Project No. 25-0056.00 October 17, 2025

ADDENDUM NO. 3
TO THE
DRAWINGS AND PROJECT MANUAL
FOR
NORTH SHORE MULTI-USE INDOOR FACILITY
GALENA PARK INDEPENDENT SCHOOL DISTRICT
HOUSTON, TEXAS



10/17/2025

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3.1 GENERAL

A. This addendum modifies the drawings and project manual, dated October 1, 2025, as noted within and shall become part of the Contract Documents.

B. Each holder of proposal documents registered with the Architect will receive a copy of the addendum. Each prime proposer is responsible for distribution of information conveyed by this addendum to its sub-proposers and suppliers.

C. Proposers shall acknowledge receipt of this addendum in the space provided on the proposal form. Failure to do so may subject proposer to disqualification.

3.2 DOCUMENT - OWNER'S COMPETITIVE SEALED PROPOSAL DOCUMENTS

A. BASE PROPOSAL INFORMATION - ACTIVITIES:
   1. Add the following after "Pre-Proposal Site Visit" dates:
      "Pre-Proposal Site Visit Address:
      15025 Wallisville Rd, Houston, TX 77049
      Fieldhouse East Entrance on Mustang Lane"

B. ALTERNATE PROPOSAL LINE, Alternate No. 10;
   1. Delete "The amount should include both rubber flooring and turf."
   2. Delete "Mondo" and insert "Regupol"

3.3 SECTION 01 23 00 - ALTERNATES

A. Page 01 23 00 – 2, Paragraph 1.4, J;
   1. Delete "The amount should include both rubber flooring and turf."

B. Page 01 23 00 – 2, subaragraph 1.4, J, 3: Delete "Mondo" and insert "Regupol"

3.4 SECTION 05 50 00 - METAL FABRICATIONS

A. Page 05 50 00 – 4, Paragraph K, add the following subparagraph and renumber subsequent paragraphs:
   "2. Bollard Caps: 6 inch pip bollard cap comprised of 5000 psi concrete reinforced with micro fibers. .
      a. Basis of Design: TopGard as manufactured by TopGuard 6."

3.5 SECTION 08 80 00 - GLAZING

A. This Section, attached hereto, is entirely new and is hereby made a part of this addendum.

3.6 SECTION 09 65 19.33 - RUBBER TILE FLOORING

A. This Section, attached hereto, is entirely new and is hereby made a part of this addendum.

3.7 SECTION 10 22 13 - WIRE MESH PARTITIONS

A. Delete this Section in its entirety.

3.8 SECTION 10 22 39 - FOLDING PANEL PARTITIONS

A. Delete this Section in its entirety and insert attached revised Section.

3.9 SECTION 10 82 16 - EQUIPMENT SCREENS

A. Page 10 82 16 – 2, Article 2.4; Delete Paragraph B in its entirety.

3.10 SECTION 11 66 00 - ATHLETIC EQUIPMENT

A. Page 11 66 00 – 1, Delete Article 2.3 in its entirety.

3.11 SECTION 13 42 75 - INTEGRATED INTERIOR ASSEMBLIES

A. On the footers, delete “METAL STORAGE BUILDING” and insert “INTEGRATED INTERIOR ASSEMBLIES”.

3.12 SECTION 32 18 13.10 - SYNTHETIC GRASS SURFACING

A. This Section, attached hereto, is entirely new and is hereby made a part of this addendum.

3.13 STRUCTURAL ADDENDUM ITEMS

A. Attached document by Matrix Structural shall hereby become a part of this addendum.

3.14 MECHANICAL, ELECTRICAL AND PLUMBING ADDENDUM ITEMS

A. Attached document by Salas O’Brien shall hereby become a part of this addendum.

3.15 REVISED DRAWINGS

A. Sheet Nos. INDEX, CODE2.2, C3.00, C4.00, C5.00, C6.00, C7.00, C8.00, C11.00, A1.01, A1.11, A1.21, A1.22, A1.31, A2.01, A2.11A, A2.11B, A2.11C, A2.11C.1, A2.23, A3.00, A3.00.1, A3.01, A3.02, A3.03, A3.04, A3.05, A3.06, A3.23, A3.31, A5.10, A6.11A, A6.11B, A6.12B, A6.31, A7.21, A7.22, A9.01, A9.11A, A9.11B, A9.11C, A9.11D, S1.03, S2.01B, S2.02C, S2.11B, S3.02, S3.03, S3.04, S4.03, S5.01, P1.00, P2.03B, P3.02A.1, P3.02A, P3.03B, P3.06B, P3.07, P5.01, P5.02, P6.01, M2.04B, M2.06C, M2.06C.1, T0.00, T2.02A, T2.03B, T2.04C, T2.04C.1, T3.01, dated October 17, 2025 and attached hereto, are revised drawings and are hereby made a part of this addendum.

3.16 NEW DRAWINGS

A. Sheet Nos. A3.32, S6.03, P5.03, P5.04, dated October 17, 2025, attached hereto, are new drawings and are hereby made a part of this addendum.

END OF ADDENDUM NO. 3

North Shore Multi-Use Indoor Facility
Galena Park ISD
Houston, Texas

October 17, 2025

STRUCTURAL ADDENDUM NO. 3 ITEMS

1. SHEET S1.03– 3D – VIEW

A. Note added for 3D view

2. SHEET S2.01B – FOUNDATION PLAN UNIT – B

A. Shear wall has been tagged on gridline 9

B. Note referencing shear wall detail on plan has been updated

C. Section cut of detail 10/S3.04 added on gridline D & gridline 9

D. Note added to contractor on plan for cutting and trenching of new pipes

3. SHEET S2.02C – FOUNDATION PLAN - UNIT C

A. New section cut added at marquee sign referencing the grade beam detail.

B. Grade beam dimensioned on gridline 1 for better understanding

4. SHEET S2.11B – MEZZANINE FRAMING PLAN – UNIT B

A. Beam Size Updated

B. Note clarifying location of beam supporting crane post updated

5. SHEET S3.02 – FOUNDATION DETAILS

A. Detail 11 – Updated

B. Detail 16 – Updated

C. Detail 6A – Added

6. SHEET S3.03 – FOUNDATION DETAILS

A. Detail 1 – Updated

B. Detail 13 - Updated

7. SHEET S3.04 – FOUNDATION DETAILS

A. Detail 19 – Updated

8. SHEET S4.03 – STEEL DETAILS

A. Detail 14 – Updated

9. SHEET S5.01 – FLOOR DETAILS

A. Detail 3 - Updated

10. SHEET S6.03 – ROOF DETAILS

A. New sheet added on to the set with details 1, 3, 5, 7, 9

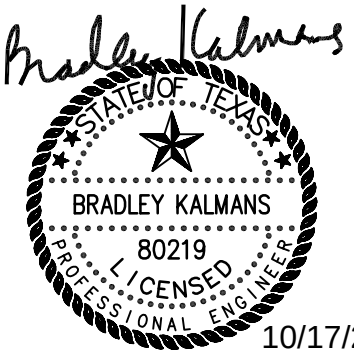
END OF MATRIX STRUCTURAL ENGINEER'S ADDENDUM ITEMS

Matrix Structural Engineers
TBPE Firm Registration No. F-2640



10/17/2025

Havish V Reddy
Graduate Engineer
Matrix Structural Engineers



MEPT ADDENDUM NO. 3 ITEMS

1. **SECTION 21 31 13 – FIRE PUMP SYSTEM**

   A. Replace this section entirely.

2. **SECTION 26 05 53 – IDENTIFICATION FOR ELECTRICAL EQUIPMENT**

   A. Delete this section entirely.

3. **SECTION 26 05 73 – ARC FLASH HAZARD ANALYSIS**

   A. Delete this section entirely.

4. **SECTION 26 12 13 – PAD MOUNTED TRANSFORMERS**

   A. Delete this section entirely.

5. **SECTION 26 32 16 – ENGINE DRIVEN GENERATOR SETS – NATURAL GAS**

   A. Add this section entirely.

6. **SECTION 27 41 16.20 – AUDIO AND VIDEO DISTRIBUTUION SYSTEMS FOR SPECIAL VENUES**

   A. Replace this section entirely.

7. **SECTION 27 50 00 – BUILDING COMMUNICATIONS SYSTEM REPLACEMENT**

   A. Replace this section entirely.

8. **SECTION 28 10 00 – ACCESS CONTROL SYSTEMS (ACS)**

   A. Replace this section entirely.

9. **SECTION 28 46 02 – EXPANSION OF EXISTING FIRE DETECTION AND ALARM SYSYTEM**

   A. Replace this section entirely.

END OF SALAS O'BRIEN ADDENDUM ITEMS

SECTION 08 80 00

GLAZING



10/17/2025

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Glass and glazing accessories.

B. Related Sections:
   1. Section 07 92 00 - Joint Sealants
   2. Section 08 11 00 - Hollow Metal Doors and Frames.
   3. Section 08 14 23 - Plastic-laminate-faced Wood Doors.
   4. Section 08 41 13 - Aluminum-framed Entrances and Storefronts.

1.2 PERFORMANCE REQUIREMENTS

A. Glass and glazing materials of this section shall provide continuity of building enclosure vapor and air barrier
   1. In conjunction with materials described in SECTION 07 92 00 - JOINT SEALANTS.
   2. Maintain continuous air and vapor barrier throughout glazed assembly from glass pane to heel bead of glazing sealant.

B. Design and size glass to withstand dead loads and live loads caused by pressure and suction of wind as calculated in accordance with building code, and measured in accordance with ASTM E 330.

C. Limit glass deflection to l/200 or flexure limit of glass with full recovery of glazing materials, whichever is less.

D. Windborne-debris-impact Resistance: Provide exterior glazing that passes basic-protection testing requirements in ASTM E 1996 for Wind Zone 1 when tested according to ASTM E 1886. Test specimens shall be no smaller in width and length than glazing indicated for use on the Project and shall be installed in same manner as glazing indicated for use on the Project.
   1. Large-Missile Test: For glazing located within 30 feet of grade.
   2. Small-Missile Test: For glazing located more than 30 feet above grade.

1.3 SUBMITTALS

A. Submit product data and samples under provisions of SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

B. Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.

C. Provide data on glazing sealant. Identify colors available.

D. Samples:
   1. Submit 2 samples of each type of glass (except clear glass), 12" x 12" in size, illustrating glass unit, coloration, design.
   2. Submit 4" long bead of glazing sealant in color selected.

1.4 QUALITY ASSURANCE

A. Glazing Standards: Comply with recommendations of Glass Association of North America (GANA) "Glazing Manual."

B. Source Quality Control: Glass shall be identified by the manufacturer's labels of grade and quality. Temporary labels shall not be removed until final cleaning. Permanent labels on tempered glass shall not be removed.
   1. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

2. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.

C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252.

D. Fire-Rated Window Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 257.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect glass and glazing materials during delivery, storage, and handling as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, or temperature changes, and other causes.

1.6 WARRANTY

A. Provide written 10-year warranty signed by manufacturer of insulating glass agreeing to furnish replacements for those insulating glass units developing manufacturing defects. Manufacturing defects are defined as failure of hermetic seal of air space (beyond that due to glass breakage) as evidenced by intrusion of dirt or moisture, internal condensation or fogging, and other visual indications of seal failure or performance.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Basis of Design products are Vitro Architectural Glass (PPG): Provide glass as manufactured by one of the following:
AGC Glass North America
Guardian Industries Corp.
Technical Glass Products
Oldcastle Building Envelope
Pilkington North America, Inc. (NSG Group)
Vitro Architectural Glass (formerly PPG Glass)

2.2 GLASS

A. (TT1) Tinted, Tempered, Insulating Low-E Glass: Manufacturer's standard 1" thick pre-assembled units consisting of 2 sheets of tempered glass, ASTM C 1048, enclosing a hermetically sealed dehydrated air space; with spacers, sealant, and without protective edge banding. Metal spacers shall be finished to match finish of aluminum storefronts.
1. Thickness of Each Pane: 1/4".
2. Air Space Thickness: 1/2".
3. Interior Pane: Type I, Class 1 (Clear), Quality q3 (Glazing select), Kind FT - Fully Tempered, Condition A - Uncoated surfaces.
4. Exterior Pane: Type I, Class 2 - Vitro Solargray tint (Tinted Heat-Absorbing and Light-Reducing), Quality q3 (Glazing select), Kind FT - Fully Tempered, Condition C - Other coated surfaces with low-emissivity Vitro Solarban 60 coating on second surface
5. Performance Characteristics: Low-E insulating glass shall comply with the following:
a. Solar Heat Gain Coefficient: 0.25
b. Winter U-value: 0.29.
c. Visible Transmittance: 35%

B. (TI1) Tinted, Impact-Resistant, Insulated Windborne-Debris Glass: Provide Laminated Glass, two panes of glass, one of Class 1 (Clear) float glass and one of Class 2 (Tinted Heat-Absorbing and Light-Reducing) (ASTM C 1036) of equal thickness, laminated together with not less than 0.09" thick polyvinyl butyl plastic interlayer to provide an overall thickness of 1-5/16". Fabricate laminated glass using laminator's standard heat-plus-pressure process to produce glass free from foreign substances and air/glass pockets.
   1. 1-5/16" thick Laminated Glass at Exterior Storefront:
      a. Interior Pane Laminated Sandwich:
         1) Exterior Lite: Type I, Class 1 (Clear), Quality q3 (Glazing select), Kind FT - Fully Tempered, Condition A - Uncoated surfaces, 1/4" thick.
         2) Laminated inner layer of 0.09" thick clear polyvinyl butyl plastic manufactured by Solutia Saflex; Eastman Chemical Co. or Trosifol; Kuraray.
         3) Interior Lite: Type I, Class 1 (Clear), Quality q3 (Glazing select), Kind FT - Fully Tempered, Condition A - Uncoated surfaces, 1/4" thick.
      b. 1/2" air space.
      c. Exterior Pane: Type I, Class 2 - Vitro Solargray tint, (Tinted Heat-Absorbing and Light-Reducing), Quality q3 (Glazing select), Kind FT - Fully Tempered at entrances, Condition C - Other coated surfaces, 1/4" thick with low-emissivity Vitro Solarban 60 coating on the 2nd Surface.
      d. Performance Characteristics: Low-E insulating glass shall comply with the following:
         1) SHGC: 0.25
         2) Visible Transmittance: 35%
         3) Winter U-value: 0.29.

C. (CT4) Clear, Tempered Glass: ASTM C 1048, Type I, Class 1 (Clear), Quality q3 (Glazing select). Kind FT - Fully Tempered, Condition A - Uncoated surfaces, 1/4" thickness.

D. Clear Glass Mirrors, Unframed: ASTM C 1503, Mirror Select.
   1. Nominal thickness 1/4". Backs shall have two coats of silver hermetically sealed, complying with GS-27, with an impervious protective coating of copper deposited over silver by electrolysis, and finished with a special composition hard, mirror-backing paint. Mirrors shall bear manufacturer's labels. Mirrors shall have ground and polished edges.
   2. Mirror Back Safety Tape: ANSI Z97.1.
   3. J-Molds: Provide stainless steel continuous "J" clip at bottom and “J” clips around perimeter of mirror to anchor mirror to wall (Approx. Size: 3/8" x 3/8").

2.3 GLAZING MATERIALS

A. Glazing Compound: Comply with ASTM C 1311 or FS TT-S-00230, one-part, non-sag acrylic polymeric sealant. Product/manufacturer; one of the following:
   Acryl-R Acrylic Sealant; Schnee-Moorehead, Inc.
   Mono 555; Tremco

B. Channel Glazing Strips; Hollow Metal Doors and Frames: Provide black vinyl channel glazing strips, Glazing Vinyl for 990 Sliders Part #6062-01 as manufactured by Kawneer.

C. Accessories: Setting blocks, tape, vinyl gaskets and spacer strips as required for a complete installation.

D. Mirror Mastic: Combination of asphaltic bitumens, fibers and mineral spirits. Product/manufacturer; one of the following:
   Gunther Pro®; Gunther Mirror Mastics
   7HR4 Mirror Tac®; Pecora Corp.
   Mirro-Mastic; Palmer Products Corporation.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine areas to receive glass for conditions that will adversely affect the execution and quality of work. Do not start this work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Setting Glass: Glazing shall be done at the site by skilled glaziers in conformance with the general conditions governing glazing in the GANA Glazing Manual.

1. Glazing of aluminum windows and storefront shall be done in conformance with the methods recommended by the manufacturer of the aluminum items. Beads or stops furnished with the items to be glazed shall be used to secure the glass in place.
2. For interior hollow metal door and frame glazing, install channel glazing strips and place glass within glazing strips. Install the removable stop and position the channel glazing strip to seal completely the void around the glass.
3. Verify glass sizes for required edge clearances by measuring the openings. Cut each piece accurately and fit to its particular position. Center glass in the opening vertically and horizontally. Use edge blocks in vertical jambs to prevent lateral "walking" of the glass.
4. Glass shall have clean cut edges. Do not seam, nip, stone or strike edges, or scarf corners, and do not install glass with flared edges at the bottom. Do not bump, drag, or rest the edge of a glass light against metal or other hard objects.
5. Set tempered glass with tong marks completely concealed or in as inconspicuous a location as possible.

B. Glass Mirrors:
1. Apply one additional coat of moisture-resistant paint, type recommended by manufacturer, to back of mirror.
2. Allow to dry.
3. Apply safety tape to back of mirror in strips leaving 25% of surface free for application of mastic.
4. Apply mirror mastic to cover not more than 25% of back mirror, 1/8" to 1/2" thickness of setting bed.
5. Set mirror on concealed shelf angle.
6. Press mirror against substrate to bond.
7. Leave open ventilation space, 1/8" minimum between mirror and substrate.
8. Do not seal off ventilation space at edge of mirror.

3.3 CLEANING

A. Upon completion of the building, clean glass on both sides and remove labels, paint spots, putty and other defacement. Replace damaged glass with new.

END OF SECTION

SECTION 09 65 19.33

RUBBER TILE FLOORING



10/17/2025

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Rubber tile flooring.

B. Related Sections:
1. Section 03 30 00 - Cast-In-Place Concrete.
2. Section 09 65 00 - Resilient Flooring; rubber base.

1.2 SUBMITTALS

A. General: Submit in accordance with SECTION 01 33 23 – SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Product Data: Submit copies of each of the following:
1. Manufacturer’s standard product data.
2. Manufacturer's requirements for correct preparation, finishing and testing of substrate base material to receive pre-manufactured rubber sport surface.
3. Adhesive product data sheets and manufacturer's certificates indicating approval for the proposed application.
4. Manufacturer's standard warranty.
5. Manufacturer's installation and maintenance instructions.

C. Concrete Slab Testing
1. Alkalinity and Adhesion Testing:
a. Submit result of pH tests.
b. Submit written documentation of acceptable pH levels of selected flooring manufacturer.
c. Submit letter from flooring manufacturer stating that floor alkalinity is acceptable and manufacturer will issue warranty.
d. Proceed with installation only after substrates pass testing.
2. Relative Humidity Probe Tests:
a. Submit results for in situ relative humidity probe tests.
b. Submit date and time measurements were made.
c. Submit locations and depth of probe holes.
d. Submit temperature and relative humidity in each probe hole.
e. Submit ambient air temperature.
f. Acceptable relative humidity is typically 75% or less. Submit written documentation of tolerances for selected flooring manufacturer. Proceed with installation only after substrates have relative humidity percentage stated as acceptable by manufacturer.
g. Submit letter from flooring manufacturer stating that relative humidity is acceptable and manufacturer will issue warranty.
3. Anhydrous Calcium Chloride Testing
a. Submit time and date of placement and retrieval.
b. Submit ambient air temperature and humidity during test duration
c. Submit manufacturer’s instructions and relative technical data.
d. Acceptable moisture emission rates are typically 3 lbs. per 1000 sq. ft. or less, in 24 hours. Submit written documentation of tolerances for selected flooring manufacturer. Proceed with installation only after substrates have maximum moisture-vapor-emission rate as stated by manufacturer.
e. Submit letter from flooring manufacturer stating that floor moisture emission rates are acceptable and manufacturer will issue warranty.

D. Shop Drawings: Include appropriate room bordering or feature strip details.

E. Samples: Provide samples of the actual surface, feature and reducer strips, in standard colors. Architect reserves the right to reject any brand of flooring based on color at no extra cost to the Owner.

1.3 QUALITY ASSURANCE

A. Acceptable manufacturer: The manufacturer to be a firm experienced in the manufacturing of prefabricated rubber surface.

B. Acceptable Installer:
   1. Installer must submit a list of similar projects completed within the past three years.
   2. Installer to be recognized and approved by the rubber flooring manufacturer.

1.4 DELIVERY AND STORAGE

A. Deliver and store material in the original containers with seals unbroken and labels intact, in a maintained environment of a minimum of 55° F. and under 55% relative humidity. Protect work until accepted by Owner.

1.5 PROJECT CONDITIONS

A. Temperatures: A temperature of at least 70° F. shall be maintained in the surrounding area and on the surface receiving the floor covering for 24 hours prior to beginning work, during installation, and for 48 hours after installation is completed.

1.6 WARRANTY

A. Submit manufacturer's standard 1-year warranty against defects in material and workmanship.

B. Submit manufacturer's standard 5-year commercial wear warranty.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Provide extra stock materials from original dye lots, for use in facility operations and maintenance (approximately 2% of the total floor surface for each color, surface texture and format of Manufactured Product).

PART 2 - PRODUCTS

2.1 MATERIALS

A. Basis of Design Rubber Tile Flooring: “Droptile”, 24” x 24” x 1” thick, resilient rubber flooring as manufactured by Tarkett or equivalent. Resilient rubber flooring shall have the following minimum requirements. It shall be:
   1. calendered and vulcanized with a base of natural and synthetic rubbers, stabilizing agents and pigmentation.
   2. phthalate-free, halogen-free, heavy metal-free, formaldehyde-free, isocyanate-free and BPA-free.
   3. colors are of a solid background with random colored flecks dispersed throughout material.
   4. resilient, homogeneous, rubber tile which provides excellent resistance to abrasion, chipping, cracking and permanent indentations.
   5. Color(s) shall be as selected by Architect.
   6. Performance Characteristics:
      a. Tile Dimension: 24” x 24”
      b. Total Thickness: 1”
      c. Weight: 4.0 lbs/sq.ft.
      d. Tensile Strength: ASTM D412 200 minimum
      e. Static Load: ASTM F970 400 p.s.i (modified test)
      f. Coefficient of Friction: ASTM 2047 >.9
      g. Chemical Resistance: ASTM F925 Excellent
      h. Ambient Noise Reduction: ASTM C423 .10
      i. Impact Sound Insulation: ASTM E492 .45 minimum
      j. Thermal Conductivity: ASTM C518 Approximate .406
      k. Sound Transmission: ASTM E413 51

B. Alternative Product Option:
   1. Provide “duraTRAIN” Compression-molded, recycled rubber, virgin rubber and binding agent resilient rubber interlocking floor files as manufactured by PMX Promaxima.

2. Series: Premium 10% Color, 35% Color, 70% Color or 95% Color EPDM Skin Series Blends.
3. Size: 24.1875” x 24.1875” +/- 1/8”
4. Description: Resilient, interlocking, fitness flooring tiles.
5. Material: Compression-molded, recycled rubber, virgin rubber and binding agents.
6. Tile Locking: U-shaped male and female configuration on all 4 sides to lock tiles to
7. adjacent tiles.
8. Top Edges: Chamfered.
9. Tile Bottom: Solid pedestal design
10. Wear Layer: Blended EPDM skin.
    a. Laminated sheets of Virgin EPDM rubber. Minimum 0.118” (3 mm) thick.

C. Alternative Product Option:
   1. Provide “Aktiv Pro” recycled rubber molded tiles with a wear and weather resistant polyurethane as manufactured by Regupol America.
      a. Tile Dimension: 24” x24” and an overall thickness of 1”. F.
      b. Tile Weight: 4.0 lb/ft² (19.5 kg/m²)
      c. Tile Standard Tolerances: Width: ± 2 mm; Thickness: ± 3 mm
      d. Colors: As selected by Architect from manufacturer’s standard colors.
      e. Wear Surface Density: 65.0 lbs/cu. ft. min.
      f. Water Permeation Rate: 0.045 cm./sec.
      g. Tear Resistance: 70pli min.,(ASTM D624, Die C)
      h. Tensile Strength: (ASTM D412) >200 lb/in² min.
      i. Static Load Limit: (ASTM F970) 400 lb/in² < 0.005 in.
      j. Coefficient of Friction: > 0.9 (ASTM D2047)
      k. Chemical Resistance: (ASTM F925)
         1) 5% Acetic Acid, no change
         2) 70% Isopropyl Alcohol: no change
         3) 5% Sodium Hydroxide: no change
         4) 5% Hydrochloric Acid: no change
         5) 5% Ammonia: no change
         6) Bleach; no change
         7) 5% Phenol: no change
         8) Sulfuric Acid: no change
      l. Impact Insulation Class: (ASTM E492) >50

D. Adhesive for the application of resilient rubber flooring shall be as recommended by rubber floor manufacturer.

E. Floor filler/resurfacing material shall be as recommended by rubber floor manufacturer.

PART 3 - EXECUTION

3.1 INSPECTION

A. Carefully and completely examine area to receive rubber flooring and accessories for conditions that will adversely affect the execution and quality of work. Do not start this work until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. All other trades shall be completely finished in this area.

