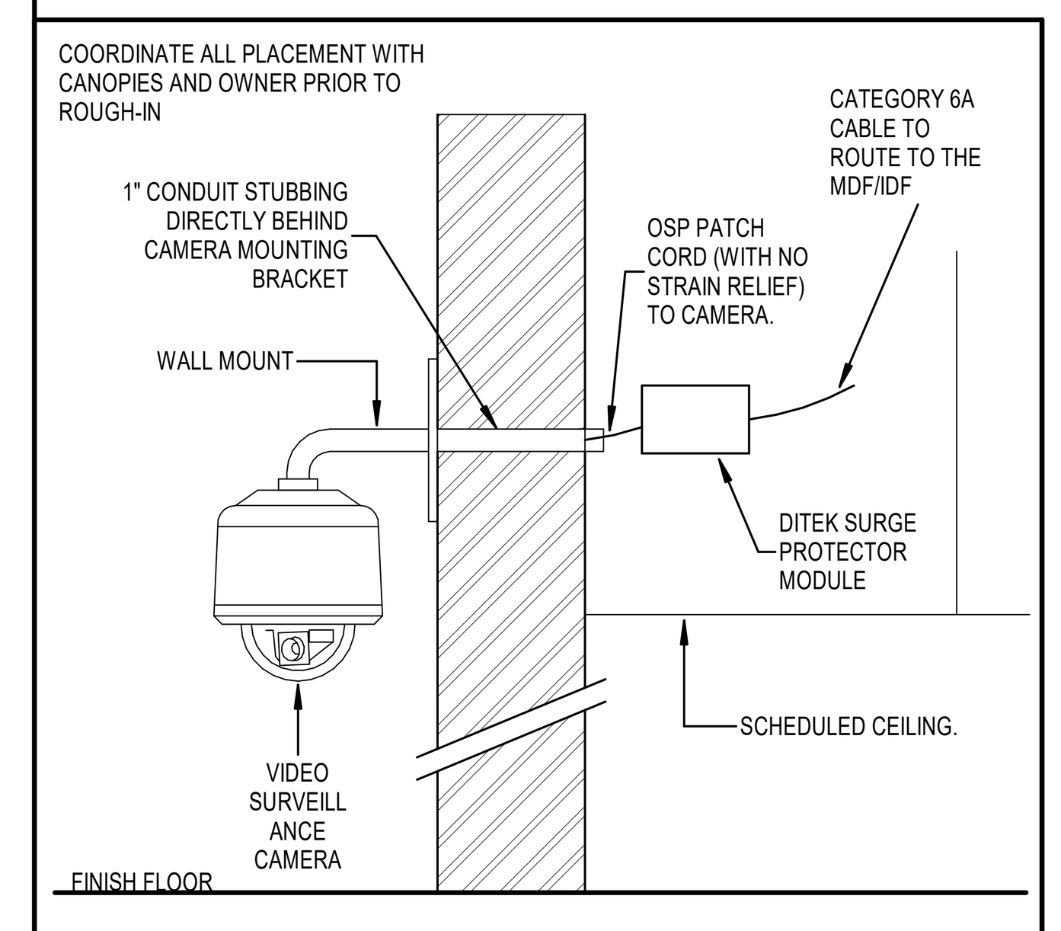
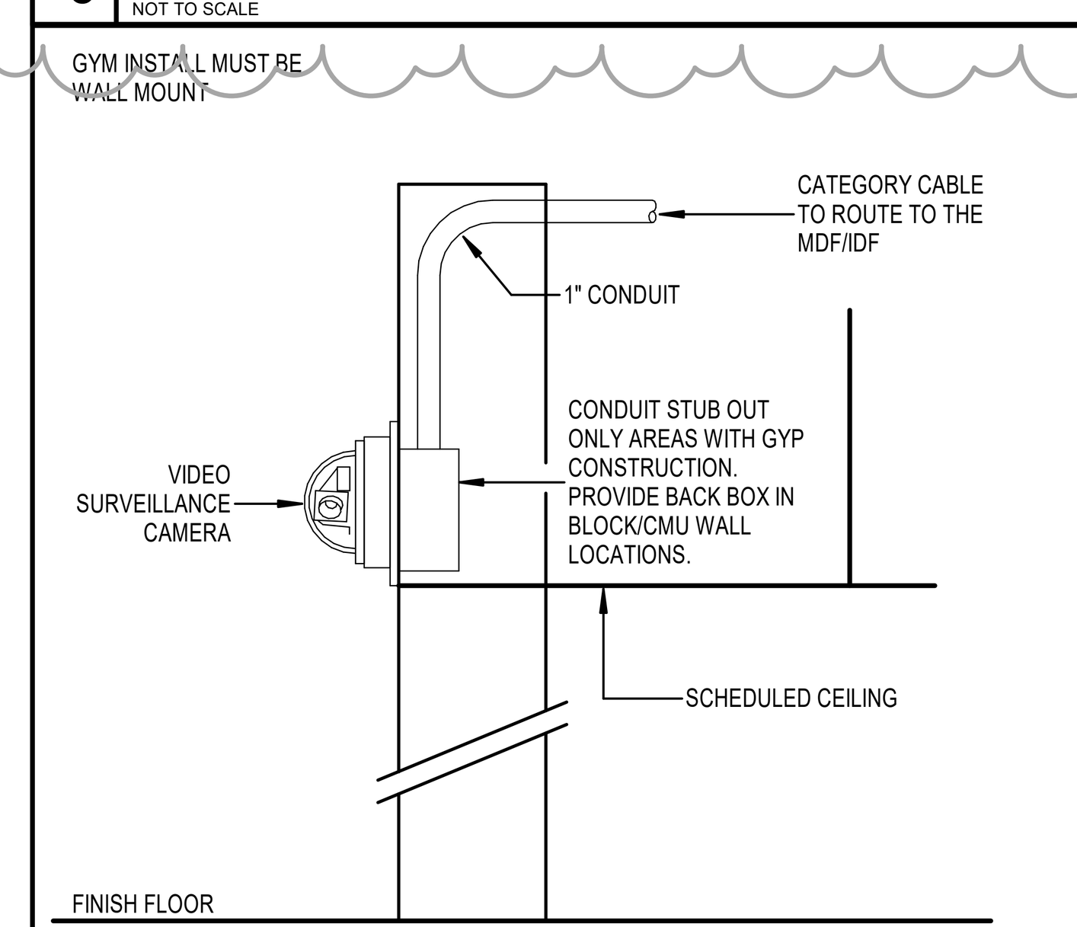
T6.1
TECHNOLOGY DETAILS