B. Preparation of substrate to provide a smooth, dense finish highly compacted with a tolerance of ⅛" in a 10' radius.

C. Concrete substrate to be in place a minimum of thirty days prior to the installation of the rubber flooring.

D. All inserts, penetrations and other construction items which affect the installation of the prefabricated rubber surface to be in place.

E. Testing of concrete slabs
   1. Anhydrous Calcium Chloride Testing
      a. Conduct anhydrous calcium chloride testing per ASTM F1869, modified to include testing over concrete containing lightweight aggregate.

b. Environmental requirements of area to be tested are to match that of the finished floor covering. Doors, windows, roofing, etc. must be installed and the temperature of the building controlled to a finished building atmosphere. Ensure interior building climate is 75 degrees F ± 10 degrees F and 50% Relative Humidity ± 10% for 72 hours prior to, and throughout the duration of the tests.
c. The number of test kits required is determined by the square footage of areas scheduled to receive finish flooring. A minimum of three test kits are required in the first 1,000 sq. ft. a minimum of one test kit per each additional 1,000 sq. ft. with consideration given to separation of test areas. Time of exposure is a minimum of 60 hours and a maximum of 72 hours.
d. A prepackaged calcium chloride test kit is equipped with a sealed dish of anhydrous calcium chloride, a metering dome with gasket and instructions.
    1) Clean substrate in area to be tested by removing dust solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, curing, sealing, hardening, or parting compounds, alkaline salts, excessive carbonation, or laitance, mold mildew and other foreign materials.
    2) Weigh the tape sealed dish on a gram scale with 1/10th gram gradation. Record start weight, date and time on dish's label and instruction document.
    3) Unseal dish and expose test according to preprinted test kit instructions.
    4) Allow 60 to 72 hours of exposure. Retrieve test dish re-seal and re-weigh according to instructions.
    5) Provide a diagram of the building, with calculations, documenting each test location with its results in writing.
e. Acceptable moisture emission rates are typically 3 lbs. per 1000 sq. ft. or less, in 24 hours; however, submit written tolerances for selected flooring manufacturer. Proceed with installation only after substrates have maximum moisture-vapor-emission rate as stated by manufacturer.
f. Submit letter from flooring manufacturer stating that floor moisture emission rates are acceptable and manufacturer will issue warranty.

2. In Situ Relative Humidity Probe Test:
    a. Conduct in situ relative humidity probe testing per ASTM F2170.
    b. Concrete floor slabs shall be at the service temperature and the occupied air space above the slab shall be at the service temperature service relative humidity far at least 48 hours before taking relative humidity measurements in the concrete slab.
    c. Perform 3 tests for the first 1,000 sq/ft. and a minimum of 1 test for every 1,000 sq/ft. thereafter.
    d. For slabs on-grade and below-grade choose a testing location within 3 feet of each exterior wall.
    e. Drill probe holes 40% into depth of slab for slabs drying from the top only and 20% into the slab for slabs drying from top and bottom.
    f. Remove dust from hole using vacuum cleaner and allow 72 hours to achieve moisture equilibration within hole before taking relative humidity measurements.
    g. After inserting probe allow necessary amount of time for probe to reach temperature equilibrium before measuring relative humidity.
    h. Use the relative humidity probe to measure the ambient air temperature and relative humidity above the slab in the vicinity of the hole.
    i. Proceed with installation only after substrates pass testing.
    j. Submit letter from flooring manufacturer stating that floor relative humidity percentage is acceptable and manufacturer will issue warranty.
3. Alkalinity and Adhesion Testing
    a. Conduct pH test per ASTM F710.
    b. Test for alkalinity prior to installation of flooring materials.
    c. pH levels shall not exceed the written recommendation of the flooring manufacturer and the adhesive manufacturer.
    d. A pH range of 5-9 is optimum, not to exceed 9 pH. Submit written acceptable pH levels of selected flooring manufacturer.
    e. Proceed with installation only after substrates pass testing.
    f. Submit letter from flooring manufacturer stating that floor alkalinity is acceptable and manufacturer will issue warranty.

F. Preparation of Sub-floors:
1. All oil, grease, paint, dried mortar residue and other materials shall be removed by scraping, sanding or scrubbing.
2. Surfaces shall be swept clean of dust and dirt.
3. Where detergents are used, surfaces shall be rinsed thoroughly and sufficient time allowed for complete drying.
4. New concrete sub-floors must be thoroughly cured before flooring is installed.
5. All cracks, expansion joints, rough and irregular or damaged portions of the floor shall be filled with the floor fill underlayment material.

3.3 INSTALLATION

A. Application of Adhesive:
   1. Adhesive shall be applied in strict accordance with manufacturer's directions. Adhesive shall be applied with a notched trowel and in amounts not less than those recommended on labels and published instructions. Notches in the trowel shall be: depth ⅛",open area ⅛", flat area 1/16", and care shall be taken to maintain full depth during the entire installation. An approved trowel is Gunlach model FOW.
   2. It is essential that the tile be applied promptly as the adhesive sets rapidly by chemical reaction. It is recommended that not more than one unit of adhesive be spread, then tile be laid promptly (approximately 80-90 sq. ft.).

B. Application of Flooring: Tile for each space shall be taken from several containers and distributed evenly into one group to reduce the variation in pattern. Tile shall be laid so as to ensure good contact with close, even joints in true and continuous alignment; it shall be carefully scribed to form a tight and neat joint with vertical surfaces. Tile shall be rolled immediately after installation with a 75-lb. sectional roller, or per manufacturer’s recommendation. Excessive adhesive shall be cleared from tile, while still wet, with a cloth dampened in denatured alcohol.

C. Edging Strips: Use edge strips where tile stops and the edge is exposed.

3.4 CLEANING

A. Remove foreign matter from tile flooring and base. Clean floor with cleaner in conformance with manufacturer's instructions. Replace defective or damaged material at no additional cost to the Owner.

B. Remove from the premises all debris caused by work under this Section.

3.5 PROTECTION

A. All traffic shall be prohibited for a period of 12 hours after installation, then limited traffic for an additional 12 hours.

END OF SECTION

SECTION 10 22 39

FOLDING PANEL PARTITIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Manually operated, folding panel partition.

B. Related Work:
1. Section 05 50 00 - Metal Fabrications: Steel framing to support partition track.
2. Section 06 10 00 - Rough Carpentry: Wood blocking for partition track.

1.2 SUBMITTALS

A. Shop Drawings:
1. Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
2. Submit shop drawings of partition layout. Include details of track, trolleys, and hardware. Indicate loading to be imposed in the supporting structure. Show all anchorage, accessory items, caulking, and finishes.

B. Product Data:
1. Submit data describing partition fabrication and installation, including hardware.
2. Submit finish data.
3. Submit laboratory acoustical performance test report, written by the test facility.

1.3 QUALITY ASSURANCE

A. Flame Spread Rating: Provide partitions with a Class "A" flame-spread rating when tested in accordance with ASTM E 84.

B. Provide demonstration of system as described in Part 3 below.

1.4 WARRANTY

A. Provide written warranty by manufacturer of operable partitions agreeing to repair or replace any components with manufacturing defects.
1. Warranty period: Two (2) years.

PART 2 - PRODUCTS

2.1 PARTITIONS

A. Basis of Design Type: Modernfold "Acoustic-Legacy 931" individual manually operated flat panels hinged, top supported with operable floor seals.
1. Products from the following Manufacturers equal to Basis of Design will be considered:
Kwik-Wall Company
Modernfold, Inc. (Dorma Kaba Group)

B. Sound Transmission Class (STC): STC rating shall be 50 when tested in accordance with ASTM E 90 for test in 14'-0" x 9'-0" opening.

C. Panel Construction:
1. Panels shall be 3.00" thick.
2. Panel Skin: Minimum 21 ga. roll-formed steel wrapping around the panel edge. Panel skins shall be lockformed and welded directly to the frame for unitized construction.
3. Panel Finish:
a. Vinyl wall covering as selected by Architect. Located above and below markerboards.
b. Markerboards: 4’-H markerboards on each side of the partition. Markerboard shall be located on each panel, excluding partition end panels. White enamel on steel, bonded to the face of the

panels with horizontal trim without exposed fasteners. Trim is not acceptable on vertical edges to provide uninterrupted work surface.

4. Single Pass Doors:
   a. Matching pass door same thickness and appearance as panels. ADA compliant pass door to be trimless and equipped with friction latch and flush pulls for panic operation. No threshold will be permitted. Provide manufacturer recommended hardware. Pull has selected by architect.

D. Sound Seals:
   1. Vertical: Interlocking sound seals in each panel edge.
   2. Horizontal:
      a. Top closure seals shall be continuous multi-finger vinyl.
      b. Provide automatic operable bottom seal. Seal shall automatically drop as panels are positioned.

E. Provide #17 suspension system consisting of a continuous roll formed 11 ga. steel track. Each panel shall be supported by a all-steel 4-wheel ball bearing trolley.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Partitions shall be installed by the manufacturer's authorized factory trained representative and shall achieve the specified sound rating.
   1. Secure ceiling tracks to steel framing.
   2. Erect the partitions in a substantial manner to be straight and plumb.

3.2 ADJUST AND CLEAN

A. Adjust partitions and hardware, and leave in perfect working order. Clean exposed surfaces and leave free of defects.

3.3 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance and user personnel to adjust, operate, and maintain operable panel partitions.

END OF SECTION

SECTION 21 31 13

FIRE PUMP SYSTEM

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Provide and install one packaged fire pump system, including a horizontal split case, centrifugal fire pump complete with motor, controller, and accessories as outlined.

1.2 RELATED WORK

A. Division 23, Mechanical.

1.3 STANDARDS

A. Make the installation in accordance with applicable requirements of National Fire Protection Association (NFPA) pamphlets, Factory Mutual, and any requirements of state or local authorities.

B. Furnish equipment and materials approved by NFPA and UL.

1.4 REQUIREMENTS

A. The Contractor shall provide and install a packaged fire pump system, designed in accordance with the requirements of NFPA Pamphlet #20. The system manufacturer will assume unit responsibility for the proper operation of the entire packaged system as specified herein.

B. The Fire Pump manufacturer shall have a quality management system in place and shall be ISO 9001 Certified.

1.5 SHOP DRAWINGS

A. Make complete shop drawings and working drawings of equipment furnished, including detailed drawings. Submittal data for the pumping system shall include, but is not limited to: pump curves, individual computer data sheets, system drawings, and complete description of control panel with wiring diagram, sequencing data, instrumentation, alarms, and a copy of certification of $1,000,000.00 minimum liability insurance.

B. Before the shop drawings are submitted for approval, submit drawings to the jurisdictions for approval. All approvals shall be noted on the drawings or by letter from the departments.

C. The Architect's approval of shop drawings shall not relieve the responsibility of correctly figured dimensions or any errors that may be contained in these drawings. The omission of any material shown on the contract drawings, or specified from the shop drawings, even though approved, shall not relieve the responsibility to furnish and erect them.

1.6 FACTORY TEST

A. All equipment will be factory tested in accordance with the requirements of NFPA, UL and FM. Additionally the entire packaged system will be hydrostatically tested by the system manufacturer prior to shipment.

PART 2 - PRODUCTS

2.1 DESIGN

A. Pump shall be designed to deliver ~~1500~~ **500** gpm when operating against at TDH as shown below. The pump shall also deliver not less than 150% of rated capacity at a pressure not less than 65% of rated pressure. Minimum suction pressure is 30 psig. Motor and pump speed shall not exceed 1775 rpm. Unit provide under provision NFPA-20, 1993. Unit pressure shut-off head shall not exceed 140% of rated pressure.

DESIGN POINTS	GPM	TDH	% DESIGN TDH
SHUTOFF	0	~~275~~ **185** HD	0%
DESIGN	~~1500~~ **500**	~~231~~ **148** HD	100%
150% DESIGN FLOW	~~2250~~ **750**	~~155~~ **97** HD	150%

2.2 PUMP

A. The pump shall be ~~horizontal~~ **vertical**, ~~split case~~ **inline**, class 40, cast iron, bronze fitted, centrifugal fire pump listed by Underwriters Laboratories and/or approved by Factory Mutual (UL/FM).

1. The unit shall be a Patterson ~~8"~~ **5"** suction x ~~6"~~ **3"** discharge, Model ~~8X6MI~~ **5x3VIP**
2. The unit shall be mounted on a fabricated steel base, complete with coupling, OSHA approved, coupling guard, and directly connected to the motor.
3. The pump shall be clockwise rotation as viewed from the driver end.
4. The pump discharge flange shall be rated for 125 lbs
5. The pump casting shall be smooth, free of scale, lumps, cracks, sand holes and defects of any nature which may make it unfit for the use for which it is intended.
6. The bolting of pressure-holding castings shall be such that the maximum stress on any bolt will not exceed ¼ the elastic limit of the material as computed by using the stress area and on the basis of the water pressure equivalent to the shutoff pressure effective over the area out of the center line of the bolts.
7. The pump bearings shall have an L-10 rating of not less than 5000 hours based on load ratings and fatigue life.
8. The shaft shall be sealed with a stuffing box and packing with external water-seal piping. The stuffing box glands shall exert uniform pressure on the packing.
9. Bearing housing supports, and suction and discharge flanges shall be integrally case with the lower half of the casing. Removal of the upper half of the casing must allow the rotating element to be removed without disconnecting the suction and discharge flanges. Replaceable shaft sleeves shall be furnished and are to be of bronze ASTM-A148 material. The shaft sleeves shall be held in position by the impeller key and locked in position by a separate threaded sleeve nut.
10. Water slingers of corrosion-resistant material shall be provided to seal the bearings at their inner ends.
11. The pump casing shall be hydrostatical strength-tested to a minimum of 250 psi, or not less than twice the maximum shut-off pressure.

2.3 DRIVER

A. The motor shall be125 HP, 1775 rpm, 3 phase, 60 cycle, 480 volt, horizontal open Dripproof motor with a 1.15 service factor.

2.4 FIRE PUMP CONTROLLER WITH TRANSFER SWITCH

A. The controller shall be a ~~Hubbell Model LX2100~~ **Firetrol FFT1000-AM25B**, UL/FM labeled combined manual and automatic type designed for soft start / soft stop.

1. NEMA Type 2 enclosure
2. The fire pump controller and transfer switch shall be a single factory wired unit meeting the requirements of the most recently mandated edition of NFPA 20 and shall be listed by Underwriter's Laboratories and approved by Factory Mutual Research Corporation. Both shall bear the labels of UL, ULC, CSA, FM and NYB of S and A.

B. The minimum withstand rating of the controller shall not be less than 100,000 Amps RMS Symmetrical at 480 V.

C. The controller manufacturer shall provide a five year warranty to include all parts and replacement labor covering the controller power circuit components, including isolating switch, circuit breaker, current sensing module and motor contractors.

D. The isolating disconnect switch and circuit breaker shall be mechanically interlocked so that the enclosure door cannot be opened with the handle in the ON position except by a hidden tool operated defeater mechanism.

E. The controller shall have a minimum running period timer set for 10 minutes. Terminals shall be provided to field convert the controller from automatic to manual shutdown.

F. The Controller shall have externally mounted individual visible indicators for:
1. Power available
2. Low Pressure
3. Local start
4. Remote start
5. Deluge valve open
6. Phase failure
7. Phase reversal
8. Interlock on
9. Pump running
10. Run timer on

G. The controller shall be supplied with duplicate, individual Phase Failure, Phase Reversal and Pump Operating alarm contacts.

H. The power transfer switch shall be designed for use with generator set emergency power source. The power transfer switch shall include a motor rated disconnect / isolating switch capable of interrupting the motor locked rotor current. The disconnect / isolating switch shall be mechanically interlocked so that the enclosure door cannot be opened with the handle in the ON position except by a hidden tool operated defeater mechanism.

I. The transfer switch circuitry shall be capable of sensing both the normal power source and the emergency source. The normal power source pickup shall be set to pickup at 90% nominal voltage and 95% nominal frequency. All voltage sensing, frequency sensing, and time delays shall be field adjustable. The transfer signal shall be delayed for one second, delaying the transfer and engine start signals so as to override momentary normal power outages.

J. The transfer switch shall have the following mounted on the flange of the enclosure:
1. Transfer switch normal pilot light
2. Transfer switch emergency pilot light
3. Emergency Isolating switch off pilot light
4. Test switch
5. Transfer bypass switch
6. Audible Alarm pushbutton
7. Silence Alarm pushbutton

K. The transfer switch shall be electrically operated and mechanically held, and shall be capable of being operated by a manual transfer mechanism located on the switch.

2.5 PUMP ACCESSORIES

A. ½” automatic air release valve

B. 4-1/2” suction and discharge gauges

C. ¾” Casing Relief Valve

D. 6” x 8” Concentric Discharge Increaser (125 lb)

E. 8” outside hose valve header (125 lb)

F. Six 2-1/2” hose valves with caps and chains

2.6 JOCKEY PUMP

A. The jockey pump controller shall be a ~~Patterson~~ **Ebara** Model ~~FPJP~~ **EVI-7F0075T3S** complete with fusible disconnect, Hand-Off-Automatic selector switch and a pressure switch. The controller shall be rated for 2 HP, 3 Phase, 60 Cycle, 460 Volt operation.

B. The minimum enclosure rating shall be NEMA Type 2, driptight.

PART 3 - EXECUTION

3.1 FACTORY FABRICATION

A. All of the above equipment will be mounted on an open structural steel I-beam skid. All piping, pressure sensing lines, pump by-pass, shut-off valves, stuffing box and casing relief valve drains will be firmly anchored to the steel base by means of structural steel supports. All electrical wiring between controllers and drivers will be completed and tested at the factory. The entire package will require one power connection by the electrical contractor.

3.2 INSTALLATION

A. Installation shall be in accordance with manufacturer's instructions.

3.3 FIELD ACCEPTANCE AND START-UP SERVICE

A. The service of a factory-trained representative shall be made available on the job site to check installation, field acceptance testing, start-up and instruct operating personnel.

B. In order to ensure the fire pump unit is properly coordinated and will function in accordance with the intent of these specifications, all the equipment required to comprise the fire pump unit will be supplied by the fire pump manufacturer in whom shall be vested unit responsibility for the proper function of the complete fire pump unit including the fire pump, motor or engine, base plate, control equipment and other required accessories.

C. To verify compliance with this requirement, the fire pump manufacturer will be required to submit a notarized Certificate of Compliance certifying that all components of the fire pump unit were in fact supplied by the fire pump manufacturer and acknowledging its responsibility for the proper function of the unit.

3.4 GUARANTEE

A. The packaged fire pumping system shall be guaranteed in writing, by the manufacturer for a period of one year from date of shipment against defect in design, material or construction.

END OF SECTION

SECTION 26 32 13

NATURAL GAS STANDBY GENERATOR SETS and TRANSFER SWITCH

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Conditions of the Contract and applicable requirements of Division 1 and Section 26 05 00 govern this Section.

1.2 WORK INCLUDED

A. Furnish and install standby engine-driven generator system, complete with wiring and controls as shown on the drawings and as specified herein.

B. The standby emergency system shall consist of an engine-driven generator set designed and sized for project site ambient conditions and project site altitude, complete for outdoor installation where specified or required outdoors, automatic transfer switches and associated fuel system.

1.3 QUALITY ASSURANCE

A. Acceptable Manufacturers:
   1. Engine-Driven Generator Sets:
      a. Cummins
      b. Caterpillar
      c. Rehlko
   2. Automatic Transfer Switch.
      a. Standby electric generating system manufacturer (as an integral part of a complete system).

B. NEC and NFPA Compliance: Comply with applicable portions of the NEC (NFPA 70) including, but not limited to, emergency and standby power generation systems (NFPA 99 & 110), and with NFPA 37 Installation and Use of Stationary Combustion Engines and Gas Turbines.

C. IEEE Compliance: Comply with applicable Institute of Electrical and Electronics Engineers, Inc. (IEEE) standards pertaining to generator construction.

D. EPA Compliance: Comply with all EPA Standards for permanently installed natural gas emergency generators.

E. Testing: The generator set shall receive the manufacturer's standard factory load testing.

F. Supplier: All equipment provided shall be supplied by an authorized distributor of the manufacturer who has been continuously engaged in the distribution of industrial grade Power System products for a minimum of 15 years. The supplier shall provide initial start-up services, conduct field acceptance testing, and warranty service. The supplier is to be authorized to perform warranty service on all products provided. Within 50 miles of the job site, the supplier shall maintain; a minimum of 6 factory-trained and qualified field technicians; a proper supply of spare parts for the supplied equipment; a shop with overhaul capabilities; and be able to provide 24 hour, 7 day per week, 365 day per year field service capability.

1.4 SUBMITTALS

A. Submit manufacturer’s certified computer-generated performance and capacity data in accordance with specification requirements. Indicate and include all ambient and altitude de-ratings and calculations.

B. Submittal drawings and information on the transfer switches including installation drawings, wiring diagrams, dimensions, weights, etc. shall be provided. Full descriptive information on accessory items shall be furnished.

C. Submit manufacturers' "Installation, Start-Up and Service" instructions, recommended conductors, overcurrent protection, and electrical interlocks.

D. Submit recommended clearance dimensions.

E. Submit sequence of operation in narrative form.

F. . Instruction Data and Drawings: Commercial type operating instructions shall be provided consisting of operating and maintenance manuals, parts books, dimensional drawings and wiring diagrams.

1.5 WARRANTY

A. Provide five-year parts and labor warranty from date of substantial completion for generator set(s) and transfer switch(es).

PART 2 - PRODUCTS

2.1 ENGINE-GENERATOR SETS

A. The engine-generator set shall be furnished as a complete working system. The model provided shall be a standard model that is quality assurance tested and prototype tested, not one of a kind without supporting literature.

B. Engine shall be liquid cooled, reciprocating engine, 12V DC electric start, natural gas fueled, electronic isochronous governed with manual speed adjustment plus/minus 5%, with belt-driven battery charging alternator.

C. The set shall provide the following performance:
1. Rated power for the duration of any utility power outage, in ambient conditions to 500-feet altitude and an outside air ambient temperature of 10 degrees F to 110 degrees F. Liquid coolant system ratings for natural gas sets through 140KW shall be rated at 122 degrees F ambient.
2. Start and accept rated load within 10 seconds of utility power outage.
3. Voltage regulation of plus/minus 2% no load to full load with random voltage variation, at any constant load, less than plus/minus 1%.
4. Isochronous frequency regulation, less than plus/minus 0.5% at any steady state load from no load to full load.

D. Engine Coupling: Engine shall be directly connected to the generator through a suitable flexible coupling.

E. Generator:
1. The generator shall be a standard make, 4-pole, revolving field, single bearing, synchronous, brushless type with the following characteristics:
a. Capacity as shown on the drawings and shall operate at 1800 rpm.
b. Dripproof, self-ventilating, permanently aligned and complete with rotating brushless exciter and shall be of ball bearing construction and connected to the engine with flexible disc coupling.
c. Conform to the latest applicable IEEE and NEMA standards.
d. Provided with generator overload protection or generator manufacturer's overload protective circuitry.
e. Output main circuit breaker(s) with adjustable LIS trip for cable protection shall be provided when shown on drawings. Circuit breaker manufacturer shall be the same as switchgear manufacturers specified and submitted to be used on this project.
f. Voltage Regulator: Include a full wave rectified automatic digital voltage regulation system matched and prototype tested by the engine manufacturer with the governing system provided. It shall be immune from mis-operation due to load-induced voltage waveform distortion and provide a pulse width modulated output to the alternator exciter. The voltage regulation system shall be equipped with three-phase RMS sensing and shall control buildup of AC generator voltage

to provide a linear rise and limit overshoot. The system shall include a torque-matching characteristic, which shall reduce output voltage in proportion to frequency below an adjustable frequency threshold. Torque matching characteristic shall be adjustable for roll-off frequency and rate, and be capable of being curve-matched to the engine torque curve with adjustments in the field.

g. Alternator: The generator shall be capable of withstanding a three phase load of 300% rated current for 10 seconds, and sustaining 150% of continuous load current for 2 minutes with field set for normal rated load excitation.

2. Provide the generator with the following:
   a. Minimum 130°C rise stand-by rating
   b. NEMA Class F or H insulation as defined by NEMA MG1.65
   c. Temperature rise by resistance and embedded detector measurements at rated load within NEMA MG1-22.40 definition.
   d. Pre-lubricated, maintenance free ball bearing, lubricated for life.
   e. Direct drive centrifugal blower cooling.
   f. RFI filters on the exciter to eliminate radio frequency interference on electronic equipment.
   g. Thermostatically controlled block strip heater mounted for condensation control.

F. Sub-Base: The engine power plant shall be mounted on an I beam, box type sub-base of fabricated steel construction. The assembly shall be installed on a vibration-absorbing base on a concrete pad as shown on the drawings.

G. Automatic Starting Sequence of Events:
1. Upon drop in normal source voltage to 65 to 70% of rated voltage, or upon failure of the normal source of electrical supply, the engine shall be automatically cranked and brought up to the full operating speed.
2. The cranking motor circuit shall be instantly broken when the engine starts.
3. Within 10 seconds the generator shall be brought up to operating speed; the generator voltage shall operate the automatic transfer switch, disconnecting the load from the normal source of supply and connecting the emergency power to the load.
4. Upon restoration of the normal source voltage to 92 to 95% of rated voltage or restoration of normal source of supply, the sequence shall be reversed, restoring the transfer switch to the automatic normal operating position, disconnecting the load from the emergency generator and reconnecting the load to the normal source of supply. The emergency generator set will continue to operate for a period of from 1 to 5 minutes after the restoration of the normal source of supply. Should the engine fail to start upon the first crank, there shall be two additional cranking attempts made with a 15 second rest between cranks, after which the cranking cycle shall cease and an alarm shall sound to indicate malfunctioning of the system.
5. The controls shall automatically stop the engine in the event the cooling water temperature becomes too high, if the coolant level becomes too low, if the oil pressure drops below a pre-determined pressure, or if the engine overspeeds. Upon the failure of the engine for any of the above reasons, an indicating lamp will operate indicating the condition under which the engine was shut down. Also, the alarm signal shall be energized.

H. Engine Control Panel & Accessories:
1. Provide a comprehensive monitoring and control system integral to the Generator Set control to guard the electrical integrity of the alternator and power system. Provide single and 3-phase fault current regulation, so that downstream protective devices have the maximum current available to quickly clear fault conditions, without subjecting the alternator to potentially catastrophic failure conditions. Include provisions to either prevent over voltage due to single phase faults, or to shut down the generator set if line to neutral voltage on any phase exceeds 115% for more than 0.5 seconds. Acceptable methods are a fully rated (100%) 600 volt Circuit Breaker, mounted in the generator enclosure, Schneider Electric - Square D Programmable Micrologic of size as indicated on drawings with handheld programmer or inherent protection provided by microprocessor-based GenSet AmpSentry protection. Submittals shall demonstrate that the protective device provides proper protection for the alternator by a comparison of the trip characteristic of the breaker with the thermal damage characteristic of the alternator. Field circuit breakers shall not be acceptable for generator overcurrent protection. The control system shall actively control

the fuel rate and excitation as appropriate to the state of the generator set. Fuel rate shall be regulated as a function of starting, accelerating to start disconnect speed, accelerating to rated speed. The governing system shall include a programmable warm up at idle and cool-down at idle function. While operating in idle state, the control system shall disable the alternator excitation system. An electronic governor system shall provide automatic isochronous frequency regulation. The governing system dynamic capabilities shall be controlled as a function of engine coolant temperature to provide fast, stable operation at varying engine operating temperature conditions. The Control Panel shall include, but is not be limited to, the following instruments and protective devices:

a. AC Ammeter.
b. Phase Selector Switch.
c. Current Transformers.
d. AC Voltmeter.
e. Automatic Solid State Voltage Regulator with immunity to severe induced waveshape distortion from nonlinear leads.
f. Rheostat for Adjusting voltage ± 5% of Rated Voltage.
g. Engine Malfunction Warning Lights/Audible Alarm:
    1) Anticipating High Engine Temperature.
    2) Anticipatory Low Oil Pressure.
    3) Low Fuel.
    4) Control Switch not in Automatic Position.
    5) Low Water Temperature.
    6) Low Oil Pressure.
    7) High Water Temperature.
    8) Engine Overcrank.
    9) Engine Overspeed.
h. Frequency Meter.
i. Non-resettable Elapsed Time Meter with a 9,999.9 Hour Maximum Indication.
j. Coolant Temperature Gauge.
k. Oil Pressure Gauge.
l. Provisions for Remote Emergency Shutdown.
m. Combination alarm shutdown system with manual reset and indicating lights for high engine temperature, low oil pressure, engine overspeed, and engine failed to start. Include an additional set of contacts for remote alarms.
n. Manual run/off/automatic selector switch for control of engine with flashing red light, and shall allow manual starting of plant without assuming load.

2. Provide low coolant level shutdown, which shall activate high engine temperature lamp and shutdown.
3. Solid-state cranking cycle device preset at 15 second cranking cycle and 15 second rest cycle followed by a 15 second cranking cycle. If engine fails to start after 3 crank cycles and 2 rest cycles, an overcranking alarm shall sound and cranking cycle shall stop. Provide adjustments in accordance with manufacturers recommendations, but cumulative crank-rest timing shall not be less than 75 seconds.
4. In the event of engine failure, the panel shall close alarm circuit, indicate the fault on the appropriate lamp and shut down the engine. The panel shall include a manual reset switch so that the panel can be reset immediately after a fault condition. Reset devices that require a waiting period are not acceptable.

I. Options and accessories shall include the following:
1. Housing: The complete engine generator set shall be enclosed in a free-standing weather protective, aluminum (0.063-inch) panel construction housing with lockable, removable hinged door panels, hinged instrument panel door and panel light. Housing shall be wind rated to a minimum150 mph.
    a. All parts shall be adequately protected against oxidation and corrosion and finish painted with durable machinery enamel, minimum of 3 mils applied in a maximum of 1-1/2 mils per application.
    b. Include within the enclosure a switched 12 or 24-Volt LED luminaire on each side of the engine and a GFCI receptacle.
    c. The enclosure must maintain the engine and generator at 40°F or be equipped with space heaters to maintain starting batteries between 50°F and 90°F.
2. 12V or 24-volt battery starting with maintenance free lead acid batteries with dual rate

solid state automatic battery charger, with equalize timer, low and high battery voltage indicators and alarm terminals, charger malfunction indicator and alarm. Batteries shall be capable of providing two 45 second continuous cranking cycles. Provide battery racks, and charger shall be protected from any other charging source.

3. Muffler, critical silencing, with condensation drain; stainless steel flexible exhaust connector. Silencer shall mount horizontally on structural support inside of housing with 90° elbow termination with rain cap.
4. Premium exhaust rain cap, cast aluminum, stainless steel hardware, brass bushing hinge.
5. Gas line accessories as required for the set to include but not limited to gas line strainer, 12" braided metallic flexible fuel line, battery power operated gas line shut-off solenoid valve, pressure reducing regulator fuel pressure gauge.
   a. Contractor shall provide natural gas fuel piping for the emergency generator set. Contractor shall install natural gas line fittings obtained from electrical contractor (as supplied with the engine generator). Plumbing line work for natural gas for the engine generator shall be with as few elbows and bends as possible (as near a straight line run from the gas supply tee-off as possible).
6. Coolant heater, 120VAC, 1 phase, 1000-2500 watts.
7. Unit mounted emergency shut-off mushroom type pushbutton switch.

J. Testing: The unit shall be given a complete shop test before shipment. It shall be installed on the job under supervision of the manufacturer's representative and shall receive start-up / commissioning service from that representative.
1. The unit shall be started cold and run for a one-hour test with building load connected. Provide additional load bank as required to achieve 100 percent loading.
2. Retransfer the load after test.
3. After this test, the set shall cool for five minutes, then must start and carry full building load for four hours.
4. Demonstrate the cranking cycle and all engine safety devices. The Owner’s authorized representative shall be instructed in the operation and maintenance of the unit.

K. Instruction Data and Drawings: Commercial type operating instructions shall be provided consisting of operating and maintenance manuals, parts books, dimensional drawings and wiring diagrams. Three copies of dimensional drawings and wiring diagrams shall be provided as specified.
1. Operating Instructions: Provide and install in a suitable enclosure operating instructions for the engine generator set.
2. Contractor shall fill the radiator with a combination of water and ethylene-glycol to protect the radiator to -20°F after completion of the test.

2.2 AUTOMATIC TRANSFER SWITCHES

A. Rating and Construction:
1. Refer to the project drawings for specifications on the sizes and types of transfer switch equipment, withstand and closing ratings, voltage and ampere ratings, enclosures and accessories. All transfer switches shall have switched neutrals and shall be electrically operated and mechanically held.
2. Automatic transfer switches shall be included in a factory assembly with bypass-isolation switch equipment for the emergency life safety branch, two-source type for bypassing to normal or emergency. Bypass isolation not required for equipment branch.
3. All transfer switches and accessories shall be UL listed and labeled, tested per UL Standard 1008, and CSA Approved, and comply with NEMA ICS 2-447. When protected by molded case breaker withstand and closing ratings shall not be less than the following RMS symmetrical amps at 600 VAC:

Switch Size in Amps	WCR @ 480 Volts
Up to 260	30,000
300 to 1000	65,000
1200	85,000
1600 and larger	100,000

4. Provide one of the following standard products:
   a. Onan OTPC Series as required
   b. Standby Generator System Manufacturer, provided as a complete system
   c. ASCO 300 Series

d. Russelectric RMT/RMTD Series
e. Zenith ZTSD Series

5. Electrical operation shall be accomplished by a momentarily energized single solenoid operating mechanism which receives power from the source to which the load is being transferred. Fuse or thermal protection of the main operator is prohibited. The operating transfer time shall be 1/6 of a second or less. Mechanical locking in each position shall be accomplished without the aid of permanent magnets, latching solenoid, or motor operators.
6. Operation shall be inherently double-throw whereby all contacts move simultaneously and with no programmed delay in a neutral position. Electrical spacing shall be equal to or exceed those listed in table 15.1 of UL 1008. Only those main contact structures specifically manufactured for transfer switch service shall be acceptable. An overload or short circuit shall not cause the switch to go to a neutral position.
7. Inspection of all contacts (movable and stationary) shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors. A manual operating handle shall be provided for maintenance purposes. The maintenance handle shall permit the operator to stop the contacts at any point throughout the entire travel to properly inspect and service the contacts when required.
8. All switches for systems with switched neutrals shall have fully rated neutral transfer contacts that momentarily interconnect the neutrals of the sources and load for 100 milliseconds maximum, during the transfer/retransfer operation. The neutrals shall remain so interconnected until the line contacts close on the alternate source. Line and neutral contacts shall be driven by a single main operator.

B. Controls and Accessories:

1. Controls shall provide for the automatic starting sequence of the generator set.
2. Automatic controls shall signal the engine-generator set to start upon signal from normal source sensors. Solid state time delay start, adjustable from 0 to 5 seconds (factory set at 2 seconds) shall avoid nuisance start-ups. Battery voltage starting contacts shall be gold, dry type contacts factory wired to a field wiring terminal block.
3. The switch shall transfer when the emergency source reaches the set point voltage and frequency. Provide a solid-state time delay on transfer, adjustable from 0 to 120 seconds.
4. The switch shall retransfer the load to the normal source after a time delay retransfer, adjustable from 0 to 30 minutes. Retransfer time delay shall be immediately bypassed if the emergency power source fails.
5. Control shall be solid state and designed for a high level of immunity to power line surges and transients, demonstrated by test to IEEE Standard 587-1980. The control shall have optically isolated logic inputs, high isolation transformers for AC inputs, and relays on all outputs. Control shall be quick disconnect for ease of service.
6. Automatic transfer switches shall have inherent phase balance protection logic to detect a ‘single phasing’ Solid state undervoltage sensors shall simultaneously monitor all phases of both sources. Pick-up and dropout settings shall be adjustable. Voltage sensors shall allow for adjustment to sense partial loss of voltage on any phase. Voltage sensors shall have field calibration of actual supply voltage to nominal system voltage. The transfer switch controller shall be equipped with a fault output terminal interconnected to a 24Vdc shunt trip, integral to the transfer switch and with built-in time delay, that functions to disconnect the utility source from the load should the standby emergency source fail to start.
7. For transfer switches serving non-disconnected motor loads, equip with a field adjustable time delay during switching in both directions, during which time the load is isolated from both power sources, to allow load residual voltage to decay before closure to the opposite source. The delay feature shall have an adjustable range covering 0 to 7.5 seconds. Transfer switches serving life safety equipment shall have this time delay set at 0 at startup/commissioning.
8. Controls shall signal the engine-generator set to stop after a time delay, adjustable from 0 to 10 minutes, beginning on return to the normal source.
9. Power for transfer operation shall be from the source to which the load is being transferred.
10. The control shall include latching diagnostic indicators to pinpoint the last successful step in the sequence of control functions, and to indicate the present status of the control functions in real time.
11. The control shall include provisions for remote transfer inhibit and area protection.

12. Provide front panel devices mounted on cabinet front consisting of:
    a. A key operated selector switch to provide the following positions and functions:
        1) Test - Simulates normal power loss to control for testing of generator set. Refer to Part 3 for programming requirements.
        2) Normal - Normal operating position.
        3) Retransfer - Momentary position to override retransfer time delay and cause immediate return to normal source, if available.
13. Exerciser Clock: Provide solid state exerciser clock to set the day, time, and duration of generator set exercise/test period. Provide a with/without load selector switch for the exercise period. Refer to Part 3 for programming requirements.
14. Provide Phase Sequence Monitor/Balance Module to protect against inadvertent phase rotation hookup and monitor for voltage phase imbalance between phases.
15. Each transfer switch shall be provided with a control panel to allow the operator to view the status and control operation of the transfer switch. The control panel shall be a sealed membrane panel rated NEMA 3R/IP53 or better (regardless of enclosure rating) that is permanently labeled for switch and control functions. The control panel shall communicate with the engine generator, including display of all engine and alternator data, and other transfer switch data in the power system. The control panel shall allow starting and stopping of the generator set via the transfer switch control panel in both test and emergency modes.

16. Where elevator loads or load disconnect of motor controls are shown on the plans, provide in switches serving elevators or motors the following:
    a. Signal module to delay the transfer and retransfer of the switch for up to 50 seconds to provide a pre-transfer warning or load disconnect signal contact. Provide signals for the following conditions:
    -- source 1 available
    -- source 2 available
    -- test/exercise
    -- backup source available
    Contacts for these functions are to be Form C type, rated for 120 VAC or 30 VDC at 4 amps.
17. Provide a load shed relay, to move the transfer switch from the emergency position to a neutral position, on receipt of a signal from a remote device.

2.3 REMOTE ANNUNCIATION PANEL

A. Locate next to ATS. Provide flush mounted with stainless steel plate containing the following:
    1. Trouble sonnet horn with silence switch.
    2. Illuminated annunciators with nameplates in accordance with the following table:

Lamp Legend	Generator Set Condition Indicated	Light	Audible Alarm
High Battery Voltage	Battery charger too high	Red	No
Low Battery Voltage	Battery voltage too low	Red	No
Normal Battery Voltage	Battery voltage ok	Green	No
Generator Running	Generator has output voltage	Green	No
Normal Utility Power	Utility power supplying the load	Green	No
EPS Supplying Load	Genset supplying the load	Green	No
Pre-Low Oil Pressure	Oil pressure approaching low limit	Yellow	Yes
Low Oil Pressure	Engine has shut down due to low oil pressure	Red	Yes
Pre-High Coolant Temp.	Temperature of coolant approaching high limit	Yellow	Yes
High Coolant Temp.	Genset has shut down due to high coolant temp.	Red	Yes
Low Engine Temp.	Engine heater has malfunctioned	Red	Yes
Overspeed	Engine has shut down due to overspeed	Red	Yes
Overcrank	Engine failed to start	Red	Yes
Not In Auto	Engine control switch not in AUTO	Flashing	Yes

Lamp Legend	Generator Set Condition Indicated	Light	Audible Alarm
	position	Red	
Battery Charger Malfunction	Charger is signaling a failure	Red	Yes
Low Fuel	Fuel level below preset minimum	Red	Yes
Fault	Customer preselected condition	Red	Yes

B. Name plates shall be laminated black with white letters engraved. Letter size shall be a minimum of 3/8” high.

C. Illuminated annunciators shall be 1 inch minimum.

2.5 ELECTRICAL AND MECHANICAL PERFORMANCE

A. The switch must comply with UL 1008 and NEMA Standard Publication ICS 2-447. In addition, the switch must meet or exceed the following requirements and if so requested, be verified by certified laboratory test report.
1. Temperature Rise: Measurements shall be made after the overload and the endurance tests.
2. Withstand: UL listed to withstand the magnitude of fault current available at the switch terminals when coordinated with respective protective devices at an X/R ratio of 6.6 or less. The main contacts of the transfer switch shall not trip open or weld when subjected to fault currents.
3. Dielectric: Test, following the withstand current rating test, at 1960 volts AC rms minimum.
4. Transient Withstandability: Control panel voltage surge withstand capability test per IEEE Standard 472-1974 and voltage impulse withstand test per NEMA Standard publication ICS-1-109.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install standby engine driven generator set where shown, in accordance with the equipment manufacturer's written instructions and recognized industry practices, to ensure that the set complies with the specified requirements and serve the intended purposes. Provide and install in a Plexiglas enclosure complete operating instructions for each type of transfer switch.

B. Standard: Comply with NEMA standards, requirements of the NEC, and applicable portions of NECA Standard of Installation pertaining to installation of standby engine-driven generator sets and accessories.

C. Vibration Isolation:
1. Outside Mounted: Ribbed Neoprene Vibration Isolation
2. Roof Mounted: Install units on properly sized spring-type vibration mounts and ribbed Neoprene vibrations isolators.
3. Generator installed inside building: Install units on properly sized spring-type vibration mounts and ribbed Neoprene vibration isolators.

D. Concrete Pad: Install generator set on a reinforced concrete pad. The generator pad shall extend 6" beyond the generator set base, unless shown otherwise. Furnish the exact position of any block outs, mounting bolts, and the dimensions and location of the generator pad in a timely manner so as to prevent delay of the concrete work. Refer to Section 26 05 00 for housekeeping pads and Division 3 for Concrete Work.

E. Options and Accessories: Provide circuits, conductors, and raceways as required for generator options and accessories as required and specified. Provide separate dedicated circuits from the emergency branch circuit panel board to the generator for (1) engine/ coolant heaters, (2) GFCI convenience receptacle(s), (3) battery charger (LED work lights on battery), etc. Provide additional circuits as required, for a fully operational system.

F. Provide remote alarm annunciator. Coordinate final location of annunciator with Owner / Architect

prior to installation. It shall be installed near ATS.

G. Provide dry contacts and outputs to monitor transfer switch and generator alarm conditions and notify Owner's Police or security personnel, and building management controls system and personnel, both when transfer to emergency occurs and when transfer to normal occurs.

H. Adjust main output circuit breaker(s) adjustable trip setting based on manufacturer's fault current and coordination analysis or as directed by Engineer.

3.2 GROUNDING

A. Install the generator as a separately derived system. Ground the generator neutral to the generator frame. Ground the generator frame to the building grounding system and provide a driven ground electrode at the generator location.

3.3 CONTROLS

A. Provide generator start-up control wiring and raceway from each automatic transfer switch to the respective standby generator set as required.

3.4 TESTING

A. Notify Owner's Commissioning Authority (CxA) prior to performing any tests so the CxA may witness tests at his/her discretion. Refer to Section 26 01 00 Commissioning of Electrical Systems. Testing shall be witnessed by owner and Engineer.

B. Provide testing in accordance with NFPA 110. Upon completion of installation of engine-driven generator set and after building circuitry has been energized with normal power source. Provide manufacturer's start-up service to test emergency power system to demonstrate standby capability and compliance with specified requirements, including automatic start-up, controls and full load acceptance. Test shall include operation of standby power system with voltage check while the system is loaded to ensure proper operation of the emergency generator, transfer switches, and other system components. Operation of the system shall simulate standby power conditions, that is, loss of main electrical power to the building. Test period shall be trouble-free operation with at least four automatic transfer switch operations (each switch) within the period of operation.
   1. The unit shall be started and run for 30-minute break-in period at no-load unless recommended otherwise by manufacturer.
   2. The unit shall be started cold and run for a four-hour test with building load connected and load bank to achieve 90 percent of rated generator capacity. Monitor and record available natural gas pressure and verify supply is adequate and stable during the entire test.
   3. Retransfer the load after test.
   4. After this test, the set shall cool for five minutes, then must start and carry 90% rated capacity load for four hours.
   5. Provide additional Owner witnessed testing for all ancillary equipment on generator. Demonstrate all specified functions and alarms.
   6. Demonstrate the cranking cycle and all engine safety devices. The Owner's authorized representative shall be instructed in the operation and maintenance of the unit. Provide minimum 4-hours training at each campus for 4-persons; one hour on four separate days

C. Contractor shall furnish all instruments, load banks, and personnel required for test. Submit 4 copies of certified test results to Architect/Engineer for review. Test reports shall include date and time of test, relative humidity, temperature and weather conditions.

3.5 MISCELLANEOUS

A. Provide circuits and receptacles to serve loads as directed by Owner / Architect, including, but not limited to:.
   1. Telecommunications equipment
   2. Public Address Communication & Master Clock System
   3. Fire Detection Alarm and Signaling Systems including remote transponder panels and alarm power supply panels

4. Security Systems including remote power supplies (except for battery powered access control door hardware)
5. Video Surveillance CCTV System including remote camera power supplies
6. All receptacles and outlets in MDF/IDF rooms.
7. Technology MDF/IDF room dedicated HVAC equipment
8. Walk-in coolers/freezers and selected reach-in refrigeration equipment
9. Clinic refrigerator and selected clinic receptacles
10. Building Access control System including remote power supplies, except do not power door electric strike or hinge hardware on emergency power.
11. Owner's Radio Base Station and handset charging equipment / Radio Repeaters / Distributive Antennae Systems (DAS)
12. Elevators, ADA chair/personnel lifts
13. Point of Sale Stations
14. Kitchen Manager's Workstation
15. Building Management and Control System (BMCS)
16. Special education receptacles, minimum one in each room.
17. First responder Bi-Directional Distributive Antennae System (DAS) Systems

B. Mount annunciator alarm as directed by Owner / Architect. Coordinate final location of ATS with Owner / Architect prior to installation. Install next to ATS.

3.6 PROGRAMMING

A. Program automatic transfer switches for delayed transfer to emergency and sequential operation to transfer loads by priority based on manufacturer recommendation or as indicated below:
1. Life Safety Loads – less than 10 seconds
2. Critical Loads – more than 15 seconds, less than 30 seconds
3. Equipment Loads – more than 40 seconds, less than 60 seconds
4. Non-Legally required loads – more than 75 seconds, less than 120 seconds

B. Program automatic transfer switch voltage and frequency pick-up and drop out for load shedding based on load priority for voltage and frequency based on manufacturer recommendations or as indicated below:
1. Life Safety pick-up 10%; drop out 20%
2. Critical Loads pick-up 10%; drop out 15%
3. Equipment Loads pick-up 8%; drop out 15%
4. Non-Legally required loads pick-up 5%; drop out 10%

C. Exerciser clock: Program automatic transfer switch exerciser clock for generator to run every Tuesday, 8:00 AM, for 15-miniute run time, without load. Verify with Owner.

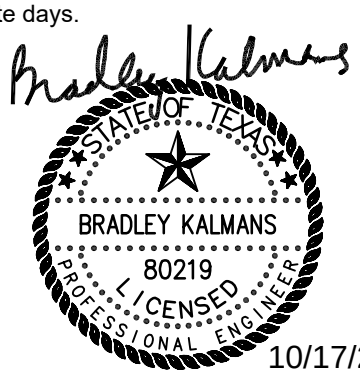
D. Test switch: Program automatic transfer test switch for generator to run with load, for minimum 30-miniutes to comply with NFPA 110 requirements for monthly testing. Maximum test time shall not exceed 35-miniutes unless directed otherwise by Owner.

E. Program engine cooldown time as recommended by the manufacturer.

3.7 TRAINING

A. Provide 4 hours training, one hour each for four persons, four separate days.

END OF SECTION



10/17/2025

SECTION 27 10 00

STRUCTURED CABLING SYSTEM (SCS)

PART 1 - GENERAL

1.1 RELATED WORK

The following, in their entirety and as applicable, shall apply to this section. Including any associated drawings.

A. Conditions of the Contract
B. Division 1
C. Division 26
D. Division 27
E. Division 28

1.2 DESCRIPTION

A. Summary of Work:
1. Reference Attachment ‘A’ of this specification for supplemental scope as it relates to the project and the Owner standards.
2. Provide a complete and tested Structured Cabling System (SCS) for the interconnections of the Local Area Network (LAN). The SCS shall include fully terminated unshielded twisted pair cables, fiber optic cabling, raceways, conduit, back boxes, copper/fiber optic termination components, station mounting hardware, fiber optic enclosures, patch panels, copper/fiber optic patch cables, relay cabinets/cabinets, and other incidental and miscellaneous premises wiring system hardware as required for a complete, tested, and usable system that is in compliance with the latest NEC, ANSI/EIA/TIA, BICSI, and Authorities Having Jurisdiction codes and standards. The installation shall comply with all applicable requirements, design guidelines, and standards in effect at the job site and as indicated in the Drawings and Specifications.
3. An IDF will be required when the distance between outlet terminations and MDF/IDF exceeds 280’, including service loops. IDF's shall be selected and organized to be minimum in number while still reaching all locations to be wired.
4. If there are any discrepancies between the drawings and specification or among themselves, the contractor shall request clarification prior to providing pricing for the scope of work. If a request is not issued and a response not provided via a posted addendum, the contractor shall provide pricing for the costliest scenario and obtain clarification during the project.
5. These documents are conceptual in nature. It shall be the responsibility of the approved installer to furnish a complete and functional system, including the items shown on the drawings, in the specifications, and items not designated in either. The installer’s shop drawings and product data submittals shall represent a complete system and documents accepted do not relieve the installer from being required to provide any materials, equipment, or labor to furnish a complete and functional system as recognized by the Project’s Technology Consultant and the Owner.