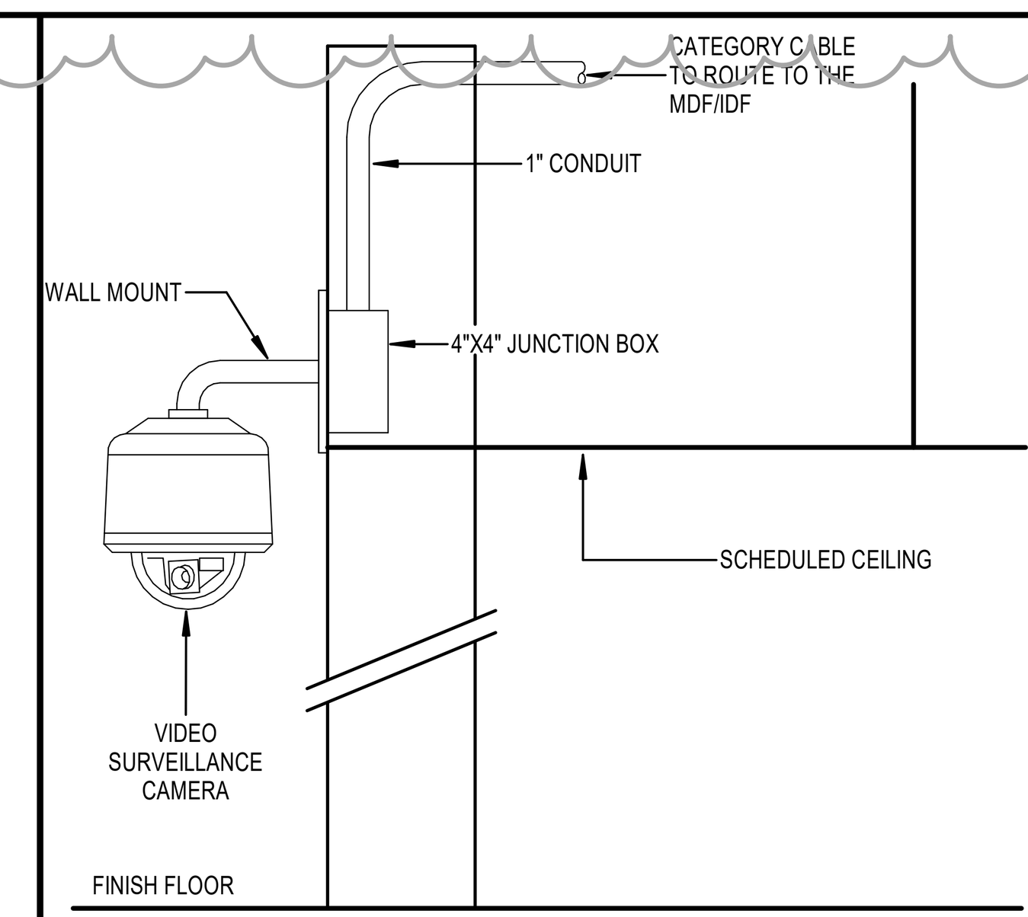
5 **LVVSS-05 - CORNER MOUNTING DETAIL**
NOT TO SCALE