1.3 QUALITY ASSURANCE

A. Acceptable manufacturers:
1. The equipment/products described herein and furnished per these specifications shall be the product of one manufacturer or must be able to obtain the full warranty of the combined solution. All references to model numbers and other detailed descriptive data is intended to establish standards of design performance, and quality, as required. The contractor shall not deviate from the part numbers listed. Any deviation from specified part numbers will result in the removal of non-specified materials and reinstallation of approved materials at no cost to the project.
2. The approved manufacturers shall provide a complete End-to-End solution with the maximum product and performance warranty offered by the specified manufacturer.
3. Only products listed in Attachment ‘B’ or approved in compliance with the project manual’s approval requirements will be accepted.

B. Installer Qualifications:

1. The Data Cable System Installer shall be licensed and shall meet all applicable regulations of the State Department of Labor insofar as they apply to this type of system. The proposer shall be a firm normally employed in the low voltage and data cabling industry and shall provide a reference list of ten (10) large-scale projects and contact names confirming successful Structure Cabling System installations.
2. The SCS Installer shall be a Certified, local area, integrator of the manufacturer's product and must be able to provide the manufacturer's maximum available warranty for the solution on the entire SCS. The contractor's certification must have been obtained and held within 75 miles of the project's location.
3. The installing contractor must have a full-time employed RCDD (Registered Communications Distribution Designer) on staff. Current RCDD certification shall be provided in the product submittals.
4. All individuals installing the SCS must be employees of the certified installer and at least 25% of the installing staff shall have undergone a training class given by the manufacturer. Current certification indicating the successful completion of the training course shall be available upon request at the project and submitted in the contractor's product submittals.
5. The proposing contractor and the installing contractor must be the same company. No subcontractor to the proposing SCS contractor will be allowed for any portion of the SCS scope of work.

C. Low Voltage Meeting Requirements:
1. The successful Contractor shall attend a mandatory pre-construction meeting with the project's consultant individuals deemed necessary by the Owner's representative prior to the start of the work. No SCS work shall begin prior to this meeting.
2. The successful contractor shall attend a mandatory bi-weekly meeting to discuss the project progress to help aid coordination with the Owner and Other contractors.
3. Prior to the installation of any items required for this scope of work the contractor must provide a purchase order with a detailed material list for all materials to be installed. The purchase order is not required to show cost, but part numbers must be provided. The purchase order will be reviewed during one of the regularly scheduled low voltage meetings.

D. Acceptance: The Owner's representative reserves the right to reject all or a portion of the work performed, either on technical or aesthetic grounds.

E. Warranty:
1. The selected system installer shall be a certified installing contractor of product and hold current certification. Contractor shall provide the specified manufacturer's maximum end-to-end performance warranty on all products installed. The proposer shall provide current certification documentation. The performance warranty shall be issued by the manufacturer and shall warrant that ALL cable links have been tested bi-directionally (end to end) using a Level IIIe or better tester, per TSB-67, and that all test results conform to the most current ANSI/TIA-568.2-D.
2. The warranty will also cover single mode fiber optic cabling. Performance testing shall be conducted in accordance with ANSI/EIA/TIA-526-14 Standard, method B.
3. The warranty will stipulate that all products used in this installation meet the prescribed mechanical and transmission specifications for such products as described in ANSI/TIA/EIA-568.3-D. Quality and workmanship evaluation shall be solely by the Owner/Designer and designated representatives.

1.4 REGULATORY REQUIREMENTS

A. Standards: All work shall be performed in accordance with the latest revisions of the following standards and codes:
1. Latest Local Codes and Amendments
2. National Electrical Code, current version

B. Other References:
1. ANSI/TIA-568-C.0 – Generic Communications Cabling for Customer Premises...
2. ANSI/TIA-568-C.1 – Commercial Building Communications Cabling Standard Part 1: General Requirements.
3. ANSI/TIA 568-C.2 – Balanced Twisted-Pair Telecommunications Cabling and Components Standards

4. ANSI/TIA 568-C.3 – Optical Fiber Cabling Components Standard
5. ANSI/TIA-568-C.4, Coaxial Cabling Component Standard
6. ANSI/TIA-569-C – Commercial Building Standard for Telecommunications Pathways and Spaces.
7. ANSI/ICEA S-83-596, Fiber Optic Premises Distribution Cable.
8. ANSI/TIA/EIA-598, Color Coding of Optical Fiber Cables
9. ANSI/ICEA S-87-640, Fiber Optic Outside Plant Distribution Cable.
10. ANSI/TIA/EIA-758: Customer-Owned Outside Plant Telecommunications Cabling Standard.
11. ANSI/TIA/EIA-526-7, Optical Power Loss Measurements of Installed Single mode Fiber Plant: OFSTP-7.
12. ANSI/TIA/EIA-526-14-A, Optical Power Loss Measurements of Installed Singlemode Fiber Plant: OFSTP-14A
13. ANSI/TIA/EIA-TSB-125, Guidelines for Maintaining Optical Fiber Polarity Through Reverse-Pair Positioning
14. ANSI/TIA/EIA-TSB-140, Additional Guidelines for Field Testing Length, Loss, and Polarity of Optical Fiber Cabling Systems.
15. ANSI/TIA-606-B – Administration Standard for the Commercial Telecommunications Infrastructure
16. TIA/EIA-607-B - 2011 - Commercial Building Grounding and Bonding Requirements for Telecommunications
17. Institute of Electrical and Electronic Engineers (IEEE 802.xLAN)
18. TIA/EIA 942 Data Center Standards
19. Current BICSI Telecommunications Distribution Methods Manual
20. NFPA 70 – National Electrical Code (NEC).
21. BICSI – TDMM, Building Industries Consulting Services International, Telecommunications Distribution Methods Manual (TDMM).

C. Governing Codes and Conflicts: If the requirements of these specifications or the Project Drawings exceed those of the governing codes and regulations, then the requirements of these specifications and the Drawings shall govern. However, nothing in the Drawings or Specifications shall be construed to permit work not conforming to all governing codes, regulations, and manufacturer installation requirements.

1.5 ABBREVIATIONS

A. The following abbreviations are used in this document:

IDF	Intermediate Distribution Frame
MDF	Main Distribution Frame
UTP	Unshielded Twisted Pair
SCS	Structured Cabling System
RCDD	Registered Communications Distribution Designer

1.6 SUBMITTALS

A. Project Initiation: Within fourteen (14) days of Notice to Proceed, the data network system installer shall furnish the following in a single consolidated submittal:
1. Permits: The Contractor shall obtain all required permits and provide copies to the Owner / Architect / Engineer.
2. Product Literature: Complete manufacturer’s product literature for all cable, patch panels, cross-connect blocks, cable supports, cable labels, outlet devices, and other products to be used in the installation. In addition, whenever substitutions for recommended products are made, samples (when requested by the Owner / Designer) and the manufacturer’s supporting documentation demonstrating compatibility with other related products shall be included. The submittal shall have some type of distinguishing marker or pointer to indicated what specific product is to be provided
3. Construction Schedule: A time-scaled Construction Schedule, using PERT/CPM, indicating general project deadlines and specific dates relating to the installation of the cable distribution system.
4. Testing: Proposed Contractor UTP cable test result forms, fiber optic cable test result forms and a list of instrumentation to be used for systems testing.
5. Specification Compliance: A letter shall be provided stating, by section and subsection, that

the SCS installer complies with the entire specification section. If the installer intends to deviate from any portion of the specifications, a detailed explanation of reason in which the installer would like to deviate shall be provided in addition to the specification compliance letter. No deviations shall be acceptable until they have been approved by the Owner.

6. Each Submittal must have a detailed parts list with quantities.
7. Certifications: The contractor shall submit all certifications for approved products and the certifications must contain dates which are valid from the date of proposal and not expirer any sooner than 12 months after substantial completion of the project.
    a. BICSI RCDD Certification: This certification must be held by an on-staff, full-time employee of the SCS installer. The holder must be staffed out of the office that is located within 75 miles of the projected.
    b. Certifications must be obtained by the SCS installer's office that is located within 75 miles of the project and shall be a company certification, not and individual certification.
    c. Certifications must be held by at least 25% of the, on-site, staff and be made available at the site if requested by the owner, architect, and/or project's technology consultant.
    d. Fiber Optic Technician Certification: This certification must be held by the on-staff/on-site individual that is supervising the fiber optic installation and performing the fiber optic terminations and testing.

B. Shop Drawings: Submit the following items, for Owner review and approval, within twenty-eight(28) days of notice to proceed:
1. Proposed circuit routing and circuit grouping plan prepared by a BICSI certified RCDD (Registered Communications Distribution Designer). The RCDD certification must be current. Identifiable, separate routing shall be shown for both the station cabling and the MDF-to-IDF tie cabling.
2. In addition to the cable routing, the submitted drawings shall indicate the following, even if the following is expected to be provided by the project's electrical or general contractor:
    a. Location of wall penetrations (all penetrations shall be sleeved and contain protective bushings at both ends)
    b. Location of sleeved wall pass-thru
    c. Size of sleeve at each location installed
    d. Quantity of cable passing through each sleeve
    e. Location of drops in each room (quantity or labeling of drops are not required in the submittal plans. Labeling shall be provided in the closeout plans and quantities shall be as per the contract documents, addendums, and issued changes. Each drop shall be labeled for the type of outlet that it is)
    f. Conduit routing, size, quantity, and stub-up locations for all floor mounted outlets.
3. Drawing Compliance: A letter shall be provided stating that the SCS installer complies with the entire project drawing, including all general, keyed, and notes to contractor. If the installer intends to deviate from any portion of the specifications, a detailed explanation of reason in which the installer would like to deviate shall be provided in addition to the specification compliance letter. No deviations shall be acceptable until they have been approved by the Owner.
4. All subcontractors shall provide submittals to general contractor for normal distribution to Architects, Engineers and the Owner's project managers.

C. At Substantial Completion: Provide drawings, to the Owner, to reflect installed cabling with correct labeling and cable routing.

D. Close-out Procedures: Two (2) copies of the following documents shall be delivered to the building owner's representative at the time of system acceptance. Close out technology documents shall be separated from all other trade's documents. The close out finals shall include:
1. Inspection and Test Reports: During the course of the Project, the Contractor shall maintain an adequate inspection system to ensure that the materials supplied, and the work performed, conform to contract requirements. The Contractor shall provide written documentation that indicates that materials acceptance testing was conducted as specified. The Contractor shall also provide documentation, which indicates that all cable termination testing was completed and that all irregularities were corrected prior to job completion.
2. Provide complete test reports for all cabling and devices that comprise system as outlined in this document.

3. Include the Name, address and telephone of the authorized factory representative with a 24-hour emergency service number.
4. The manual shall also include Manufacturer's data sheets and installation manuals/instructions for all equipment installed a list of recommended spare parts.
5. Generic or typical owner's instruction and operation manual shall not be acceptable to fulfill this requirement.
6. An up-to-date record ("as-built") set of approved shop drawing prints that have been revised to show each and every change made to the structure cabling system from the original approved shop drawings. Drawings shall consist of a scaled plan of each building showing the placement of each individual item of the technical cabling system equipment as well as raceway size and routing, junction boxes, and conductor size, quantity, and color in each raceway.
7. As-built Drawings shall include cable pathways, camera locations with correct labeling and MDF/IDF locations. A copy of the As-Built drawings reflecting the final locations of all cabling shall be given to the designated Owner's representative. The as-built drawings shall be prepared using AutoCAD 2012 or later. Provide the Owner with electronic versions of the as-builts on CD media.
8. All drawings must reflect final graphic numbering, point to point wiring, device address and programmed characteristics as verified in the presence of the engineer and/or the end user unless device addressing is electronically generated, and automatically graphically self-documented by the system.
9. A copy of the manufacturer's warranty on the installed system.
10. Any keys to cabinets and/or equipment and special maintenance tools required to repair, maintain, or service the system.
11. Operating and Maintenance Instructions for all devices within the system. These instructions shall reflect any changes made during the course of construction, and shall be provided to the Owner, for their use, in a three-ring binder labeled with the project name and description. (4 copies)
12. Upon completion of the work and at a time designated by the Architect or owner, provide formal training sessions for the Owner's operating personnel to include location, operation, and maintenance of all included systems and equipment. Minimum amount of training time shall be at least 4 hours.
13. One (1) 30" x 42" laminated floor plan sheets illustrating technology drops and cable designation with final graphic numbering. Contractor shall provide one complete floor plan sheet for each telecommunications room (MDF or IDF)

PART 2 - PRODUCTS

2.1 GENERAL

A. Reference Attachment 'B' to this specification, which contains the minimum materials list for this specific project.

B. Installation: The cabling shall be installed per requirements of the manufacturer and the Project Documents utilizing materials meeting all applicable TIA/EIA standards. The Contractor is responsible for providing all incidental and/or miscellaneous hardware not explicitly specified below as required for a complete and operational system.

C. Materials: Materials shall be as listed or shall be approved equivalent products of other manufacturers meeting the intent and quality level of the TIA/EIA specifications.

D. Testing: All installed cabling shall be tested 100% good after installation by the Contractor. All final test results shall be delivered to owner at completion of project. Refer to closeout requirements.

E. Ratings: All products shall be new and brought to the job site in the original manufacturer's packaging. Electrical components (including innerduct) shall bear the Underwriter's Laboratories label. All communications cable shall bear flammability testing ratings as follows:

CM	Communications Cable
CMP	Plenum Rated Communications Cable
CMR	Riser-Rated Communications Cable

F. Initial Cable Inspection: The Contractor shall inspect all cable prior to installation to verify that it is identified properly on the reel identification label, that it is of the proper gauge, containing the correct number of pairs, etc. Note any buckling of the jacket that would indicate possible problems. Damaged cable or any other components failing to meet specifications shall not be used in the installation.

G. Cable Lubricants:
1. Lubricants specifically designed for installing communications cable may be used to reduce pulling tension as necessary when pulling cable into conduit.
2. Approved Products
   a. Twisted-pair cable: Dyna-Blue
   b. American Polywater

H. Fire Wall Sealant:
1. Any penetration through firewalls (including those in sleeves) will be resealed with an Underwriter Laboratories (UL) approved sealant.
2. Approved Products
   a. 3M or
   b. Pre-approved equal

2.2 DATA CLOSET (MDF/IDF) HARDWARE

A. Equipment Cabinets/Cabinets: Provide and install equipment cabinets and/or cabinets in locations indicated on the attached drawings for the following areas.
1. For all MDF/IDF locations: Contractor shall provide and install a new floor mounted cabinet/rack system or a wall mounted cabinet where indicated on plans. Refer to floor plan and enlarged MDF/IDF room layouts for number of cabinets/racks to provide at each location. If an enlarged detail is not available, the contractor shall provide the required number of racks to accommodate 100% of all termination components and an equal amount of owner equipment; as well as (1) spare rack. If an MDF/IDF is located in shared space, the contractor shall provide a floor supported, wall mounted cabinet system with all required doors and side panels to secure the equipment and termination components.

B. Distribution Cabinet/Cabinet Grounding: All Cabinets and/or Cabinets shall be grounded using stranded #6 AWG insulated copper conductor. Connect to service entrance grounding electrode. Provide all required bonding materials and hardware and bond to building grounding electrode subsystem at building electrical service entrance.

C. Fiber Optic Patch Panels:
1. The enclosures used shall provide termination panels for the specified type of connectors and be of sufficient size and capacity to terminate 110% of the fiber count of the inside of outside fiber optic cables. Patch panels must be 19” cabinet mountable. Provide all termination accessories, fiber patch cords, enclosures and test for a complete fiber optic distribution system.
2. Provide closet connector housing panels, size for 110% of total fiber count to be terminated.
3. ALL fiber strands must be terminated in fiber housing.

D. Patch Panels:
1. All patch cables shall be modular type patch panels to allow individual jacks to be inserted. All patch panels shall be fully populated with Jacks. Provide dust caps for all unused jacks. Furnish units that adhere to the performance requirements TIA/EIA-568A standards.
2. Provide cable support bars at the back of all patch panels to provide additional support at rear of panels. Provide one (1) support bar for each row of 24-ports. Support bars will not be required if the closet design consist of rear horizontal cable management above and below each patch panel.

E. Rack Electrical:
1. A power strip shall be installed vertical at the back of each data relay rack.
2. Project electrical contractor to provide and install one electrical receptacle for each UPS installed on the entire project. Coordinate receptacle type and location with the installed product requirements and the technology consultant prior to installation.

F. Cable Management Panels:

1. Provide cable management panels as required for vertical cable management on ends and in between all racks on entire project.
2. Provide Velcro straps for cable dressing in MDF/IDF rooms.

G. MDF/IDF Patch Cables:
1. Cabling Contractor shall provide owner with one (1) patch cable for each data drop on entire project. These cables will provide connectivity from the front of the network patch panels to the network equipment. The patch cables are to be terminated properly with RJ-45 connections on each end with the proper pin-out assignments per project configuration.
2. All patch cables shall be factory terminated. NO EXCEPTIONS.

2.3 CABLE ROUTING/PATHWAY

A. Cable Tray:
1. Metal cable tray shall be provided to affix to the top of all floor mount cabinets. Cable tray shall be used to brace cabinets to walls and to route cable from walls to cabinets in communication closets.
2. Contractor to provide and install all applicable installation accessories.

B. Cable Support System:
1. All low voltage cabling shall be installed and supported using an approved cable support system installed at 48” intervals unless installed in conduit. Do not exceed manufacturer’s recommendation for the quantity of cables supported in an individual support.
2. Cable supports shall not connect to any ceiling grid wire or on any support attached to the ceiling grid.
3. Cable supports shall not exceed a serviceable height of more than 5’, but no closer than 2’, above the finished ceiling.
4. Cable supports can be attached to vertical walls or the building’s structure.
5. If attached to the building’s structure, 3/8” threaded rod shall be utilized to extend down within the serviceable heights mentioned above. Grid wire hangers will not be accepted.

C. All cable bundles shall be grouped together using plenum rated Velcro for the entire run above and below the ceilings.

D. Conduit Bushings shall be installed prior to the installation of any cable. If cable is found to be installed without the bushing the cable will have to be removed and re-installed. No cut bushings will be accepted. If cable damage occurs during any portion of the installation, the cable will be removed and replaced at no cost to the project. This item will be strictly enforced and adhered too.

E. The projects electrical contractor shall provide and install all metallic conduit and backboxes indicated to be installed on the drawings. It is the SCS installer’s responsibility to coordinate all conduit requirements with the electrical contractor to ensure that all conduit sizes and locations are correctly installed. If box locations and conduit sizes are found to vary from the project documents after installation the SCS installer will bare all financial responsibility to ensure these items are installed correctly. The RCDD for the SCS will be responsible for ensuring conduit sizes are sufficient for cable count while maintaining a 40% fill ratio. If there is not electrical contractor on the project, the SCS Installer shall bear responsibility for the provision and installation of all required raceways.

2.4 STATION WIRING

A Wire: The data and voice wire provided for all outlets shall be four-pair, solid copper conductor, meeting the intent and quality level of the TIA/EIA-568 Commercial Building Wiring Standard.

B. Testing: The four-pair UTP cable must be UL Performance Level tested. Each 1000-foot spool must be individually tested with test results affixed to the spool. All cable must be provided on new 1000-foot spools. No shorts will be allowed.

C. Rating: Cable installed in conduit shall be non-plenum rated. Cable not installed in conduit shall be plenum rated if installed in plenum ceiling space, non-plenum rated otherwise.

D. All cable shall be routed to the center of the room in which it is serving and then route to the outlet location that it is intended for. Provide a 5’ service loop in the center of the room and 5’ service loop

at each workstation outlet properly supported above ceiling. All workstation service loops shall be made in figure eight configurations, no exceptions.

E. Provide minimum of 10’ service loop at all headend locations properly supported above ceiling.

F. Provide indoor/outdoor, plenum rated category cable at any outdoor data outlet or data outlets served by cabling that travels through subsurface conduit. This applies to station or horizontal cable runs only.

2.5 STATION HARDWARE

A. Information Outlet / Jack Modules:
1. Shall be high quality 8p/8c modular jacks with circuit board construction and IDC style or 110-style wire, T568B terminations. Jacks shall meet EIA/TIA TSB40 recommendations for connecting hardware
2. Shall be standard 8-position, RJ-45 Style, FCC compliant
3. Shall be designed for 4-pair, 100 Ohm balanced UTP Cable
4. Shall terminate 26-22 AWG solid or stranded conductors
5. Shall accept FCC compliant 6 position plugs.
6. Shall have attached wiring instruction labels to permit either T568A or T568B wiring configurations.
8. Shall meet or exceed transmission requirements for connecting hardware, as specified in ANSI/TIA/EIA-568-C2, Transmission Performance Specifications for 4-Pair 100 Ohm.
9. Shall be UL Listed and CSA certified.
10. Each jack shall have category rating identified on the front face.

B. Faceplates:
1. Standard faceplates shall be a minimum of 4-port.
2. Wall mounted telephone faceplates shall be 1-port.
3. All faceplates shall be single gang.
4. All blank inserts color shall be coordinated prior to procurement.

C. Outlet Patch Cables: Cabling Contractor shall provide owner with patch cable for each data drop on entire project. Each cable will be terminated properly with RJ45 connections on each end with appropriate pin-out assignments per project configuration.
1. Cabling Contractor shall provide owner with patch cable for each data drop on entire project. Each cable will be terminated properly with RJ45 connections on each end with appropriate pin-out assignments per project configuration.
2. Patch cords shall be stranded copper, matching the category of the installed cable.
3. All patch cables shall be factory terminated. No exceptions

2.6 FIBER OPTIC PRODUCTS

A. Singlemode: Single mode fibers, each with a color-coded PVC tight buffer shall have a maximum attenuation of 1.0 dB/km at 1310 nm and 1.0 dB/km at 1550 nm.

PART 3 - EXECUTION

3.1 GENERAL

A. Fire Wall Penetrations: The contractor shall avoid penetration of fire-rated walls and floors wherever possible. Where penetrations are necessary, they shall be sleeved with metallic conduit and resealed with an Underwriter Laboratories (UL) approved sealant. Contractor shall also seal all floor, ceiling and wall penetrations in fire or smoke barriers and in the wiring closet.

B. Allowable Cable Bend Radius and Pull Tension: In general, communications cable cannot tolerate sharp bends or excessive pull tension during installation. Refer to the cable manufacturers allowable bend radius and pull tension data for the maximum allowable limits.

C. Cable Lubricants: After installation, exposed cable and other surfaces must be cleaned free of lubricant residue.

D. Pull Strings: Provide pull strings in all new conduits, including all conduits with cable installed as part of this contract. Pull test is not to exceed 200 pounds. Data and video cables can be pulled together with pull strings.

E. Conduit Fill shall not exceed 40%.

F. Damage:
1. The Contractor shall replace or rework cables showing evidence of improper handling including stretches, kinks, short radius bends, over-tightened bindings, loosely twisted and over-twisted pairs at terminals and cable sheath removed too far (over 1-1/2 inches).
2. The Contractor shall replace any damaged ceiling tiles that are broken during cable installation.

G. Clean Up: All clean up activity related to work performed will be the responsibility of the Contractor and must be completed daily before leaving the facility.

H. Conduit and Back Boxes:
1. The Contractor shall ensure that the appropriate back boxes and conduits, for the project, are provided as required.
2. One (1) 1" conduit will be required each outlet that serves one to a maximum six (6) category 6 or a maximum of four (4) category 6 cables. Provide additional conduit for cable counts that exceed this number.
3. One (1) double gang deep box will be required for each technology outlet. All boxes except Presentation outlets will be required to have a single gang reducer ring.

3.2 EQUIPMENT CABINET CONFIGURATION

A. Equipment Cabinets: Equipment racks shall be assembled and mounted in locations shown on the Drawings and as detailed. Each rack shall be securely mounted to the floor and braced to the wall with cable tray in accordance with the manufacturer’s instructions and recommendations. Racks shall be mounted such that the side rails are plumb with vertical cable management panels. Racks to be located such that future expansion can occur without relocating existing racks. Racks shall be grounded in accordance with NEC requirements.

B. Wire Management Components: Horizontal cable management panels shall be installed directly above and below each patch panel. Vertical cable management panels shall be installed on each side of the cabinet.

C. Cable Placement: Cable installation in the Wiring Closet must conform to the Project Drawings. All cabling shall be routed so as to avoid interference with any other service or system, operation, or maintenance location. Avoid crossing area horizontally just above or below any riser conduit. Lay and dress cables to allow other cables to enter the conduit/riser without difficulty at a later time by maintaining a working distance from these openings.

D. Cable Routing: Cable shall be routed as close as possible to the ceiling, floor or corners to ensure that adequate wall or backboard space is available for current and future equipment. All cable runs within the Wiring Closet shall be horizontal or vertical within the constraints of minimum cable bending radii. Minimum bend radius shall be observed. Cables shall not be tie-wrapped to electrical conduit or other equipment.

E. Installation: All incoming cables shall be routed on the cable tray and neatly dressed down to the patch panels. Cable bundles shall not exceed more than 48 cables to patch panel.