6 **EXTERIOR WALL MOUNTED DOME CAMERA**
NOT TO SCALE



1 **LVVSS-02 - INTERIOR WALL MOUNT CAMERA-VERTICAL**
NOT TO SCALE



2 **INTERIOR WALL MOUNTED DOME CAMERA**
NOT TO SCALE

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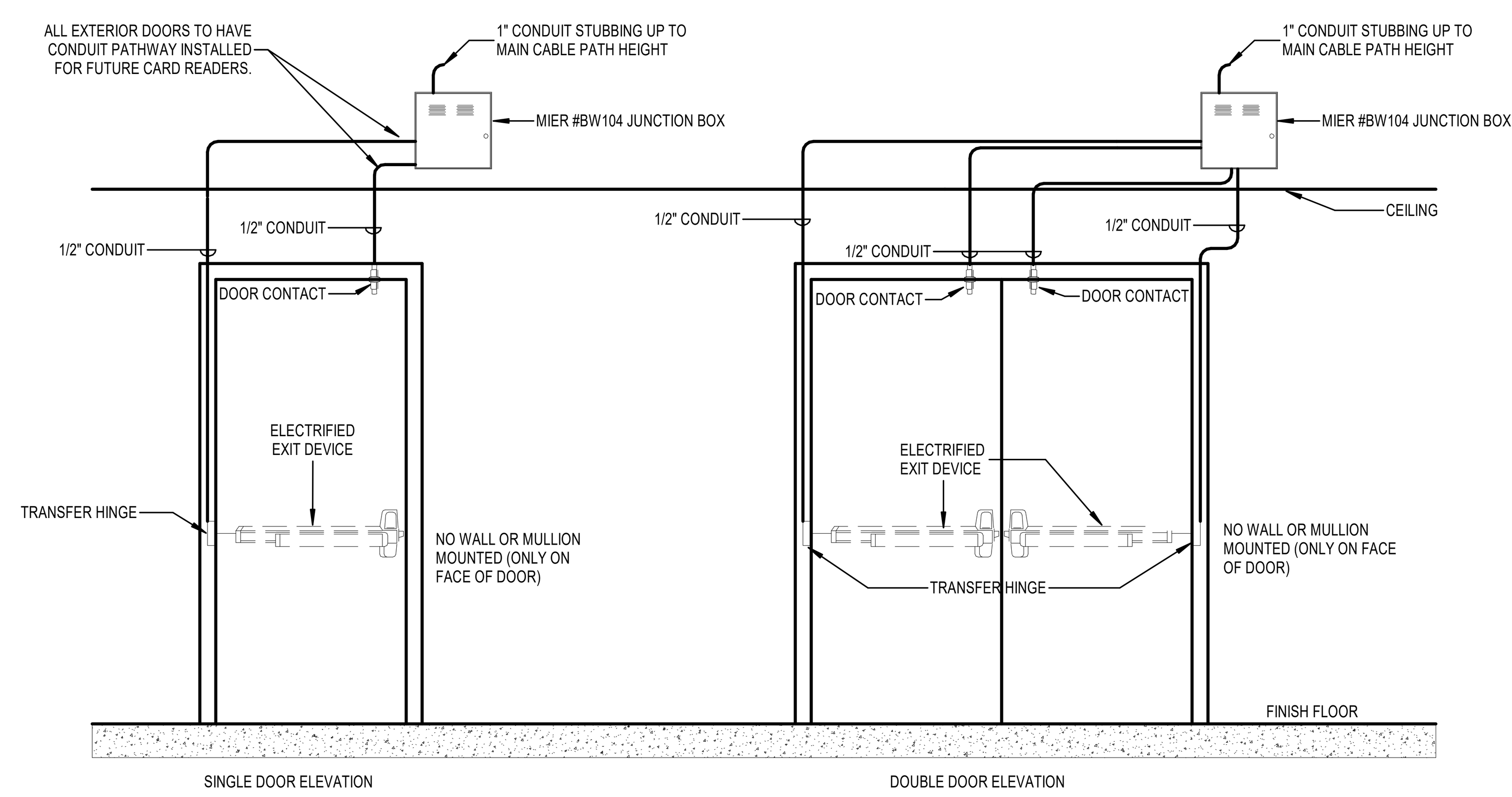
T6.3