F. Hardware: Provide cabinet and jack panel hardware as required for all data station wiring.

3.3 STATION WIRING INSTALLATION

A. General:
1. Cabling between wiring closet and workstation locations shall be made as individual home runs. No intermediate punch down blocks or splices may be installed or utilized between the wiring closet and the communications outlet at the workstation location.
2. All cable must be handled with care during installation so as not to change performance

specifications. Factory twists of each individual pair must be maintained up to the connection points at both ends of the cable. There shall never be more than one and one-half inches of unsheathed UTP cable at either the wiring closet or the workstation termination locations.

3. All cable shall be routed to the center of the room in which it serves before routing to the outlet location and a 5’ service loop shall be provide. An addition 5’ service loop shall be provided above ceiling at the outlet location. All service loops shall be figure 8 loops.

B. Exposed Cable:
1. All cabling shall be installed inside walls or ceiling spaces whenever possible. Exposed cables and/or cables routing through mechanical rooms, electrical rooms, or restrooms shall be installed inside conduits, unless noted otherwise on the project drawings.
2. Additional exposed cable runs will require Owner approval and will only be allowed when no other options exist.
3. All cable routing through conduits and sleeves shall maintain a 40% maximum conduit fill ratio.

C. Placement: All cabling and associated hardware shall be placed so as to make efficient use of available space. All cabling and associated hardware shall be placed so as not to impair the Owner’s efficient use of their full capacity.

D. Cable Routes:
1. All cabling placed in ceiling areas must be in conduit, or Panduit Corp. J-MOD modular cable support with Velcro cable wrap at each location. Cable supports shall be permanently anchored to building structure or substrates. Provide attachment hardware and anchors designed for the structure to which attached and that are suitably sized to carry the weight of the cables to be supported. Do not route cable through webbing of structural steel. Cabling must be supported in dedicated supports intended to support cabling as described in this section. Contractor shall adhere to the manufacturer’s suggested fill ratio for each size cable support installed. No support shall have more than 48 cables.
2. Attaching cable to pipes or other mechanical items is not permitted. Communications cable shall be rerouted so as to provide a minimum of 18 inches spacing from light fixtures, sources of heat, power feeder conduits and EMI sources. Cabling shall not be attached to ceiling grid support wires. Cable runs shall be routed down the corridors; parallel or perpendicular to building structure. Multiple cables to be bundled together at and between each cable support installed.
3. Contractor shall be responsible for coordinating with other trades on the project so that the installed cable pathway does not interfere with the installation of other systems to insure that mechanical ducts, pipes, conduits, or any other above ceiling systems are not putting unnecessary stress on any portion of the install SCS.
4. All (48) cable bundles shall be routed directly to the MDF or IDF that serves the area. All bundles shall remain separated for the length of the cable run.
   a. Provide data outlet for irrigation controllers. Coordinate location with landscape consultant.
   b. Provide data outlet for time clock appliance in main custodian office.
   c. Provide OSP or flooded/gel filled cat6 cable at any outdoor data outlet or data outlets served by cabling that travels through subsurface conduit. This applies to station or horizontal cable runs only.

3.4 STATION HARDWARE

A. Flush Mount Jacks shall be mounted in a faceplate with back box.

B. Placement:
1. Where possible, the communications outlet shall be located so that its centerline is 18 inches above floor level or 12 inches above permanent bench surfaces. Outlets shall not be mounted on temporary, movable, or removable surfaces, doors, or access hatches.
2. Outlets shall be installed within 3’-0” of power outlets

C. RJ-45 Jack Pin Assignments:
1. Pin connections for data station cable outlets and patch panels shall match EIA/TIA 568 modular jack wiring recommendation T568B.

2. Pin connections at data jack panels shall match pin connections at outlets (straight through wiring)

3.5 CABLE TESTING REQUIREMENTS

A. Notification: The Owner and Engineer shall be notified one week prior to any testing so that the testing may be witnessed.

B. Inspection: Before requesting a final inspection, the Contractor shall perform a series of end-to-end installation performance tests. The Contractor shall submit for approval a proposal describing the test procedures, test result forms and timetable for all copper and fiber optic cabling.

C. Procedures:
1. Trained personnel shall perform all testing. Acceptance of the test procedures discussed below is predicated on the Contractor's use of the recommended products and adherence to the inspection requirements and practices set forth. Acceptance of the completed installation will be evaluated in the context of each of these factors.
2. 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. These circuits must be repaired to meet "PASS".

D. Errors: When errors are found, the source of each shall be determined, corrected and the cable retested. All defective components shall be replaced and retested. Re-test results must be provided on Owner approved forms and witnessed by Owner.

E. Twisted Pair Cable Testing:
1. At a minimum, the Contractor shall test all station drop cable pairs from Data Closet termination patch panels to outlet device RJ45 jacks. Products shall be tested for compliance with ANSI/TIA/EIA 568A and ISO/IES 11801. Test equipment used shall meet TIA/EIA TSB-67, Level II accuracy. Further, the contractor shall have a copy of TSB-67 in their possession and be familiar with its contents.
2. Each wire/pair shall be tested at both ends for the following:
   a. Wire map (pin to pin connectivity)
   b. Length (in feet)
   c. Attenuation
   d. Near end cross talk (NEXT)
   e. Power Sum
3. Test equipment shall provide an electronic and printed record of these tests.
4. Test results for each four-pair UTP cable must be submitted with identification to match labels on all patch panel ports and RJ45 jacks and must match as-builts associated with that cable.

F. Fiber Optic Cable Testing:
1. Testing device for fiber optic cables shall be a high quality OTDR (Optical Time-Domain Reflectometer) equipped with a printer. The printed data shall show, in addition to any summary information, the complete test t0.and all relevant scale settings. The OTDR must have the capability to take measurements from bare fiber strands as well as SC connector terminations.
2. All fiber optic cable shall be tested on the reel before installation to ensure that it meets the specifications outlined herein.
3. After installation the Contractor shall test each fiber strand in accordance the EIA 455-171 Method D procedures (bi-directional testing) at 1550nm for single mode. A form shall be completed for each cable showing data recorded for each strand including length, total segment (end-to-end) loss (dB) and connector losses (dB) at each end. In addition, the printed data strip for each strand shall be attached to the form. Patch cables shall also be tested.
4. Acceptable fiber optic connector loss shall not exceed .75dB per mated pair. The Contractor is responsible for obtaining minimum loss in fiber connections and polishing per manufacturer specifications.
5. Singlemode: Single mode fibers shall have a maximum attenuation of 1.0 dB/km at 1310 nm and 1.0 dB/km at 1550 nm.

3.6 INSPECTION

A. Conformance to the installation practices covered above is to be verified when completed. In some cases, the Owner/Designer may inspect before acceptance.
   1. Written Test Report:
      a. Complete test results, including actual values associated with tests.
      b. Show all certifications for telecommunications wiring systems.
      c. Include cable maps showing each cable route and keyed to cable labels. Provide owner with complete floor plans identifying outlet location and cable routing drawing in AutoCAD format. Provide electronic copy of drawings to owner in AutoCAD version 2012 or greater.
      d. Documentation of outlet, cable and cabinet labeling system.

B. After performing all tests, tabulate results and bind together in format acceptable to Owner. Installer shall provide written certification in the test report that telecommunications cable is properly installed, and test results certify system to all specified standards.

ATTACHMENT 'A'

PROJECT SPECIFIC SCOPE OF WORK AND INSTRUCTIONS

PART 1 – SUMMARY OF WORK

1.1 DESCRIPTION OF WORK

A. The work includes provision and installation of a complete Cabling System (SCS) in compliance with these specifications and associated drawings, pre-proposal addenda, change orders, change directives and any other documents issued both pre-proposal and during the project.

B. The SCS Installer shall comply with all conditions of the contract and "Division 1 –General Requirements" as they apply to the SCS Scope of Work. It shall be the responsibility of the SCS Contractor to make themselves familiar with all documents.

C. It should not be assumed that any portions of a complete and functional system are to be furnished and/or provided by anyone, other than the SCS installer, unless specifically stated otherwise.

1.2 STRUCTURED CABLING SYSTEM – ADDITIONAL INSTRUCTIONS

A. Base Proposal:
   1. The SCS Installer shall provide and install an End-to-End Structured Cabling System as per these specifications and associated drawings. The Base bid SCS shall consist of:
      a. Category 6 cable and connectivity to each Video Surveillance Camera, Voice/Data Outlet, IP Intercom Speakers, and any other locations requiring Local Area Network Connectivity.
      b. Category 6 cable and connectivity to each Wireless Access Points.
      c. Each connectivity solution be a complete Channel Solution; consisting of jacks, patch panel, and patch cables.
      d. Each channel solution shall be color coded to the system in which it serves.
   2. The products specified in Attachment 'B' are to establish quality, functionality, color, and standards. The following shall be considered preapproved equivalent for each specific portion of the SCS.
      a. Category 6 copper cable
         1) Panduit (basis of design)
         2) Commscope
      b. Category 6 copper cabling, termination components, and patch cables
         1) Panduit (basis of design)
         2) Commscope
      c. Fiber Optic Cabling and Components:
         1) OCC
         2) Corning
      d. Metals (racks, cable managers, and cable tray):
         1) Hoffman
         2) Chatsworth
         3) B-Line
      e. Manufacturer approval request must be submitted in compliance with the Division 1 instructions and must be received no less than ten (10) business days prior to the posted proposal submission date. No substitutions will be allowed if not submitted per these instructions and approved via official pre-bid addendum.

1.3 COPPER PATCH PANELS

A. The SCS Installer shall provide and install patch panels as per the instructions below.
   1. 24-port patch panels shall only be used for copper tie cables and demarcation extensions.
   2. Provide dedicated, 48-port patch panels for each of the following system (reference color code chart for designated insert and patch panel color coding per system):
      a. LAN and IP Telephones
      b. Wireless Access Points
      c. IP Intercom
      d. Video Surveillance Cameras

1.4 COPPER AND FIBER OPTIC PATCH CABLE LENGTHS

A. The SCS Installer shall provide copper and fiber optic patch cables as per the instructions below. All patch cables shall be factory terminated and warrantied for the copper and fiber solutions specified.

1. MDF/IDF Copper Patch Cables:
   a. Patch cables shall be category 6
   b. Provide one patch cable for each port on the entire project
   c. Patch cables to be installed by network equipment installer/programmer
   d. Patch cable lengths
      1) 85% shall be 5’
      2) 15% shall be 7’
2. Work Area Outlet Copper Patch Cables:
   a. Patch cables shall be category 6
   b. Provide one patch cable for each port on the entire project
   c. Patch cables to be installed by the owner.
   d. Patch cable lengths
      1) 90% shall be 10’
      2) 10% shall be 15’
3. Wireless Access Point Copper Patch Cables:
   a. Patch cables shall be category 6
   b. Provide one patch cable for each port on the entire project
   c. Patch cables to be installed by wireless system installer.
   d. Patch cable lengths
      1) Interior access points: 100% shall be 10’
      2) Exterior Access Points: 100% shall be 15’
4. Video Surveillance Camera Copper Patch Cables:
   a. Patch cables shall be category 6
   b. Provide one patch cable for each port on the entire project
   c. Patch cables to be installed by the Video Surveillance System Installer.
   d. Patch cable lengths
      1) Interior Cameras: 100% shall be 10’
      2) Exterior Cameras: 100% shall be 15’
5. IP Intercom Copper Patch Cables:
   a. Patch cables shall be category 6
   b. Provide one patch cable for each IP Intercom device on the entire project, plus an additional twenty (20) for future use.
   c. Patch cables to be installed by the IP Intercom System Installer.
   d. Patch cable lengths
      1) 100% shall be 3’
6. MDF/IDF Fiber Optic Patch Cables:
   a. Patch cables shall be 12-strand single-mode.
   b. Patch cable shall be duplex, SC to SC
   c. Provide quantity sufficient for connecting all network equipment plus 20% for growth.
   d. Patch cables to be installed by network equipment installer/programmer
   e. Patch cable lengths
      1) 100% shall be 3 meters

1.5 SYSTEM SPECIFIC COLOR REQUIREMENTS

A. The following information shall apply to the complete SCS Channel. All cable, patch cables, outlet terminations, and closet terminations shall be provided in the colors designated below:

Item	Description	Horizontal Cable	Insert	Patch Cables
1	Data	Blue	Blue	Blue
2	VoIP Telephone	Blue	Blue	Blue
3	Wireless	Blue	Blue	Blue
4	Camera	Green	Green	Green

5	IP Intercom System	Blue	Blue	Blue

1.6 DOCUMENTATION

A. Labels:
The Contractor will label all outlets using permanent / legible typed or machine engraved labels approved by the Owner (no handwritten labels permitted). Label patch panels in the wiring closet to match those on the corresponding data outlets. The font shall be at least one-eighth inch (1/8") in height, block. All labels shall correspond to as-builts and to final test reports.
1. The following nomenclature shall be used when labeling data/voice jacks:
   a. All cables being served by MDF closet shall begin with '1' all IDF served cables shall begin with numerical digit 2 thru 25) designating the specific IDF's identification.
   b. Next identification letter shall refer to patch panel that is serving outlet (A, B, C…)
   c. Next identification shall note what # data port on patch panel (01 thru 48).

Example:
Label of an outlet from 23rd port of the third patch panel from top of rack located at IDF-2 shall read: 2-C-23
Label of an outlet from the 5th port of the second patch panel from the top of rack located in the MDF shall read: 1-B-05

B. Floor Plan: A floor plan clearly labeled with all outlet jack numbers shall be included in the as-built plans.

C. Cables: All cables shall be labeled at both ends. This includes but not limited to horizontal voice and data cabling, copper backbone tie cables, and fiber optic cables.

D. Fiber Optics: Fiber optic strands shall be labeled at both ends on the fiber distribution panel.

E. Equipment racks: Equipment racks shall bear at least one indicating label indicated MDF or IDF. If rack is installed in IDF, label shall include IDF #.

F. Access Points: Label ceiling grid with digital label according to location installed and a bright orange ¾" round dot sticker.

ATTACHMENT 'B'
MANUFACTURER AND MATERIAL LIST

The Communications Contractor shall perform no portion of the work requiring submittal and review of record drawings, shop drawings, product data, or samples until the respective documentation has been approved by project's Technology Consultant.

MATERIAL LIST

MANUFACTURER	DESCRIPTION	PRODUCT NUMBER	NOTES
Panduit	4-Post, Adjustable Server Rack; 84"H; 45 RMU; #12-24 Threaded Mounting Holes; Black		Provide as shown on Drawing, minimum of one (1) in the Building's MDF.
Panduit	2-Post Relay Rack; 84"H; 45 RMU; #12-24 Threaded Mounting Holes; Black		Provide as shown on Drawing, minimum of one (1) in the Building's MDF and each IDF.
Panduit	Front/Rear, 6-inch, Vertical Cable Manager		Provide one (1) between each rack and at both ends of each rack system
Panduit	Front/Rear, 19", 2RU, Horizontal Cable Manager		Provide one (1) above and below each pair of 24-port patch panels and each 48-port patch panel installed. Provide the duplicate amount for owner installation.
Hubbell	RE-BOX Commercial, Wall Mount Cabinet, 42.2" H x 24.2" W x 10" D, Black	SB8370844DFB	Provide at locations designated on the project drawings.
Panduit	EIA compliant 19" pivoting equipment rack, black in color.		Provide at locations designated on the project drawings.
Panduit	Perforated Front Door with lock		Provide one (1) for each pivoting equipment rack on the entire project.
Panduit	Fan Panel, 100 CFM, 27dB, w/ Remote Thermistor		Provide one (1) for each pivoting equipment rack on the entire project.
Panduit	8-Outlet 15A Rack mount Power/Light		Provide one (1) for each pivoting equipment rack on the entire project.
Panduit	Rackmount Power/Cooling, 11 Outlet, 20A, 2-Stage Surge		Provide one (1) for each pivoting equipment rack on the entire project.
Panduit	Grounding Busbar, 12", Kit		Provide one (1) in each MDF and IDF on the entire project
Panduit	Copper Compression Lug, 2 Hole, #6 AWG		Provide at TGBB and at each point bonding to the rack system.

MANUFACTURER	DESCRIPTION	PRODUCT NUMBER	NOTES
Panduit	Universal Cable Runway 12 in (305mm) W, Black		Provide as shown on drawings. Tray shall route to and between all racks, in each MDF/IDF, on the entire project. In addition to cable tray shown, provide vertically installed sections at each location where cables enter the room, routing down and up vertical walls and at the Service Provider's entrance location
Panduit	Cable Runway, 90° radius horizontal bend, 12-inch, black		Provide as shown on drawings.
Panduit	Cable Runway, 90° radius vertical bend, 12 inch, black, inside/outside bend		Provide as shown on drawings.
Panduit	Rack-to-Runway Mounting Kit, black in color		Provide one (1) per rack and Cabinet installed.
Panduit	Runway Stand-Off (Elevation) Kit, 4" - 6"		Provide one (1) per rack and Cabinet installed.
Panduit	Cable Runway, wall angle support kit, 12 inch, black		Provide one (1) at each location where cable tray terminates at a vertical wall
Panduit	Triangular Support Bracket. Made of 1/4" x 2" aluminum bar. Load rating is 100 lb. (45.4 kg). Black		Provide one (1), every 5', for all tray that routes horizontally along a vertical wall.
Panduit	Cable Runway, protective end cap kit (2 caps), black		Provide one (1) pair at each exposed end of all cable tray installed
Panduit	Cable Runway, junction splice kit, black		Provide one (1) set at each location where cable trays intersect.
Panduit	Cable Runway, butt splice kit, black		Provide one (1) set at each location where cable tray ends butt together
OCC	Rack mount 1RU, High Density fiber enclosure, holds 4 adapter plates	RTC1U-HD4APB	Provide as per the project drawings. Or as required, to accommodate all fiber optics in the IDFs, if not shown on drawings
OCC	Rack mount 2RU, High Density fiber enclosure, holds 8 adapter plates	RTC2U-HD8APB	Provide as per the project drawings. Or as required, to accommodate all fiber optics in the MDF/IDFs, if not shown on drawings
OCC	Rack mount 4RU, High Density fiber enclosure, holds 16 adapter plates	RTC4U-HD16APB	Provide as per the project drawings. Or as required, to accommodate all fiber optics in the MDF/IDFs, if not shown on drawings
OCC	Wall Mount 12 to 24 strand fiber optic enclosure, 13"H x 12"W x 3.5"D, black in color	WTC12/24B	Provide at wall mounted fiber optic termination locations

MANUFACTURER	DESCRIPTION	PRODUCT NUMBER	NOTES
OCC	HD Adapter Plate, 12-port, Dual SC, Single-Mode	6112DSC50QHD	Provide as required to accommodate 110% of all fiber terminated in each MDF/IDF
OCC	SM SC, pre-stubbed, factory-polished connector for use on 900m buffered fiber, Aqua Housing	RFC-SC5G	
OCC	SC-to-SC, duplex Fiber jumper, 10gb	D5GSC-SC-*F	* to be replaced with a numeric value depicting the cable length
OCC	Laser Optimized Single-Mode , Plenum, 12-Strand, Tight-Buffered, Interlocking Armored		
Panduit	Patch Panel, 24 Port, Modular Snap In, Black	CPP24FMWBLY	Provide in quantities as required to terminate 100% of all copper backbone cable. Reference project drawings.
Panduit	Patch Panel, 48 Port, Modular Snap In, Black	CPP48FMWBLY	Provide in quantities as required to terminate 100% of all distribution structured cabling, plus 25% for future growth. Reference project drawings. Voice/Data, Security, and WLAN shall have dedicated panels per system.
Dynacom	Unwired, 66-Style Termination Block with clear, hinged cover	66M1-50	Provide one (1) for each 25-pair demarcation extension cable
Dynacom	66 wiring block, metal backboard, blue in color	183C*M	* to be replaced with a numeric value depicting the board size. Provide at each demarcation point for the mounting of the 66 wiring blocks. Board size shall consist two (2) mounting brackets per 25-pair cable installed.
Panduit	Copper Cable, Enhanced Cat 6, 4-Pair, 23 AWG, UTP, CMP, 1000ft/305m	PUP6504**-UY	** to be replaced with numeric character depicting the color of the cable. Colors shall comply with designated color of the system each cable is provided for.
Panduit	Mini-Com Module, Cat 6, UTP, 8 pos 8 wire, Universal, TG Style	CJ688TG**	** to be replaced with numeric character depicting the color of the module. Colors shall comply with designated color of the system each IO is provided for.
Panduit	Mini-Com® 1-port blank module, black	CMBBL-X	provide one for each unused patch panel port
Panduit	Mini-Com® 1-port blank module, gray	CMBIG-X	provide one for each unused faceplate port

MANUFACTURER	DESCRIPTION	PRODUCT NUMBER	NOTES
Panduit	Faceplate, 2 Port, Single Gang, Classic, Stainless Steel	CFPL*SY	* to be replaced with a numeric character depicting the port quantity. Minimum port quantity shall be 4, unless being utilized for single port devices such as phones, clocks, cameras, wireless access points, etc.
Panduit	Copper Patch Cord, Cat 6, UTP Cable	UTPSP^**	^ to be replaced with a numeric value depicting the patch cable length. ** to be replaced with alpha or numeric character depicting the color of the patch cable. Colors shall comply with designated color of the system each cable is provided for. Length to comply as stated in these specifications.
Panduit	Mini-Com® surface mount box accepts two Mini-Com® Modules	CBX2WH-AY	Provide one at every above ceiling outlet location. Including, but not limited to: Ceiling Mounted Projectors, Wireless Access Points, and Video Surveillance Cameras
Leviton	QuickPort In-Ceiling Bracket	49223-CBC	Provide one at every above ceiling outlet location. Including, but not limited to: Ceiling Mounted Projectors, Wireless Access Points, and Video Surveillance Cameras
Leviton	Decora Wall plate/Faceplate	804#-*	Provide one (1) at each USB charging wall plate. '#' to be replaced with numeric characters depicting the required port count. '*' to be replaced with alphabetic characters depicting the plates cover. Port count shall be determined by the quantity of charging wall plates installed at each location. Color to white, black, or stainless steel and shall be dictated by the electrical devices within the same area
EXTENDED DISTANCE POWERED FIBER FOR WIRELESS AP AND VIDEO SURVEILLANCE CAMERAS			
CommScope	Power Express Distribution shelf with alarm module	PFP-PX-S1	Power Express Class 2 shelf and starter kit, accommodates up to 4 modules of 8 SELV/Class 2 outputs, 1U
CommScope	Power Express Distribution module.	PFP-PX-8M	

MANUFACTURER	DESCRIPTION	PRODUCT NUMBER	NOTES
CommScope	Power Express Blank Slot Panel	PFP-PX-SF	Provide one (1) for every empty slot.
CommScope	SPS Rectifier Power Distribution Shelf	PFP-SPS-1	
CommScope	1600W SPS Power Rectifier module	PFP-SPS-1600M	
CommScope	SPS Rectifier Controller Display	PFP-SPS-C1	Provide one per SPS Rectifier Power Distribution Shelf
CommScope	SPS Rectifier Blank Slot Panel	PFP-SPS-SF	Provide one (1) for every empty slot.
CommScope	CS34O Category 6 U/UTP filled Cable, outdoor direct burial, black jacket, 4 pair count, 1000 ft (305 m) length, reel	UN884019904/10 | CS34O BLK C6 4/24 U/UTP RL 1KFT	
CommScope	OS2, Outdoor, 4-Strand Fiber	PFC-S04012	
Transition Networks	Gigabit SFP Module	TN-GLC-LH-SM.	Provide one (1) for each POE extender.
CommScope	PoE Extender, 2 Port Universal Mount, Outdoor, 60 Watt, 2-Port	PFU-P-C-0-060-02	
Hoffman	22” X “22” back panel	CP2424	
Hoffman	24”x24”x8” NEMA-4 junction box.	CSD24248	
Hoffman	Padlock Handle	CWHPTO	

END OF SECTION

SECTION 27 41 16.20

AUDIO AND VIDEO DISTRIBUTION SYSTEMS FOR SPECIAL VENUES

PART 1 – GENERAL

1.1 RELATED WORK

A. The following sections shall associate with this specification as applicable.
1. General Conditions
2. Supplementary Conditions
3. Division 1
4. Division 26 in its entirety.
5. Division 27 in its entirety.
6. Division 28 in its entirety.

1.2 DESCRIPTION

A. Summary of Work:
1. Provide all equipment specified well as all miscellaneous parts and materials required for the proper, complete, and functional Video and/or Sound Distribution System at all spaces.
2. All applicable equipment shall bear the UL label.
3. Governing Codes and Conflicts: If the requirements of these specifications or the Project Drawings exceed those of the governing codes and regulations, then the requirements of these specifications and the Drawings shall govern. However, nothing in the Drawings or Specifications shall be construed to permit work not conforming to all governing codes, regulations, and manufacturer installation requirements.
4. Locate equipment to accommodate millwork, fixtures, marker boards and other room equipment at no additional cost to the owner.
5. Plenum rated cable may be used as an option at the contractor's discretion. Wherever cabling is run exposed, conduit shall be used to cover and protect wiring.
6. These documents are conceptual in nature. It shall be the responsibility of the approved installer to furnish a complete and functional system, including the items shown on the drawings, in the specifications, and items not designated in either. The installer's shop drawings and product data submittals shall represent a complete system and documents accepted do not relieve the installer from being required to provide any materials, equipment, or labor to furnish a complete and functional system as recognized by the Project's Technology Consultant and the Owner.

1.3 QUALITY ASSURANCE

A. Installer Qualifications:
1. The contractor providing and installing the integrated audiovisual systems and associated infrastructure shall be an authorized dealer of the specified manufacturer and be capable of providing the manufacturer's maximum available product warranty.
2. All individuals installing the audio-video system must be employees of the authorized dealer and at least 75% of the installing staff shall have undergone a training class given by the manufacturer. Current certification indicating the successful completion of the training course shall be available upon request at the project and submitted in the contractor's product submittals.
3. The proposing contractor and the installing contractor must be the same company. No subcontractor to the proposing audio-video contractor will be allowed for any portion of the audio-video scope of work.
4. The System Installer shall meet all applicable regulations of the State and Department of Labor insofar as they apply to this type of system. The bidder shall be a firm normally employed in the audio-video industry and shall provide a reference list of ten (10) projects of equivalent size or larger and contact names confirming successful completion of projection system installations.
5. The bidder shall have an authorized service center, within 75-miles of the project's location, for the brand of equipment that is submitted for bid. The Owner, Architect, and Consultant reserves the right to perform an onsite inspection as they deem necessary.

6. The bidder must produce a letter from the manufacturer guaranteeing the delivery of all the equipment outlined in the specification herein.

B. Pre-Construction Meeting:
1. The successful Contractor shall attend a mandatory pre-construction meeting with individuals deemed necessary by the Owner's representative prior to the start of the work.
2. The contractor shall provide a mockup of the complete integrated audiovisual system solution for each of the typical spaces below before implanting the installation in multiple like rooms. Mockup shall include all products listed in part 2 of this specification. Coordinate with G.C., Architect, Consultant, and Owner for scheduling and location of mockup.
3. All proposing contractors must have ability to demonstrate a/v system being proposed and provide owner with completely installed system to evaluate performance and operation.

C. Acceptance: The Owner's representative reserves the right to reject all or a portion of the work performed, either on technical or aesthetic grounds.

D. Warranty:
1. The selected system installer shall be factory authorized service center and shall provide an end-to-end performance warranty of not less than one (1) year. The proposer shall provide current certification documentation. The performance warranty shall be issued by the manufacturer and shall warrant that video systems have been tested to the district's approval. This end-to-end warranty shall cover the labor associated with removing/reinstalling any associated hardware or equipment as well as the replacement of all defective equipment or hardware.
2. The bidder shall also submit with the materials mentioned in section 1.5 submittals of this specification a written explanation outlining the terms and conditions of product warranty of all parts and service of the integrated a/v solutions.

1.4 REGULATORY REQUIREMENTS

A. Standards: All work shall be performed in accordance with the latest revisions of the following standards and codes:
1. Latest Local Codes and Amendments
2. National Electrical Code, current version

B. Other References:
1. TIA/EIA-568-A Commercial Building Telecommunications Wiring Standard
2. EIA/TIA-569 Commercial Building Standard for Telecommunication Pathways and Spaces.
3. TIA/EIA-606 The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings.
4. TIA/EIA-607 Commercial Building Grounding and Bonding Requirements for Telecommunications.
5. EIA/TIA 455-A Standard Test Procedure for Fiber Optic Fibers, Cables, Transducers, Sensors, Connecting and Terminating Devices and Other Fiber Optic Components.
6. TIA/EIA TSB 67 Transmission Performance Specification for Field Testing of Unshielded Twisted-Pair Cabling Systems.
7. TIA/EIA TSB 72 Centralized Optical Fiber Cabling Guidelines
8. ISO/IEC 1180 Generic Cabling Standard
9. EN 50173 Generic Cabling Standards for Customer Premises
10. ANSI/EIA/TIA 526-14 Optical Power Loss Measurements of Installed Multimode Fiber Cable Plan.

C. Governing Codes and Conflicts: If the requirements of these specifications or the Project Drawings exceed those of the governing codes and regulations, then the requirements of these specifications and the Drawings shall govern. However, nothing in the Drawings or Specifications shall be construed to permit work not conforming to all governing codes and regulations.

1.5 ABBREVIATIONS

A. The following abbreviations are used in this document:
1. AV-*# Audiovisual input station / Presentation Station (Reference drawing legend) CMP

Ceiling Mounted Projector LCD or LED Flat panel screen/monitor

1.6 SUBMITTALS

A. Project Initiation: Within fourteen (14) days of Notice to Proceed, the projection system installer shall furnish the following in a single consolidated submittal:
   1. Permits: The Contractor shall obtain all required permits and provide copies to the Owner/Architect/Engineer.
   2. Product Literature: Complete manufacturer's product literature for all, speakers, amplifiers, cable, cross-connect blocks, cable supports, cable labels, outlet devices, and other products to be used in the installation. In addition, whenever substitutions for recommended products are made, samples (when requested by the Owner/Designer) and the manufacturer's supporting documentation demonstrating compatibility with other related products shall be included.
   3. Construction Schedule: A time-scaled Construction Schedule, using PERT/CPM, indicating general project deadlines and specific dates relating to the installation of the cable distribution system.
   4. Testing: Proposed Contractor test result forms, and a list of instrumentation to be used for systems testing.
   5. The contractor shall provide a letter from the manufacturer stating that the dealer is an authorized service center.
   6. The resume and contact information of the full-time service personnel responsible for the installed projection system.
   7. Specification Compliance: A letter shall be provided stating, by section and subsection, that the installer complies with the ENTIRE specification section. If the installer intends to deviate from any portion of the specifications, a detailed explanation of reason in which the installer would like to deviate shall be provided in addition to the specification compliance letter. No deviations shall be acceptable until they have been accepted by the project's technology consultant.
   8. Certifications: The contractor shall submit all of the following certifications and the certifications must contain dates which are valid from the date of proposal and not expirer any sooner than 12 months after substantial completion of the project.
      a. Manufacturer authorized dealer certification
      b. Installer training certification
         1) Provide specification with line by line acknowledgement of compliance.

B. Shop Drawings: Submit the following items, for Owner review and approval, within twenty-eight (28) days of notice to proceed:
   1. Proposed wiring and connectivity diagram of the proposed projection system including all faceplates and sound reinforcing equipment
   2. In addition to the wiring/connectivity diagram, the submitted drawings shall indicate the following, even if the following is expected to be provided by the project's electrical or general contractor:
      a. Location of wall penetrations (all penetrations shall be sleeved and contain protective bushings at both ends)
      b. Location of sleeved wall pass-thru
      c. Size of sleeve at each location installed
      d. Quantity of cable passing through each sleeve
      e. Location of drops in each room (quantity or labeling of drops are not required in the submittal plans. Labeling shall be provided in the closeout plans and quantities shall be as per the contract documents, addendums, and issued changes. Each drop shall be labeled for the type of outlet that it is)
      f. Conduit routing, size, quantity, and stub-up locations for all floor mounted outlets.
   3. Drawing Compliance: A letter shall be provided stating that the installer complies with the ENTIRE project drawing, including all general, keyed, and notes to contractor. If the installer intends to deviate from any portion of the specifications, a detailed explanation of reason in which the installer would like to deviate shall be provided in addition to the specification compliance letter. NO DEVIATIONS SHALL BE ACCEPTABLE UNTIL THEY HAVE BEEN ACCEPTED BY THE PROJECT'S TECHNOLOGY CONSULTANT.

C. Project Completion: As a condition for project acceptance, the Contractor shall submit the following

for review and approval:

1. Samples: Complete manufacturer's product literature and samples (if requested) for all pre-approved substitutions to the recommended products made during the course of the Project.
2. Inspection and Test Reports: During the course of the project, the Contractor shall maintain an adequate inspection system to ensure that the materials supplied, and the work performed conform to Contract requirements. The contractor shall provide written documentation that indicates that materials acceptance testing was conducted as specified. The Contractor shall also provide documentation, which indicates that all cable termination testing was completed and that all irregularities were corrected prior to job completion.
3. Operating and Maintenance Instructions: Operating and maintenance instructions for all devices within the system. These instructions shall reflect any changes made during the course of construction and shall be provided to the Owner for their use on disc or USB drive with the project name and description (2 copies).
4. Provide schematic line diagram of system components as deployed in each installation.

PART 2 – PRODUCTS

2.1 GENERAL

All products listed in this section shall be provided and installed by the contractor unless otherwise noted below. The following list is not intended to be a complete list of required equipment or cables as the project is to be Turnkey and may require equipment beyond the depth of this list. It is the contractor's responsibility to ensure that they are providing a complete and functional system with their proposal. All part numbers listed herein are for performance basis of design reference only. Prior to purchasing and installing equipment, the contractor shall ensure that the most up-to-date equivalent products from the same manufacturer are provided.

A. Installation: The cabling shall be installed per requirements of the manufacturer and the Project Documents utilizing materials meeting all applicable TIA/EIA standards. The Contractor is responsible for providing all incidental and/or miscellaneous hardware not explicitly specified below as required for a complete and operational system.

B. Materials: Materials shall be as listed or shall be approved equivalent products of other manufacturers meeting the intent and quality level of the TIA/EIA specifications. All approved equivalent products will be published by addendum ten days prior to proposal for Architect / Engineer to review.

C. Testing: All installed cabling shall be tested 100% good after installation by the Contractor.

D. Ratings: All products shall be new and brought to the job site in the original manufacturer's packaging. Electrical components (including innerduct) shall bear the Underwriter's Laboratories label. All communications cable shall bear flammability testing ratings as follows:

CM Communications Cable
CMP Plenum Rated Communications Cable
CMR Riser-Rated Communications Cable

E. Initial Cable Inspection: The Contractor shall inspect all cable prior to installation to verify that it is identified properly on the reel identification label, that it is of the proper gauge, containing the correct number of pairs, etc. Note any buckling of the jacket that would indicate possible problems. Damaged cable or any other components failing to meet specifications shall not be used in the installation.

F. Cable Lubricants: Lubricants specifically designed for installing communications cable may be used to reduce pulling tension as necessary when pulling cable into conduit.

1. Approved Products
   a. Twisted-pair cable: Dyna-Blue
      American Polywater

G. Fire Wall Sealant: Any penetration through firewalls (including those in sleeves) will be resealed with an Underwriter Laboratories (UL) approved sealant.

1. Approved Products
   a. 3M or
   b. Pre-approved equal

2.2 WEIGHT ROOM C148 – AUDIO AND VIDEO DISTRIBUTION

A. Contractor to provide and install a complete video and audio distribution system in compliance with the equipment specified in the table below and associated drawings. Installation shall be turnkey, including programming, testing, and training.

QTY	MFR	PRODUCT NUMBER	DESCRIPTION
AUDIO DISTRIBUTION			
1	Q-SYS	Core 8 Flex	Digital Signal Processor
1	Q-SYS	CX-Q 2K4	1000W 4-Channel Network Amplifier
1	Bluesound	B400S	4-zone network music player - Shared with indoor practice facility.
Ref. Plans	Q-SYS	AD-S8T	8-inch 2-way, 75° conical Speaker – Provide Yoke mounts as required.
1	RDL	D-BTN21	Bluetooth Audio Dante/AES67 Network Interface (White)
VIDEO DISTRIBUTION			
1	Q-SYS	TSC-70-G3	7” Touch Screen AV Controller to control source.
1	FSR	WB-TSC-FM-10	Touchscreen Wall Plate Cover
WIRELESS MICROPHONE SYSTEM			
1	Shure	**SLXD124/85**	Combo Wireless Handheld and Lavalier Microphone System – provide (1) additional over the ear mics.
1	Shure	**SBC203**	Dual Docking Charging Station
2	Shure	**SB903**	Rechargeable Lithium-Ion Battery
2	**Shure**	**UA864**	**Wall Mounted Antenna – Coordinate color with architect**
2	Shure	UABIAST	In-Line Power Adapter
AV NETWORK EQUIPMENT			
1	Netgear	M4250-40G8XF-PoE+ (GSM4248PX)	AV Line 40x1G PoE+ 960W and 8xSFP+ Managed Switch – Shared with Indoor Practice Facility

2.3 INDOOR PRACTICE FACILITY – AUDIO AND VIDEO DISTRIBUTION

A. Contractor to provide and install a complete video and audio distribution system in compliance with the equipment specified in the table below and associated drawings. Installation shall be turnkey, including programming, testing, and training.

QTY	MFR	PRODUCT NUMBER	DESCRIPTION
AUDIO DISTRIBUTION			
1	Q-SYS	Core 24F	Digital Signal Processor - Shared with indoor Practice facility – Connect displays audio output to DSP input
2	Q-SYS	CX-Q 4K8	1250W – 4 Channel Network Amplifier
Ref. Plans	Q-SYS	AD-S12	12-inch 2-way, 75° conical Speaker - Black in color - Provide Yoke mounts as required.
2	RDL	D-BTN21	Bluetooth Audio Dante/AES67 Network Interface (White)
VIDEO DISTRIBUTION			
2	Q-SYS	TSC-10-G3	10” Touch Screen AV Controller
2	FSR	WB-TSC-FM-10	Touchscreen Wall Plate Cover
WIRELESS MICROPHONE SYSTEM			
1	Shure	**SLXD124/85**	**Combo Wireless Handheld and Lavalier Microphone System – provide (1) additional over the ear mics.**

1	Shure	**SBC203**	Dual Docking Charging Station
2	Shure	**SB903**	Rechargeable Lithium-Ion Battery
1	RF Venue	D-ARC	Diversity Architectural Antenna – Coordinate color with architect
2	Shure	UABIAST	In-Line Power Adapter

2.4 PLAYER MEETING ROOMS – AUDIO AND VIDEO DISTRIBUTION

A. Contractor provide and install a complete video and audio distribution system in compliance with the equipment specified in the table below and associated drawings. Installation shall be turnkey, including programming, testing, and training.

QTY	MFR	PRODUCT NUMBER	DESCRIPTION
AUDIO DISTRIBUTION			
1	Q-SYS	Core 8 Flex	Digital Signal Processor - Connect displays audio output to DSP input
1	Q-SYS	MP-A40V	200W, 4-Channel Network Amplifier
Ref. Plans	Q-SYS	AD-C6T-ZB	6-inch 2-way, 75° conical Speaker
VIDEO DISTRIBUTION			
4	Q-SYS	TSC-70-G3	7” Touch Screen AV Controller for input control
4	Visionary Solutions	D5200	AVoIP Decoder – connect touch USB port on interactive display to decoder.
4	Visionary Solutions	E5-WP	AVoIP Wall plate encoder
4	Visionary Solutions	E5200	AVoIP encoder – connect to display HDMI output to mirror interactive display.
3	Lutron	GRX-IRPS-WH	Partition Sensor. Coordinate power and conduit requirements with Division 26.
4	**Cleartouch**	**CTI-6086A+UH40 w/ CTI-PCOPS-PC15-SM**	**Interactive video display with PC module. Connect audio output to DSP input.**
AV NETWORK EQUIPMENT			
1	Netgear	M4250-26G4F-PoE+ (GSM4230P)	24x1G PoE+ 300W 2x1G and 4xSFP Managed Switch

2.5 ENTRANCE HALL C147 – AUDIO AND VIDEO DISTRIBUTION

A. Contractor provide and install a complete video and audio distribution system in compliance with the equipment specified in the table below and associated drawings. Installation shall be turnkey, including programming, testing, and training.

QTY	MFR	PRODUCT NUMBER	DESCRIPTION
AUDIO DISTRIBUTION			
1	**LEA Professional**	**CONNECT 352D**	**350W Two Channel Amplifier with Dante and DSP - Connect displays audio output to amplifier audio input.**
Ref. Plans	JBL	SLP14/T	Low-Profile On-Wall Loudspeaker – Black in color

2.6 HEAD COACH C106 – AUDIO AND VIDEO DISTRIBUTION

A. Contractor provide and install a complete video and audio distribution system in compliance with the equipment specified in the table below and associated drawings. Installation shall be turnkey, including programming, testing, and training.

QTY	MFR	PRODUCT NUMBER	DESCRIPTION

VIDEO DISTRIBUTION			
1	Liberty AV	DL-1H1A1UC-WPKT	HDMI & USB-C HDBaseT Wall Plate Extension Set w/USB

2.7 AUDIO AND VIDEO COMPONENTS AND EQUIPMENT - ALL VENUES

A. Custom Plates
1. Liberty Panel Crafters, Proco, or RCI are approved manufacturers.
2. Provide custom plates as indicated on the drawings.

B. Equipment Rack: Provide and install equipment rack at locations designated on the contract drawings. Equipment rack shall consist of the following:
1. Enclosure:
a. Atlas Sound 300 Series wall mount rack with 6 spare keys. (1 per venue). Provide size to accommodate all equipment, plus an additional 25% for future growth.
2. Additional Accessories:
a. Middle Atlantic D3 (3) space rack drawer (1 per venue)
b. Juice Goose JG 8LED Power Distribution Center with LED Lighting (1 per venue)
c. Juice Goose CQ 1520 Sequenced Power Control System (1 per venue)
d. Provide any additional hardware or lacing strips to make a complete installation
e. Provide blank panels necessary to enclose rack completely.

C. Miscellaneous Equipment
1. Provide the following equipment for each venue, unless noted otherwise. (excluding the Advanced Culinary Lab, Weight Room, and Wrestling Room)
a. (2) Shure SM58S-LC Microphones, per venue
b. (1) 25’ Microphone cable, per venue
c. (1) 50’ Microphone cable, per venue
d. (2) Atlas MS20E Mic Stand, per venue
e. (1) Atlas TL34-15E Boom Stand, per venue

D. Assistive Listening
1. Provide a remote antenna. Adjust DSP for “hard knee” compression on assisted listening output. Test and use equalization for maximum sound quality.
a. Listen LT-800-072-01 – Assisted Listening RF Transmitter
b. Listen LA-326 Universal Rack Mounting Kit
c. Listen LR-500-072-P1 Advanced Intelligent DSP RF Receiver
d. Listen LA-430 Intelligent Ear Phone/Neck Loop Lanyard
e. Listen LA-380-01 Intelligent 12-Unit Charging/Carrying Case
f. Provide quantities needed to fulfill the quantities stipulated in the Receivers for Assistive Listening Systems Table.

RECEIVERS FOR ASSISTIVE LISTENING SYSTEMS TABLE

Capacity of Seating in Assembly Area	Minimum Number of Required Receivers	Minimum Number of Required Receivers Required to be Hearing-aid Compatible
50 or less	2	2
51 to 200	2, plus 1 per 25 seats over 50 seats	2
201 to 500	2, plus 1 per 25 seats over 50 seats	1 per 4 receivers
501 to 1000	20, plus 1 per 33 seats over 500 seats	1 per 4 receivers
1001 to 2000	35, plus 1 per 50 seats over 1000 seats	1 per 4 receivers
2001 and over	55, plus 1 per 100 seats over 2000 seats	1 per 4 receivers

E. Programming shall be coordinated with the Owner and Project’s Consultant. Programming shall include, but not be limited to the following:
1. AV Control Panel Configuration
2. Audio routing from any source location through the DSP
3. Screen control via the Audio / Video Control panel
4. Device resolution and over/under-scanning settings

5. Incorporation of any Owner furnished source equipment (maximum of 2)

2.8 DISPLAYS AND MOUNTING HARDWARE

A. All displays and digital signage players shall be owner furnished, contractor installed.

B. Wall Mounted Monitors: Provide the following at each wall mounted flat screen display location on the entire project
1. Universal Flat Wall Mount: Peerless Product No.SF680
2. Articulating Wall Mount for 39" to 90" Displays installed on prefabricated walls: Peerless Product No. PA762. Coordinate with architect.
2. Provide Triple Stud Wall Plate for each, stud-wall, wall mounted solution as needed.

2.9 AUDIO AND VIDEO CABLING AND COMPONENTS

A. Cabling:
a. One (1) HDMI Cable, from AV input plate to the AV device location.
1) For runs 40’ or less, provide Liberty Product No. P-HDM-M-* HDMI active cable.
2) For runs over 40’, Provide (1) Liberty AV Product no DL-1H1A1UC-WPKT, HDMI & USB-C HDBaseT Wall Plate Extension Set w/USB at Wall plate AV input locations.
3) For runs over 40’, Provide (1) Liberty AV Product no. DL-1H1A1UB-H3, 4K HDMI & USB HDBaseT 3.0 Extension Set at floor box AV input locations.
b. One (1) 3.5mm Stereo Audio Cable, Liberty Product No. P221P-3.5TRSM-M-* (cable shall provide connection from the device audio output to the audio amplifier or DSP)
C. The (*), at the end of each product number above, shall be replaced with a numerical value depicting the length as required per location.

B. Components:
a. Provide the following at each AV Input Wall Plate (AV-1, PS, AVI, etc.:)
1) One (1) HDMI Pass-Thru, with Pigtails, C2G Product No. 39710
2) One (1) 1-Gang Decora Wallplate, Standard Size.
b. Provide the following at each AV Output Wall Plate associated with a video display (FSD, Monitor, or Digital Signage) unless noted otherwise elsewhere.
1) One (1) HDMI + 3.5MM Stereo Audio Pass-Thru, with Pigtails, C2G Product No. 39872
2) One (1) 1-Gang Decora Wallplate, Standard Size.
c. The (*), at the end of each product number above, shall be replaced with a numerical value depicting the finish and color. Contractor to match finish and color.
d. Provide lockable covers for physical audio inputs at practice facility.

2.10 AUDIO VISUAL PATCH CABLES

A. Provide and install the following Patch Cables
1. Provide the following at each AV Input Outlet:
a. One (1) 10’ HDMI Patch Cable, C2G Product No. 56784
2. Provide the following at each AV Output Outlet:
a. One (1) 6’ HDMI Patch Cable, C2G Product No. 56783

2.11 CABLE ROUTING/PATHWAY

A. Cable Support System: All audio-video cabling shall be installed and supported using an approved J-Hook cable support system at 4’-0” intervals unless installed in conduit. Do not exceed manufacture recommendation for the quantity of cables supported in an individual support.

B. All cable bundles shall be grouped together using plenum rated Velcro for the entire run above and below the ceilings.

PART 3 – EXECUTION

3.1 GENERAL

A. Contractor is required to properly mount integrated A/V solutions and connect all video / audio cables to component inputs.

B. Contractor is required to thoroughly test and verify operation of all A/V inputs and video modes prior to project completion.

C. Contractor shall provide owner with written verification test process and results once all projectors have been installed, tested, and placed in final condition.

D. Damage: The Contractor shall replace or rework cables showing evidence of improper handling including stretches, kinks, short radius bends, over tightened bindings, loosely twisted and over-twisted pairs at terminals and cable sheath removed too far (over 1-1/2 inches).

E. The Contractor shall replace any damaged ceiling tiles that are broken during cable installation.

F. Clean Up: All clean up activity related to work performed will be the responsibility of the Contractor and must be completed daily before leaving the facility.

G. Provide audio ducking signal from PA system to all local sound systems systems.

3.2 DOCUMENTATION

A. Contractor shall provide owner with detailed serial number listing and associated graphical room number designation equipment was installed. Contractor shall use actual graphical package room numbers not architectural plan numbers from construction set.

3.3 STATION WIRING INSTALLATION

A. General: All cable must be handled with care during installation so as not to change performance specifications. Factory twists of each individual pair must be maintained up to the connection points at both ends of all category 6 cable. There shall never be more than one and one-quarter inch of unsheathed enhanced Category6 UTP cable at either the wiring USB Transmitter or Receiver.

B. Exposed Cable: All cabling shall be installed inside walls or ceiling spaces whenever possible. Exposed station cable will only be run where indicated on the Drawings. Additional exposed cable runs will require Owner approval and will only be allowed when no other options exist.

C. Placement: All cabling and associated hardware shall be placed so as to make efficient use of available space. All cabling and associated hardware shall be placed so as not to impair the Owner’s efficient use of their full capacity.

D. Cable Routes:
1. All cabling placed in ceiling areas must be in conduit, cable tray or an approved J-Hook cable support. Cable supports shall be permanently anchored to building structure or substrates. Provide attachment hardware and anchors designed for the structure to which attached and that are suitably sized to carry the weight of the cables to be supported. Do not route cable through webbing of structural steel. Cabling must be supported in dedicated supports intended to support cabling as described in this section. Contractor shall adhere to the manufacturer’s suggested fill ratio for each size cable support installed.
2. Attaching cable to pipes or other mechanical items is not permitted. Communications cable shall be rerouted so as to provide a minimum of 18 inches spacing from light fixtures, sources of heat, power feeder conduits and EMI sources. Cabling shall not be attached to ceiling. Grid support wires. Cable runs shall be routed down the corridors; parallel or perpendicular to building structure. Multiple cables to be bundled together at and between each cable support installed.
3. Contractor shall be responsible for coordinating with other trades on the project so that the installed cable pathway does not interfere with the installation of other systems to insure that mechanical ducts, pipes, conduits, or any other above ceiling systems are not putting unnecessary stress on any portion of the install audio-video cabling.