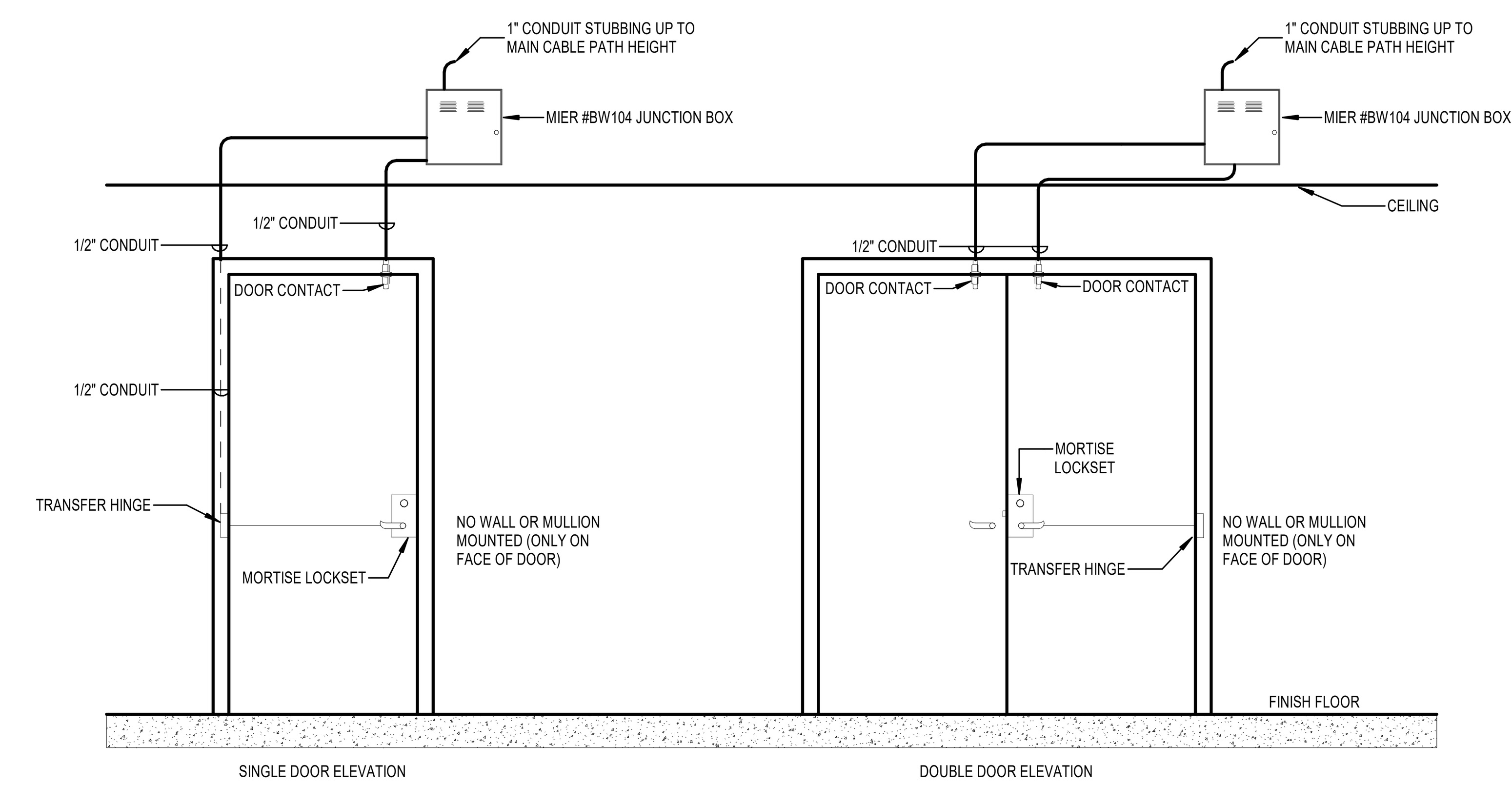
SECURITY DETAILS

GENERAL DETAIL NOTES:

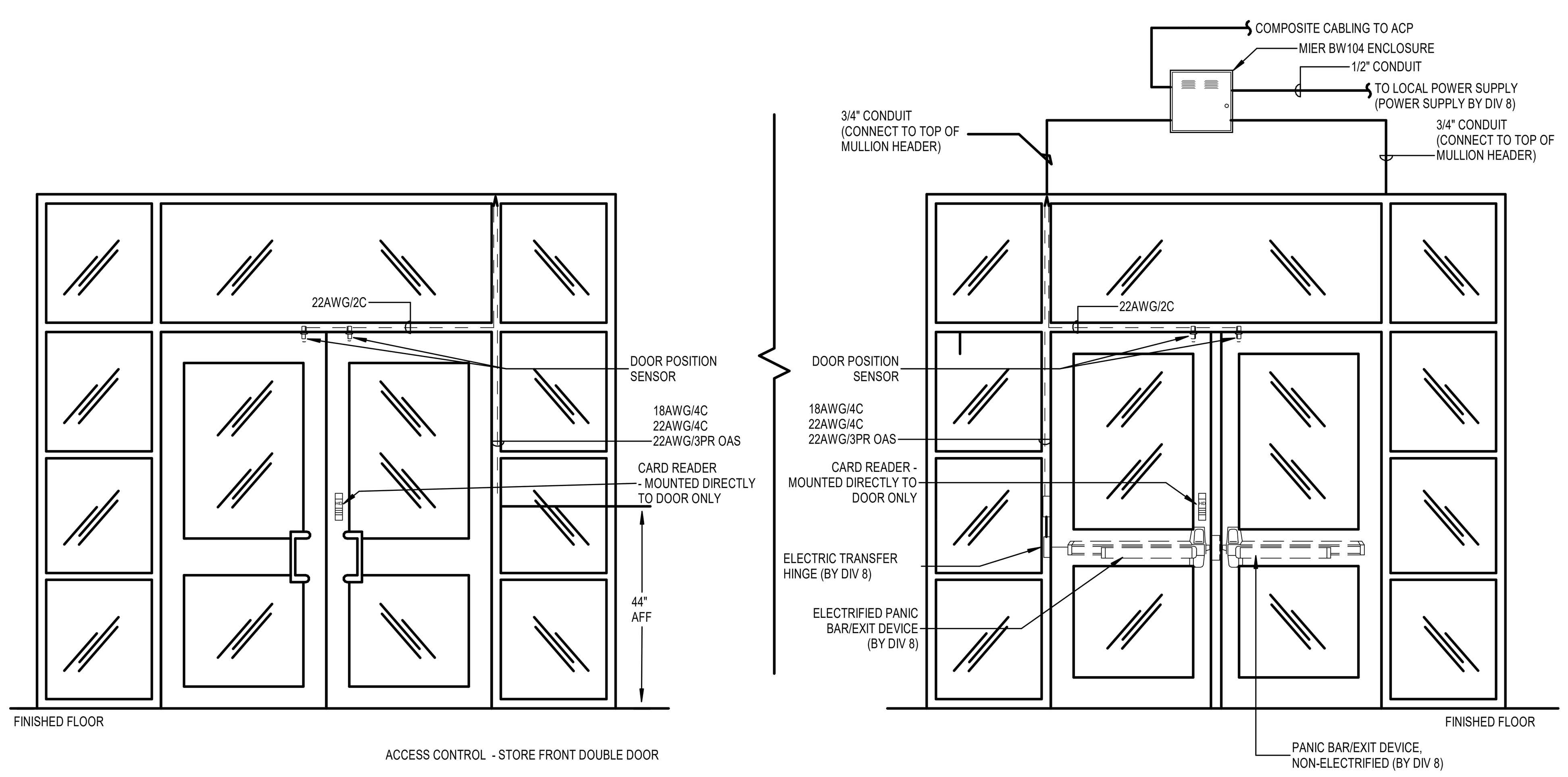
1. ALL EXTERIOR EGRESS DOORS PREPPED FOR FUTURE CARD READER WITH EPT INSTALLED.