3.4 STATION HARDWARE

A. Flush mounted components: all component shall be inserted to a flush mounted faceplate unless designated otherwise.

B. Placement: Where possible, the AV input outlets shall be located so that its centerline is 18 inches above floor level or 12 inches above permanent bench surfaces. Outlets shall not be mounted on temporary, movable, or removable surfaces, doors, or access hatches.

3.5 PROGRAMMING

A. Programming shall be coordinated with the Owner and Project's Consultant. Programming shall include, but not be limited to the following:
   1. AV Control Panel Configuration
   2. Audio routing from any source location through the DSP
   3. Screen control via the Audio / Video Control panel
   4. Device resolution and over/under-scanning settings
   5. Incorporation of any Owner furnished source equipment (maximum of 3)

3.6 FINAL TESTING REQUIREMENTS

A. Notification: The Owner and Engineer shall be notified one week prior to any testing so that the testing may be witnessed.

B. Inspection: Before requesting a final inspection, the Contractor shall perform a series of end-to-end installation performance tests. The Contractor shall submit for approval a proposal describing the test procedures, test result forms and timetable for all copper and fiber optic cabling.

C. Procedures: Trained personnel shall perform all testing. Acceptance of the test procedures discussed below is predicated on the Contractor's use of the recommended products and adherence to the inspection requirements and practices set forth. Acceptance of the completed installation will be evaluated in the context of each of these factors. Testing procedures shall consist of, but not me limited to the following:
   1. Input locations to be tested utilizing multiple types of source equipment. Equipment to include:
      a. Personal Computer (laptop)
      b. Apple iMac
      c. Apple Mac Mini
      d. Google Chromebook
      e. Additional devices may be required at the time of testing
      f. contractor to provide devices on a single cart, to roll between inputs during testing.
   2. Routing of video, from any source to each display simultaneously and independently.
   3. Routing of audio, from any source to each audio channel simultaneously and independently.
   4. Control of the entire system from each installed A/V Control Panel
   5. Additional test requirements may be required at the Owner and/or Consultant's request.

3.7 OWNER TRAINING AND DEMO

A. A/V integrator shall provide demonstration of all integrated a/v solutions to owner's staff that have any stake with the operation and maintenance of the a/v solutions. Integrator shall produce sign in sheets for record of who was trained and when. Copies of sign in sheets shall be submitted with close out paperwork. Coordinate training dates with owner at project completion.

B. Integrator shall provide factory training for owner's operations and maintenance personnel for each major component of the systems listed in the A/V solutions outlined in part 2 of these specifications. Training shall be a minimum of 4 hrs. per person. Re-training of staff shall be available, at no cost to the owner, to a maximum of 3 on-site training sessions up to 1 year from the date of project competition.

C. All training is to be recorded via video recording and a copy of the recorded video shall be provided to the owner upon completion. All video recording equipment, for the recording of training, shall be

provided by the integrator.

END OF SECTION

SECTION 27 50 00

SCHOOL COMMUNICATIONS SYSTEM

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 RELATED WORK

A. The following sections shall associate with this specification as applicable.
1. General Conditions
2. Supplementary Conditions
3. Division 1
4. Division 26 in its entirety.
5. Division 27 in its entirety.
6. Division 28 in its entirety.

1.2 GENERAL REQUIREMENTS

A. The contractor shall furnish and install all required materials to expand the existing intercom system to new and renovated areas as shown on the project drawings. It shall be the responsibility of the installing contractor to design the expanded/renovated areas of the system in accordance with the latest codes and standards.

B. The contractor shall field verify the manufacturer, model, expansion capabilities, and location of the existing system.

C. The campus Intercom System is an existing Telecenter U with a Telecenter ICS slave. The system is located in the PA room of the adjacent High School. Connect speakers to this system as designated on the project drawings.

D. The system expansion shall be provided and installed by the manufacturer's authorized contractor. Certification shall be submitted verifying that the contractor is the manufacturer's authorized contractor. Included shall be certificates of attendance in manufacturer's installation / maintenance training by the contractors directly employed personnel. The communications contracting company shall have been in business for a minimum of 5 years, continuously furnishing the specified manufacturers' product lines and systems.

E. The system expansion assemblies shall be completely factory built and tested by manufacturers of established reputation, who have and can refer to similar systems which are currently installed and functioning properly. The factory pre-assembled cabinets, consoles, and power supplies shall be UL approved and listed.

F. The system’s expansion shall be guaranteed for a period of one year from the date of acceptance or first beneficial use, whichever is first, against defects in materials, workmanship, design and improper adjustment. Any defects in the system’s expansion shall be corrected at no expense to the Owner, provided the system does not show signs of abuse. During the guarantee period any work found not to be in conformance with the plans, specifications and addenda shall be brought into conformity with same at no additional cost to the owner.

G. The equipment described herein and furnished per these specifications shall be supplied by one communications contractor. The contractor shall hold the necessary License for this type of work. Equipment shall be manufactured by the same manufacturer of the existing system and all work shall

be performed by a certified dealer of the existing manufacturer. Contractor is required to submit current certification from manufacturer with submittals.

H. Approval request for installation of equipment not as specified herein must be received by the architect not less than ten days prior to bid opening. Proposals must be accompanied by complete technical data as well as a list of at least 10 references for successful Telephone / Intercom / Clock system installations. All potential bidders submitting proposals for substitute system approval must provide a working demonstration system, for the owner's inspection prior to final acceptance, to ensure that the submitted components are equal to the specified in all functional aspects. Demonstrations shall be provided at the owner's chosen location at no cost or inconvenience to the owner's personnel.

I. Alternative proposals which are approved, for bidding purposes only, will be published by addenda. Proposals not complying with the prior approval requirements and conditions set forth will not be considered.

J. The contractor shall make available, and maintain a radio dispatched mobile service department capable of furnishing equipment inspection and timely service at the Owner’s location.

K. The contractor shall be prepared to offer a service contract for the maintenance of the system beyond the warranty period.

L. The contractor shall instruct personnel designated by the owner in the proper use, basic care, and maintenance of the equipment. Such training shall be provided as an integral component of the system.

M. The contractor shall submit certificates of factory authorization and completion of the manufacturer’s telephone installation and maintenance training.

N. These documents are conceptual in nature. It shall be the responsibility of the approved installer to furnish a complete and functional system, including the items shown on the drawings, in the specifications, and items not designated in either. The installer’s shop drawings and product data submittals shall represent a complete system and documents accepted do not relieve the installer from being required to provide any materials, equipment, or labor to furnish a complete and functional system as recognized by the Project’s Technology Consultant and the Owner.

1.3 CONTRACTOR QUALIFICATIONS

A. The installing contractor shall be the authorized representative of the intercom system to sell, install, and service the proposed manufacturer's equipment. The installing contractor shall have represented the intercom manufacturer's product for at least two years.

B. The installing contractor shall provide 24 hour, 365 days per year emergency service with factory trained, state licensed service technicians.

C. The installing contractor must have a permanent office within a 120-mile radius of the project site and be an approved dealer/integrator, of the proposed system, in the nearest major metropolitan area.

D. The installing contractor shall have been actively engaged in the business of selling, installing, and servicing systems in the surrounding area for at least ten (10) years.

E. All individuals installing the intercom system must be employees of the certified installer and at least 25% of the installing staff shall have undergone a training class given by the manufacturer. Current certification indicating the successful completion of the training course shall be available

upon request at the project and submitted in the contractor's product submittals.

F. The entity providing pricing to furnish and install the system specified within this specification section and the physical installing entity of this system shall be one in the same. Absolutely no subcontracting on any portion of this system, by the system's proposing entity, will be allowed.

1.4 SUBMITTALS

A. Product Data:
1. Within fourteen (14) days of Notice to Proceed, the system installer shall furnish the following in a single consolidated submittal:
a. Permits: The Contractor shall obtain all required permits and provide copies to the Owner/Architect/Engineer.
b. Product Literature: Complete manufacturer's product literature for all cable, termination components, cable supports, cable labels, field devices, and other products to be used in the installation. In addition, whenever substitutions for recommended products are made, samples (when requested by the Owner/Designer) and the manufacturer's supporting documentation demonstrating compatibility with other related products shall be included. The submittal shall have some type of distinguishing marker or pointer to indicated what specific product is to be provided
c. Construction Schedule: A time-scaled Construction Schedule, using PERT/CPM, indicating general project deadlines and specific dates relating to the installation of the cable distribution system.
d. Testing: Proposed Contractor system test result forms and a list of instrumentation to be used for systems testing.
e. Specification Compliance: A letter shall be provided stating, by section and subsection, that the system installer complies with the ENTIRE specification section. If the installer intends to deviate from any portion of the specifications, a detailed explanation of reason in which the installer would like to deviate shall be provided in addition to the specification compliance letter. No deviations shall be acceptable until they have been accepted by the project's technology consultant.
f. Certifications: The contractor shall submit all of the following certifications and the certifications must contain dates which are valid from the date of proposal and not expirer any sooner than 12 months after substantial completion of the project.
1) Manufacturer's Authorized Dealer/Installer Certification: This certification must be held by the proposing/installing contractor and state that the proposing/installing contractor is and authorized dealer/installer of the system specified within the project specifications. The certification must have been obtained by the office that is within a 120-mile radius of the project's location.
2) Installer Certification: This certification must be held by at least 25% of the, on-site, staff and be made available at the site if requested by the owner, architect, and/or project's technology consultant.
3) Licenses: This includes all licenses required by the state in which the work is being performed, the federal government, local authorities having jurisdiction, and any organization in that governs the specific system

B. Shop Drawings:
1. Submit the following items, for Owner review and approval, within twenty-eight (28) days of notice to proceed:
a. Proposed circuit routing and circuit grouping plan prepared by a system registered designer. The designer's certification must be current. Identifiable, separate routing shall be shown for both the station cabling and any backbone trunk cabling.
b. In addition to the cable routing, the submitted drawings shall indicate the following, even if the following is expected to be provided by the project's

electrical or general contractor:

1) Location of all control equipment and remote power sources
2) Locations of all field devices and outlets
3) Location of wall penetrations (all penetrations shall be sleeved and contain protective bushings at both ends)
4) Location of sleeved wall pass-thru
5) Size of sleeve at each location installed
6) Quantity of cable passing through each sleeve
7) Location of drops in each room (quantity or labeling of drops are not required in the submittal plans. Labeling shall be provided in the closeout plans and quantities shall be as per the contract documents, addendums, and issued changes. Each drop shall be labeled for the type of outlet that it is)
8) Conduit routing, size, quantity, and stub-up locations for all floor mounted outlets.

c. Drawing Compliance: A letter shall be provided stating that the system installer complies with the ENTIRE project drawing, including all general, keyed, and notes to contractor. If the installer intends to deviate from any portion of the specifications, a detailed explanation of reason in which the installer would like to deviate shall be provided in addition to the specification compliance letter. No deviations shall be acceptable until they have been approved by the project's technology consultant.

C. Close-out Procedures:

1. Four (4) copies of the following documents shall be delivered to the Architect/Engineer at the time of system acceptance. One (1) final copy of the same documents shall be delivered directly to the project's Technology Consultant upon final closeout of the project. The closeout submittals shall include:
   a. Inspection and Test Reports: During the course of the Project, the Contractor shall maintain an adequate inspection system to ensure that the materials supplied, and the work performed, conform to contract requirements. The Contractor shall provide written documentation that indicates that materials acceptance testing was conducted as specified. The Contractor shall also provide documentation, which indicates that all cable termination testing was completed and that all irregularities were corrected prior to job completion.
   b. Provide complete test reports for all cabling and devices that comprise system as outlined in this document.
   c. Include the Name, address and telephone of the authorized factory representative with a 24-hour emergency service number.
   d. The manual shall also include Manufacturer's data sheets and installation manuals/instructions for all equipment installed and a list of recommended spare parts.
   e. Generic or typical owner's instruction and operation manual shall not be acceptable to fulfill this requirement.
   f. An up-to-date record ("as-built") set of approved shop drawing prints that have been revised to show each and every change made to the structure cabling system from the original approved shop drawings. Drawings shall consist of a scaled plan of each building showing the placement of each individual item of the technical cabling system equipment as well as raceway size and routing, junction boxes, and conductor size, quantity, and color in each raceway.
   g. As-built Drawings shall include cable pathways, device locations with correct labeling, control equipment locations, remote power supply locations, cross-connect locations, lightning protection locations, and MDF/IDF locations. The as-built drawings shall be prepared using AutoCad 2012 or later. Provide the Owner with electronic versions of the as-builts on USB media and (1) hard copy per binder.
   h. All drawings must reflect point to point wiring, device address and programmed characteristics as verified in the presence of the engineer and/or the end user

unless device addressing is electronically generated, and automatically graphically self-documented by the system.

i. A copy of the manufacturer's warranty on the installed system.

j. Any keys to cabinets and/or equipment and special maintenance tools required to repair, maintain, or service the system.

k. Operating and Maintenance Instructions for all devices within the system. These instructions shall reflect any changes made during the course of construction, and shall be provided to the Owner, for their use, in a three-ring binder labeled with the project name and description. (4 copies)

l. Upon completion of the work and at a time designated by the Architect or owner, provide formal training sessions for the Owner's operating personnel to include location, operation, and maintenance of all included systems and equipment. Minimum amount of training time shall be at least 4 hours.

m. One (1) 30" x 42" laminated floor plan sheets illustrating technology drops and cable designation. Contractor shall provide one complete floor plan sheet for each telecommunications room (MDF or IDF)

1.5 FUNCTION - INTERCOM

A. General: The contractor shall verify and document the functions of the existing system. All function of the existing system shall remain and be expanded to the newly added devices installed per the project drawings.

B. Use materials and equipment that comply with referenced standards and manufacturer's standard design and construction, in accordance with published product information. Coordinate the features of all materials and equipment so they form an integrated system, with components and interconnections matched for optimum performance of specified functions.

1.6 Function - Master Clock: The master time controller is existing to remain.

PART 2 - PRODUCTS

2.1 EQUIPMENT

All head end equipment is existing to remain. The following system information if provided in the event that the information is not obtainable. Provide all necessary expansion equipment as required.

A. External Paging Amplifier

1. External paging amplifiers shall be provided as required to meet the load requirements to the system when activated in the all-page mode.

2. Program/paging amplifiers shall have the following:
   a. Power output of 250 watts RMS.
   b. Maximum .5% harmonic distortion from 45-20KHz.
   c. Frequency response of 20Hz to 20 KHz (+0, -1 dB).
   d. -90- dB signal to noise ratio at 20Hz to 20 KHz.
   e. 1-volt RMS input sensitivity at 1 KHz.

B. Speakers, Ceiling, Pendant, and Beam Mounted

1. Lay-In Ceiling Speakers:
   a. General Purpose Speaker: 8" speaker with 5 oz. magnet complete with line matching transformer. Program rating shall be 5 watts continuous. The speaker shall be a Quam System 12, 2x2 lay-in at grid ceilings and Quam Solution 1 at hard ceilings. 25/70V transformers shall have primary taps of 0.25, 0.5, 1, 2 and 5 watts. Tap speaker at 0.25 watt. White finish unless indicated otherwise.
   b. Classroom, office, conference, telephone, teacher lounge, workroom speakers:

8-ohm speaker with 5 oz. magnet, complete with line matching transformer. Program rating shall be 4 watts continuous. The speaker shall be a Quam System 12/VC 2x2 lay-in at grid ceilings and Quam Solution 2 at hard ceilings, with integral volume control. 25/70V transformers shall have primary taps of 0.25, 0.5, 1, 2, 5 watts; tap speaker at 0.5 watt.

2. Solid Ceiling Speakers:
   a. 8" O.D. loudspeaker with 10 oz. magnet, 4W/70V Transformer with 5 tap settings (0.25W, 0.50W, 1.0W, 2.0W, 4.0W). Quam Product No. C10X/B70/WS/VC
   b. Provide Backbox Enclosure, Quam Product No. ERD8U
3. Pedant Mount Speakers:
   a. 8" 2-way pendant mount speaker with 60-watt 70.7v transformer, Altas IED Product No. PM8FA-**
   b. ** to be replaced with the proper alphabetical characters that depict the device color. Coordinate color with the Project Architect prior to submittal and procurement.
4. Surface mount speaker/horn:
   a. Surface mount wide-angle loudspeaker with multitap line matching transformer. Quam Product No. H16/SVP
   b. Provide recessed back can for each speaker. System installer to coordinate backbox rough-in with the project's electrical sub-contractor.

5. Recessed Vandal proof wall mounted paging horn:
   a. Atlas Sound APF-15T with 193-8-6 square recessed back box and VP161-APF aluminum alloy grille, white finish, neoprene gasket.

C. Remote Source Output Volume Control:
   1. Rack mounted in remote source rack. Provide line level volume control of output of each remote source device. Label each volume control for each output device.

D. Wall Mounted Volume Control (Attenuators)
   1. Attenuator(s) shall be Atlas Sound AT Series Model AT10-PA auto transformer or approved equal. The power rating shall be 10W and total attenuation shall be 33dB. Attenuation per step for AT10-PA shall be 8 steps of 3dB and 6dB each for the last two positions. Attenuator shall be a step type control with a positive off position. There shall be no stop between the maximum and off positions. Switch shall have silver plated contacts to eliminate noise and contact loss. All terminations must be made via a removable terminal block. Unit(s) shall be supplied with stainless steel single gang face plates (with dial scale to indicate attenuator position).

E. Secondary Clocks:
   1 General
      a. Provide secondary clocks at locations shown on drawings.
      b. Provide double sided clocks as indicated on drawings.
      c. Digital Clock: Microprocessor-controlled unit with red LED digital time display of hours and minutes.
         1) Digital Clock: Microprocessor-controlled unit with red LED digital time display of hours, minutes, and seconds.
         2) Display Height
            i. Classroom: 2.5-Inch
            ii. Corridor: 4-Inch
            iii. Cafeteria: 4-Inch
            iv. Gymnasium: 4-Inch
         3) Display Format: Selectable between 12-hour (with "PM" indicator on LED display) and 24-hour formats.
      d. Connections for Power and Correction:
         1) Wired synchronous connection to master clock for both operating power

and correction.

e. Clock Circuit Power Booster
   1) Transformer power supply, mounted in steel cabinet with hinged door, and having fuse-protected input and output circuits.

f. Back Boxes
   1) Box and cover plate assembly shall be furnished by device manufacturer and be suitable for device to be mounted. Back boxes shall be equipped with knockouts and hanger straps or mounting adapters arranged for flush mounting device, unless otherwise indicated.

g. Guards
   1) Formed-steel wire, shaped to fit around guarded device, with 1-inch (25-mm) maximum clearance.
   2) Mounting Provisions: Fixed tabs welded to guard and arranged for screw attachment to mounting surface.
   3) Finish for Indoor Devices: Clear epoxy lacquer over zinc plating or powder coat painted finish.

PART 3 – EXECUTION:

3.1 MATERIALS:

A. Wire: Wire shall be #22 gauge at a minimum. Wire for communications system shall consist of 2 twisted pairs #22 solid copper under plenum jacket. No splices are permitted except in approved junction boxes. All terminations shall be made on telephone type punch blocks or at specified devices. Display, speaker, and specialty cables shall be as required for best operation under manufacturer recommendations.

B. Jacks: All station device terminations (except speakers) shall be terminated on USOC standard modular jacks. Jacks for wall mounted telephones shall have lugs for securely attaching the instrument to the wall.

C. Backboards: Provide 4 feet x 8 feet plywood backboards for mounting of system cross connect field. Mount as shown on the plans. Provide Modular Termination backboards with 110 type terminal blocks as required to terminate all cables. Provide Distribution and cross connect backboards equal to AT&T 110 Series for all cross connect wiring.

3.2 INSTALLATION:

A. All work under this section shall be performed by persons having specific familiarity with telephone, data and sound system installation. Upon request the contractor shall submit resumes, references or other corroborating documentation, to the engineer to confirm the contractor's capabilities and experience.

B. Grounding: Except were specifically indicated otherwise, all exposed non-current carrying metallic parts of the communications system shall be grounded. This may be accomplished via a driven ground rod, cold water pipe or building power ground. If the building power ground is used, a separate ground conductor shall be used from the equipment to the grounding grid. All grounding shall be done with #6 solid copper wire or larger. The contractor shall use every effort to insure system stability and safety.

C. Wiring: A comprehensive, documented communications wiring system is to be installed. Wiring is to be identified by room number, segregated, neatly laced, and terminated on telephone type punch blocks. Back boards and cross connect fields shall be neatly organized as to function. (ie: intercom, telephone stations, data network etc.) All termination points are to be labeled with function. Data cables shall be

certified as usable and checked using the cable certification sheet. Data cables shall be labeled as per the data identification scheme.

D. Speaker Wattage Taps: Tap all classrooms at ½ watt. Tap Corridor Speakers for 1 watt, Outside Horns 3.3 watts, Tap Speakers in High Ceilings (15FT +) at 4 watts. Rest rooms ½ watt.

3.3 TESTING AND TRAINING:

A. Prior to connection of any terminal equipment all cables shall be tested as per REA spec. PC-4. Cables shall be tested for Opens, Splits, Crossed Pairs, Shorts to Ground and Shield Continuity. All defective cabling is to be replaced prior to device hook-up.

B. Upon completion of the installation the contractor shall test each room station speaker, handset or call switch for proper operation. All telephones, programming and functions are to be tested for proper operation. All emergency and program functions are to be tested. Any malfunction shall be corrected prior to final acceptance.

C. Operational guidelines shall be given in written form in sufficient numbers so that all key personnel have operational instructions of programming, station use and special features. Copies of these instructions shall be provided for permanent record in the operations and maintenance manuals specified in part 1.04 above.

END OF SECTION

SECTION 28 10 00

ACCESS CONTROL SYSTEM (ACS)

PART 1 - GENERAL

1.1 RELATED WORK

A. The following, in their entirety and as applicable, shall apply to this section. Including any associated drawings.
   1. Conditions of the Contract
   2. Division 1
   3. Division 26
   4. Division 27
   5. Division 28

1.2 WORK INCLUDED

A. The Contractor shall furnish and install a complete microprocessor-based access control system as specified herein. The system shall include, but not be limited to, all control equipment, power supplies, power circuits, signal initiating and signaling devices, conduit, wire, fittings, and all other accessories required to provide a complete and operable system.

B. Security system devices indicated are for reference and coordination purposes only. The installing contractor shall design and provide a complete system, meeting the requirement of specification. The Contractor shall provide all security system devices required for complete system perimeter coverage acceptable to all governing authorities, Architect and Owner.

C. The system shall include security for all access into building, including but not limited to the following:
   1. Control Panels
   2. Power Supplies.
   3. Interconnection of panels.
   4. Installation of new devices.
   5. Card reader.
   6. Magnetic locking hardware
   7. Request to exit devices
   8. Door position sensors
   9. Door Hardware (as specified herein and/or in Division 08, door hardware)
   10. Servers
   11. Clients
   12. Mobile application
   13. Badging Station; including Enrollment Readers, Cameras, Software, and Printers
   14. Lockdown and Lockout Buttons
   15. Audio Intercom Systems
   16. Licensing
   17. Integration
   18. All additional material, hardware, and labor required for a fully functional, turnkey system

D. The contractor shall connect each controller to the ACS Management System.

E. All system programming will be performed by the system installer. The system installer will be required to meet with the Owner, engineer, and system manager to discuss wiring and termination of the system control panels and field devices prior to installation.

F. Licensing: The contractor shall NOT utilize any of the owner’s existing licensing for this scope of work. All licensing shall be provided by the contractor, no exceptions. Including, but not limited to the following:
   1. Portal Licensing
   2. Controller Licensing
   3. Wireless Licensing

4. Video Management Software Integration Licensing

G. Contractor to refer to specification 08 71 00 Door Hardware. Provide and install all hardware specified to be provided by the “Access Control Contractor”, “Security Installer”, “Division 28”, or any variation thereof.

H. The documents issued for this project are conceptual in nature, including but not limited to specifications and drawings. It shall be the responsibility of the approved installer to furnish a complete and functional system, including the items shown on the drawings, in the specifications, and items not designated in either. The installer’s shop drawings and product data submittals shall represent a complete system, and documents accepted do not relieve the installer from being required to provide any materials, equipment, or labor to furnish a complete and functional system as recognized by the Project’s Technology Consultant and the Owner.

I. Contractor shall expand existing system. A new access control panel shall be provided in new IDF and other locations as indicated on drawings.

1.3 REFERENCES

A. Code of Federal Regulations (CFR).

B. Institute of Electrical and Electronics Engineers (IEEE):
1. 802.3 Ethernet Standards.
2. IEEE 1100 Recommended Practice for Powering and Grounding Electronic Equipment.

C. International Electrotechnical Commission (IEC).

D. International Organization for Standardization (ISO):
1. ISO / IEC 10918 - Information technology -- Digital compression and coding of continuous-tone still images: Requirements and guidelines; JPEG.
2. ISO / IEC 14496-10 - Information Technology - Coding Of Audio-Visual Objects - Part 10: Advanced Video Coding; MPEG-4 Part 10 (ITU H.264).
3. ISO / IEC 23008-2 - High Efficiency Coding and Media Delivery In Heterogeneous Environments - Part 2: High Efficiency Video Coding; MPEG-H Part2 (ITU H.265, HEVC).