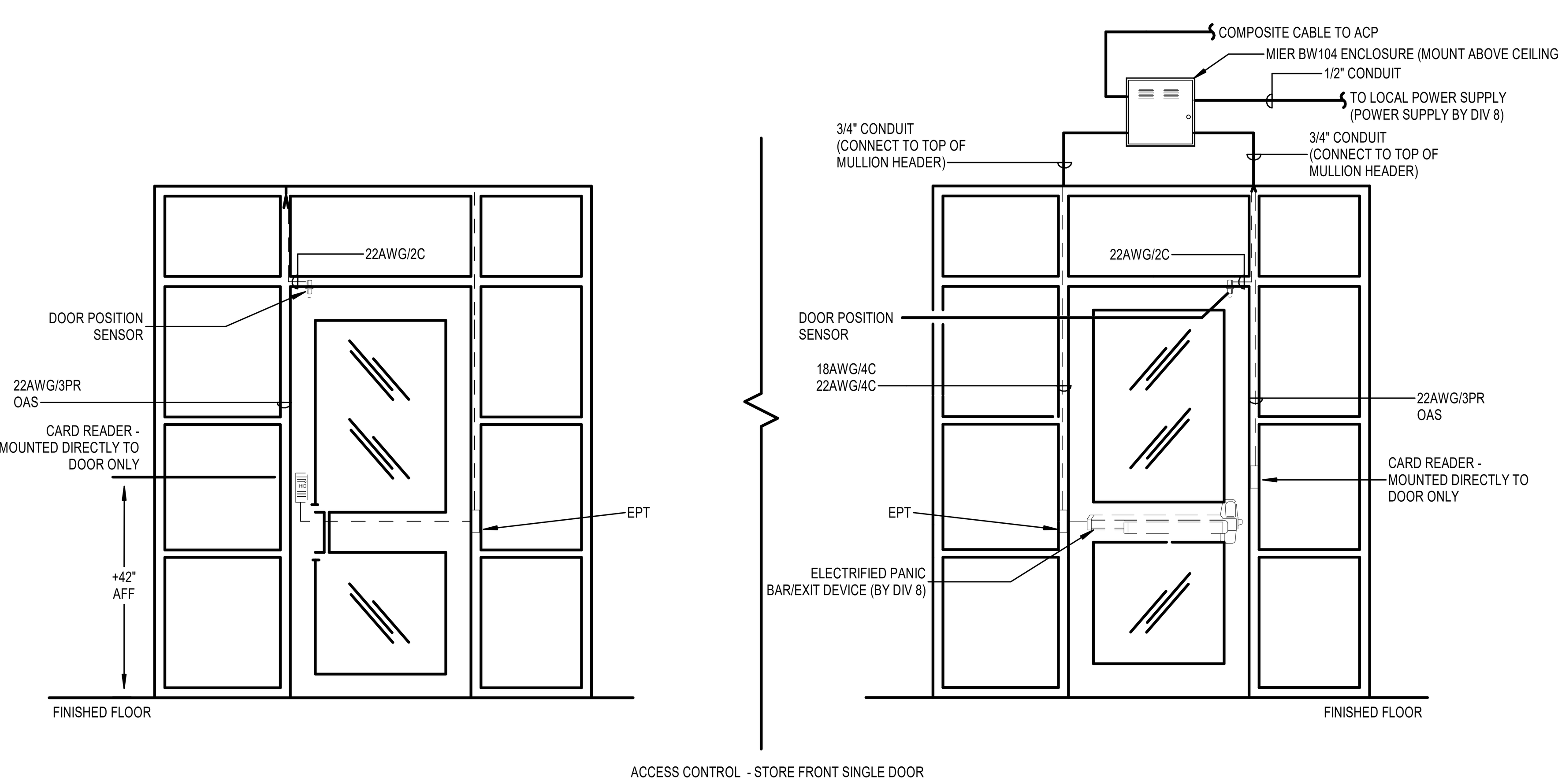
3 **LVACS-03 - ACCESS CONTROL - EXIT DEVICE DOOR ELEVATION**
NOT TO SCALE



4 **ACCESS CONTROL - MORTISE LOCK DOOR ELEVATION**
NOT TO SCALE



1 **ACCESS CONTROL - STORE FRONT DOUBLE DOOR**
NOT TO SCALE



2 **ACCESS CONTROL - STORE FRONT SINGLE DOOR**
NOT TO SCALE

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Bicsi — Michael Quirl, BICSI ID # 157703, EXPIRES 12-31-26, RCDD, 4/27/2024

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T6.4

SECURITY DOOR DETAILS