E. Federal Communications Commission (FCC):
1. FCC Part 15 – Radio Frequency Device

F. Underwriters Laboratories (UL):
1. UL294 – Access Control Systems Units

G. Electronic Industries Alliance (EIA)
1. RS485 - Electrical Characteristics of Generators and Receivers for use in Balanced Digital Multi-Point Systems

H. Federal Information Processing Standards (FIPS)
1. Advanced Encryption Standard (AES) (FIPS197)
2. FIPS201-2: Open Options DNA Fusion FIPS in conjunction with an E2-SSP-D2-FIPS, NSC-100-FIPS, RSC-2-FIPS and other listed components will provide an access control solution that is fully FIPS 201-2 compliant.
3. Personal Identity Verification (PIV) of Federal Employees and Contractors

I. Homeland Security Presidential Directive 12 (HSPD12)

J. National Fire Protection Association Standards:
1. NFPA 70 - National Electrical Code
2. NFPA 72 - National Fire Alarm Code
3. NFPA 101 - Life Safety Code

K. RoHS compliant

L. SIA AC-01-1996.10 - Access Control - Wiegand

M. Local & State Building Codes

N. Requirements of Local Authorities having Jurisdiction

O. Requirements of American Disabilities Act (Public law 101-336).

P. Texas Accessibility Standards (T.A.S.)

Q. Texas Insurance Code.

1.4 QUALITY ASSURANCE

A. Contractor Qualifications:
1. The installing contractor shall be the authorized representative of the Access Control Manufacturer to sell, install, and service the proposed manufacturer's equipment. The installing contractor shall have represented the security alarm manufacturer's product for at least two years.
2. The installing contractor shall be licensed as required, by the State in which the project is located in, as a security services contractor to design, sell, install, and service security alarm systems.
3. The installing contractor shall provide 24-hour, 365 days per year emergency service with factory trained service technicians.
4. The installing firm shall have personnel on their staff that has been actively engaged in the business of designing, selling, installing, and servicing security alarm systems for at least ten (10) years.
5. All Contractors must submit to the owner prior to starting any work the factory training certificates for all personnel that will be working on the access control system. No person is allowed to work on the system without proper manufacturer's certification.
6. The proposing contractor for this system and the installing contractor of this system shall be of the same organization. Absolutely no subcontracting of any portion of this system by the proposing contractor will be allowed.
7. The proposing/installing contractor of this system must be an authorized dealer / integrator for the project's specified Video Surveillance and the Intrusion Detection systems as well as the system specified in this section.
8. For proper, smooth, and complete integration of the IP security camera, access control, and intrusion detection systems; the proposing/installing contractor of the video surveillance and intrusion detection systems must be the same contractors.
9. Contractor must be a current integrator of solution in the closest major metropolitan area marketplace, have a permanent office located within 75-miles of the project, and be able to include information on current support staff to be able to service this client.

1.5 SUBMITTALS AND CLOSE-OUT

A. Product Data: Within fourteen (14) days of Notice to Proceed, the system installer shall furnish the following in a single consolidated submittal:
1. Permits: The Contractor shall obtain all required permits and provide copies to the Owner / Architect / Engineer.
2. Product Literature: Complete manufacturer's product literature for all system equipment, power supplies, cable, termination components, cable supports, cable labels, field devices, and other products to be used in the installation. In addition, whenever substitutions for recommended products are made, samples (when requested by the Owner/Designer) and the manufacturer's supporting documentation, demonstrating compatibility with other related products shall be included. The submittal shall have some type of distinguishing marker or pointer to indicated what specific product is to be submitted.
3. Construction Schedule: A time-scaled Construction Schedule indicating general project deadlines and specific dates relating to the installation of the cable distribution system.

4. Specification Compliance: A letter shall be provided stating, by section and subsection, that the system installer complies with the ENTIRE specification section. If the installer intends to deviate from any portion of the specifications, a detailed explanation of reason in which the installer would like to deviate shall be provided in addition to the specification compliance letter. No deviations shall be acceptable until they have been accepted by the project's technology consultant.
5. Certifications: The contractor shall submit all of the following certifications and the certifications must contain dates which are valid from the date of proposal and not expirer any sooner than 12 months after substantial completion of the project.
    a. Manufacturer's Authorized Dealer/Installer Certification: This certification must be held by the proposing/installing contractor and state that the proposing/installing contractor is and authorized dealer/installer of the system specified within the project specifications. The certification must have been obtained by the office that is within a 75-mile radius of the project's location.
    b. Installer Certification: This certification must be held by at least 25% of the, on-site, staff and be made available at the site if requested by the owner, architect, and/or project's technology consultant.
    c. Licenses: This includes all licenses required by the state in which the work is being performed, the federal government, local authorities having jurisdiction, and any organization in that governs the specific system

B. Shop Drawings: Submit the following items, for Owner review and approval, within twenty-eight (28) days of notice to proceed:
1. Proposed circuit routing and circuit grouping plan prepared by a system registered designer. The designer's certification must be current. Identifiable, separate routing shall be shown for both the station cabling and any backbone trunk cabling.
2. In addition to the cable routing, the submitted drawings shall indicate the following, even if the following is expected to be provided by the project's electrical or general contractor:
    a. Location of all control equipment and remote power sources
    b. Locations of all field devices and outlets
    c. Location of wall penetrations (all penetrations shall be sleeved and contain protective bushings at both ends)
    e. Location of sleeved wall and/or floor pass-thru
    f. Size of sleeve at each location installed
    g. Quantity of cable passing through each sleeve
    h. Conduit routing, size, quantity, and stub-up locations for any floor mounted outlets or outlets installed in casework.
3. Drawing Compliance: A letter shall be provided stating that the system installer complies with the entire project drawing, including all general, keyed, and notes to contractor. If the installer intends to deviate from any portion of the specifications, a detailed explanation of reason in which the installer would like to deviate shall be provided in addition to the specification compliance letter. No deviations shall be acceptable until they have been approved by the project's technology consultant.

C. Close-out Procedures: For review and acceptance, furnish an electronic copy of the following documents to the Architect / Engineer. Upon acceptance of the submitted close-out documents, provide four (4) copies on an electronic storage media (CD or USD Flash Drive) Labeled with the project name, date of submission, and the name of the submitting firm. Final copies shall be delivered directly to the project's Technology Consultant. The closeout submittals shall include the following and be packaged in a storable container with the physical storage media and any physical items listed:
1. Inspection and Test Reports: During the course of the Project, the Contractor shall maintain an adequate inspection system to ensure that the materials supplied, and the work performed, conform to contract requirements. The Contractor shall provide written documentation that indicates that materials acceptance testing was conducted as specified. The Contractor shall also provide documentation, which indicates that all cable termination testing was completed and that all irregularities were corrected prior to job completion.
2. Provide complete test reports for all cabling and devices that comprise system as outlined in this document.

3. Include the Name, address and telephone of the authorized factory representative with a 24-hour emergency service number.
4. The manual shall also include Manufacturer's data sheets and installation manuals/instructions for all equipment installed and a list of recommended spare parts.
5. Generic or typical owner's instruction and operation manual shall not be acceptable to fulfill this requirement.
6. An up-to-date record ("as-built") set of approved shop drawing prints that have been revised to show each and every change made to the system from the original approved shop drawings.
7. As-built Drawings shall include cable pathways; device locations with correct labeling, control equipment locations, remote power supply locations, cross connect locations, and lightning protection locations. The as-built drawings shall be prepared using AutoCAD 2014 or later.
8. All drawings must reflect point to point wiring, device address and programmed characteristics as verified in the presence of the engineer and/or the end user unless device addressing is electronically generated, and automatically graphically self-documented by the system.
9. A copy of the manufacturer's warranty on the installed system.
10. Any keys to cabinets and/or equipment and special maintenance tools required to repair, maintain, or service the system.
11. Operating and Maintenance Instructions for all devices within the system. These instructions shall reflect any changes made during the course of construction, and shall be provided to the Owner, for their use, in a three-ring binder labeled with the project name and description. (4 copies)
12. Upon completion of the work and at a time designated by the Architect or owner, provide formal training sessions for the Owner's operating personnel to include location, operation, and maintenance of all included systems and equipment. Provide a video copy of the training session as well as all sign in and training sign off sheets
13. One (1) 30" x 42" laminated floor plan sheets illustrating device locations, system wiring configuration, and cable designation. Contractor shall provide one complete floor plan sheet at each panel location.

1.6 DEFINITIONS

A. Abbreviations:

1.	ACS	Access Control System
2.	VMS	Video Management System
3.	NVR	Network Video Recorder
4.	IDS	Intrusion Detection System
5.	GUI	Graphical User Interface
6.	IP	Internet Protocol
7.	CR	Card Reader
8.	DS	Door Station
9.	MS	Master Station
10.	PIR	Passive Infrared Sensor
11.	LD	Lockdown
13.	LO	Lockout
14.	MDF	Main Distribution Frame
15.	IDF	Intermediate Distribution Frame

B. Definitions:
1. Access Card: A coded employee card, usually the size of a credit card, recognizable to the access control system and read by a reader to allow access. It can be used for photo identification of the cardholder and for other data collection purposes. Card technologies include magnetic strips, wiegand-effect, proximity (active/passive), barium ferrite, smart/intelligent cards, and NFC enabled applications on mobile devices.
2. Access Control System: An interconnected set of controllers, managing the entrance and exit of people through secured areas.
3. Access Level: The door or combination of doors and/or barriers an individual is authorized to pass through and the times they are permitted.
4. Anti-Pass back (Anti-Tailgating): This feature protects against more than one person using

the same card or number. It defines each system card reader and card ID number as IN, OUT or other. Once a card is granted access to an IN reader, it must be presented to an OUT reader before another IN reader access is granted. Cards will continue to have access to all authorized OTHER readers.

6. Alarm: A signal that indicates a problem.
7. Alarm input: A device that is monitored by the access control panel. An alarm signal will be generated if the device is activated.
8. Badge: Badge is a template or a design for creating a card. DNA Fusion includes a full-featured badge layout utility for designing, creating, and printing badges. Badge design includes magnetic stripe encoding, bar coding, signatures, and so on.
9. Bar Code: A method of encoding information using lines and blank spaces of varying size and thickness to represent alphanumeric characters.
10. Biometrics: A general term for the verification of individuals using unique biological characteristics (i.e. fingerprints, hand geometry, voice analysis, the retinal pattern in the eye).
11. Card and Card Holder: A card is an identity proof of a person and a card holder is a person who holds the card. Multiple cards can be assigned to a single card holder to provide different access.
12. Controller: A microprocessor-based circuit board that manages access to a secured area. The controller receives information that it uses to determine through which doors and at what times cardholders are granted access to secure areas. Based on that information, the controller can lock/unlock doors, sound alarms, and communicate status to a host computer.
13. Card Reader: A device that retrieves information stored on an access card and transmits that information to a controller.
14. Digital Video Recorder: A security system device that records the video from the surveillance cameras (IP and Analog) on a hard disk.
15. Door: A generic term for a securable entry way. In many access control applications, a "door" may be a gate, turnstile, elevator door, or similar device.
17. Duress: Forcing a person to provide access to a secure area against that person's wishes.
18. Input: An electronic sensor on a controller that detects a change of state in a device outside the controller.
19. Integrated lockset: An integrated, intelligent locking solution that typically runs on batteries, but can be externally powered, that contains most of the door components, i.e. reader, door contact, and request to exit in a single, mountable unit.
20. Keypad: An alphanumeric grid which allows a user to enter an identification code. A flat device which has buttons that may be pressed in a sequence to send data to a controller, and which differs from a typewriter-like computer keyboard.
21. Output Relay: A device that changes its state upon receiving a signal from a controller. Typically, the state change prompts an action outside of the controller such as activating or deactivating a device. The auxiliary relays found in access control panels or NODES that control external devices.
22. Shunt Time: The length of time a door open alarm is suppressed (shunted) after a valid card access or free egress request. This time should be just enough to allow a card user to open a door or gate, pass through, and then close it.
23. Time Schedules: Schedules that allow cards to function or not function depending on the time of day. This is used to limit access to the facility. The schedule may include not only time but which days of the week a card is valid.
24. Video Management System: An enterprise-class video management and storage solution

1.7 PRE-INSTALLATION MEETINGS

A. Convene minimum two weeks prior to starting work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

B. Handling: Handle materials to avoid damage.

1.9 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.10 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.11 WARRANTY

A. The ACS furnished by the System Integrator including wiring, software, hardware and third-party products shall be fully warranted for parts, materials and labor for a minimum of 1 year from date of the final acceptance.

B. Manufacturer shall provide a limited 3-year warranty for the product to be free of defects in material and workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Approved Manufacturers:
1. Bosch

B. Requests for substitutions will be considered in accordance with provisions of Division 1. In the absence of direction by Division 1, substitution request must be submitted no less than ten (1) business days from the time of proposal.

2.2 SERVERS AND USER INTERFACE

A. Existing to remain.

B. Integrate new ACS panel with existing server and Bosch Access Control Software.

2.3 ACCESS CONTROL SYSTEM (ACS)

A. General: The ACS is a modular and networked based system providing physical access control security to a Wide Area campus enterprise. The system shall be capable of controlling and integrating multiple security functions including the configuration, management and monitoring of cardholder access, locking hardware units, events, alarms, visitors, and real-time tracking and reporting. The ACS is to be alterable at any time depending on the facility requirements and will allow for easy upgradeability or modification of network processors, controller, interface modules, card data, inputs, outputs, and remote workstations. The ACS shall include, but is not be limited to, the following:
1. Client/Server model operating central server host software modules and client workstation software applications in a multi-user and a multi-tasking environment.
a. The ACS to permit multiple instances of client software applications to run simultaneously on the network. The base system shall include one (1) software application licenses per site with an unlimited number of licenses available subject to connection fees.
2. Partitioning: The system to support security partitioning enabling system administrator to segment the configuration database and group multiple entities within the security partition.
a. Security partitions limit what users can view in the configuration database. Administrators, who have all rights and privileges, can segment a database into multiple security partitions. A user who is given access to a specific partition will only be able to view entities (components) within the partition they have been

assigned.

3. Encryption: The system to support encrypted communication between the central server software and client software applications (sever-to-server and client-to-server) using a 128-bit AES encryption algorithm (at a minimum).
   a. Communication between the central server host software module and system controllers to be encrypted if supported by the controllers.
   b. The ACS client software applications to be password protected with passwords stored in the central server database in an encrypted manner.
4. Distributed Processing: The system is a fully distributed processing application allowing information, including time, date, zones, valid codes, tasks, access levels, and similar data, to be downloaded from the central host station to controller interface devices allowing access-control decisions with or without central host station communication. If communications to a central host station are lost, the controllers will automatically buffer event transactions until communications are restored and events are automatically uploaded to the central host station.
   a. Provide for a higher level of distributed database management at defined perimeter access points such that no single point of failure will allow more than two access points to fail, or affect more than two access points at perimeter points system wide.
5. Single Data Base: The system to support a single database for access control site setup, credential and identity file creation, alarm and control setup, and system user operation and command functions.
6. System Access Management: The system to allow operators through password authentication the ability to make access granted or denied decisions, define access levels, time zones, holidays, assign cardholders, access groups, develop tasks, and generally manage access control, alarm monitoring and response activities system wide from a single login. Operator and user privileges are managed by a system administrator allowing for different levels of system access and system control. Authorization management is fully Owner definable.
7. Cardholder Management: The system to include a cardholder management system integrated within the access control system. This cardholder management functionality allows the enrollment of cardholders into the database, and import / export of employee data.
8. Access Groups and Access Levels: The system to provide adequate access groups and access level assignment capability to meet Owner requirements for the specified project. If required, software application can be expandable to support unlimited access groups and access levels.
9. Alarm Monitoring: The system is able to monitor, report, and provide information about the time and location of alarms, along with their priority.
10. Event Monitoring: The system is able to monitor, report, and archive network access control activity.
11. Transaction Logs: The system to support an unlimited number of logs and historical transactions (events and alarms) with the maximum allowed being limited by the amount of hard disk space available.
12. System Monitoring: The system to have ability to report on the integrity of all network assigned devices, circuits and communications and provide a diagnostics screen showing field level communications system wide
13. Lock/Unlock Commands: The system to allow an operator to manually lock and unlock doors overriding scheduled access control restrictions and configurations if necessary.
14. Hardware Interface: The system to integrate with and control specified electrified hardware, signaling and monitoring devices.
15. Report Generator: The system to have the ability to generate and output reports with any and all combinations of system fields and data including, but not limited to: by cardholder, by door, by site, by time, by groups of doors and by cardholder field. Any and all combinations of fields must be available for reporting. The report feature to allow exporting of generated reports over a network connection or by remote printing.
16. Multi-User/Web Based Network Capabilities: The system to support multiple operator workstations via local area network/wide area network (LAN/WAN), the Internet, or VPN. The system to be capable of supporting minimum of concurrent users/clients with software expansions to an unlimited number of workstations based on the Owners network

requirements.

17. Systems Integration: The system to have the ability to be fully and seamlessly integrated with existing or specified IDS and VMS.

B. Open Architecture: The access control system infrastructure will be based on an open architecture design capable of supporting multiple access control hardware manufacturers and integrate with multiple non-proprietary network processors, controllers, interface modules, integrated locking hardware, remote card readers, keypads and display terminals, and other third party applications.

C. Open Protocol: The ACS manufacturer to provide non-proprietary, open protocol hardware for the system control processors and associated device sub-controllers. Systems utilizing a single manufacturer solution that encompasses combined proprietary software and integrated electronic hardware combinations are not acceptable. In addition, integrated electronic locking hardware requiring a processor or sub-controller module upgrade, or extensive access control firmware upgrades to accommodate integrating with an alternate software package, will not be considered.

D. Network Support: Communication network connecting the central server host software modules, client workstation software applications, and hardware controllers to be designed to support all of the following:
1. LAN/Ethernet enterprise ring topology and localized star topology based on TCP/IP.
2. Direct-connected RS-232 and RS-485 communication cabling.
3. Dial-up modem connection using a standard dial-up telephone line.

E. Provide local communication port at each panel for local configuration of system with laptop.

F. Locate all main control panels in MDF and IDF rooms of each building.

G. Provide 120v at all controller and power supply locations.

H. Provide and transfer all required licensing to the owner.

I. Provide local communication port at each panel for local configuration of system with laptop.

J. Provide and install all software and/or hardwire connections required to connect the system to IDS and VMS.

K. Integrated Elevator Destination Dispatch Control Solutions
1. The ACS shall provide means of integration with the following elevator systems destination dispatch control solution. Integration shall be by software or input/output connection (software, if available between the specified ASC and Elevator System):
   a. Otis
   b. Krone
   c. Thyssen-Krupp
2. The destination dispatch control solution shall provide the following functions:
   a. Provide card reader security within the elevator(s) as required.
   b. Provide card reader security at the Destination Dispatch kiosk(s), as required.
   c. Allow Default Floor call registration upon card swipe.
   d. Allow for card flags such as VIP and ADA from a card swipe
   e. Enforce elevator access levels

L. Integrated Video Management Systems: The ACS shall support integration of DVR and/or NVRs from the following manufacturer. Integration to be completed by the system installer:
1. Video Insight

2.4 ACCESS CONTROL PANEL HARDWARE

A. Shall be Bosch. Provide as indicated on drawings

2.5 FIELD DEVICES

A. General: Coordinate with door hardware and access control schedule as to whether each access

control portal is wireless or directly connected to a control panel. Provide all Controllers, Sub-Controllers, and licensing as required to connect all card reader locations shown on plan.

B. Card Readers: Provide card readers as shown on the floor plans, access control schedule, and access control details.

C. Credentials: Coordinate Facility Code, External Start Number, and Internal Start number with the Owner prior to procuring credentials.

D. Miscellaneous Devices: Provide the following devices as designated per the project floor plans, access control schedules, and access control details:
1. DP/DT Door Position Sensors (Door Contacts)
2. PIR Motion Request to Exit Sensor
3. Lockdown Buttons
4. Door Release Buttons
5. Video Intercom Door Stations – AiPhone IX/IXG Series
6. Video Intercom Master Stations – AiPhone IX/IXG Series

2.6 WIRING

A. Ethernet cabling shall be provided by the Structured Cabling System Installer. In the event that there is not ACS installer on the project, cabling shall be provided and installed by the Access Control System Integrator and shall comply with the Division 27 Structured Cabling specification.

B. Conventional access control cable shall be a jacketed composite cable. All non-network cabling shall be orange. The minimum conductor requirement shall be as follows:
1. Standard
   a. Lock Power: 4-conductor, 18AWG, shielded
   b. Card Reader: 6-conductor, 22AWG, OA shielded
   c. Door Contact: 2-conductor, 22AWG, shielded
   d. Request to Exit/Spare: 4-conductor, 22AWG, shielded
2. Extended Distance
   a. Lock Power: 4-conductor, 16AWG, shielded
   b. Card Reader: 6-conductor, 18AWG, OA shielded
   c. Door Contact: 2-conductor, 18AWG, shielded
   d. Request to Exit/Spare: 4-conductor, 18AWG, shielded

C. Wire scheme and conductor quantity shall be as required by the manufacture's specifications. Contractor to provide and install shielded cable as required.

D. All 120v Power shall be furnished by the Division 26 contractor. In the event that a division 26 contractor is not contracted for the project, the system installing contractor shall contract a licensed electrical firm to provide and install all materials required to furnish a complete and operational system.

E. All Security Conduit as required for a complete installation of this system shall be furnished by the division 26 contractor as part of their scope of work. In the event that a division 26 contractor is not contracted for the project, the system installing contractor shall provide and install all conduit required.

F. Coordination with the Division 26 contractor is the responsibility of the Security Contractor to ensure all conduit is in place for a complete installation.

G. All systems shall be connected to a dedicated circuit and on an emergency power source if available.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All wiring shall be in accordance with the National Electrical Code, Local Codes, and article 760 of NFPA Standard 70. All wiring sizes shall conform to recommendations of the equipment manufacturer, and as indicated on the engineered shop drawings.

B. All wire shall be UL Listed CL2 for limited energy (300V) applications and shall be installed in conduit. Limited energy MPP wire may be run open in return air ceiling plenums provided such wire is UL Listed for such applications and is of the low smoke producing fluorocarbon type and complies with NEC Article 760 if so, approved by the local authority having jurisdiction.

C. No AC wiring or any other wiring shall be run in the same conduit as security alarm wiring.

D. All wire shall be installed in an approved conduit/raceway system (except where permitted by NEC and the local authority having jurisdiction). Maximum conduit "fill" shall not exceed 40% per NEC.

E. Minimum conduit size shall be 3/4" EMT. Install conduit per engineered shop drawings.

F. Systems utilizing open wiring techniques with low smoke plenum cable shall provide conduit in all inaccessible locations, inside concealed walls, all mechanical/electrical rooms, or other areas where wiring might be exposed or subject to damage.

G. All vertical wiring and all main trunk/riser wiring shall be installed in a complete raceway/conduit system. All riser boxes shall be adequately sized for the number of conductors transversing the respective box as well as the number of terminations required.

H. Network Connection Cable: Provide a 4 pair Category 6 data cable from the Master Control Panel to the MDF network rack. Category 6 cable shall be purple in color.

I. All plenum wiring is to be installed parallel and perpendicular to the building structure. Install wiring tight up against structure for protection. Cable shall be bundled on a maximum of 2'-6" and secured to the structure at a maximum of 5' on center. Bundling and support shall be with plenum rated cable ties.

J. Contractor is required to provide all mapping and software configuration required to operate system as per manufacturer’s recommendations.

3.2 CABLE PATHWAYS

A. Cable Support:
1. All wire not installed inside conduit or a designated cable tray system shall be installed in a dedicated cable support system for the entire run of each cable. Including, but not limited to service loops.
   a. Approved Cable Support Product:
      1) Panduit
      2) Arlington
      3) Caddy
      4) Support system shall be sized appropriately for the number of wires being installed. Reference the manufacturer’s specifications for the suggested maximum cables per support size.
2. The approved cable support system shall be attached directly to the building steel at a serviceable height. In the event that the building steel is not 5’ of the finished ceiling, the contractor shall provide a dedicated threaded rod extending within 5’ of the finished ceiling and mount the J-MOD™ support hook to the treaded rod.
3. J-MOD™ cable support shall be installed at a maximum of 5’ on center.
4. All cable installed shall be attached to the J-MOD™ support system with plenum rated Velcro and a plenum rated Velcro tie shall be installed between each J-MOD™ cable support to keep wires neatly bundled throughout the entire run. Tie wraps will only be allowed to be used inside the control panels as required to manage the wires within each type of panel.
5. Absolutely no cable, not installed in conduit, will be allowed to be attached directly to the building’s steel or supported in any other method than that stated above.

6. It is the responsibility of the installing contractor to coordinate with all other trades on the project to ensure that the pathway of this system does not interfere with the installation of the other trades and to prevent the installed product of other trades from putting strain on the installed wiring.

B. Conduit / Raceway:
1. All wire shall be installed in an approved conduit/raceway system (except where permitted by NEC and the local authority having jurisdiction). Maximum conduit "fill" shall not exceed 40% per NEC.
2. Conduit and raceway system shall be installed as specified under the general electrical section of the specifications, and per NEC.
3. Minimum conduit size shall be 3/4" EMT. Install conduit per engineered shop drawings.
4. Systems utilizing open wiring techniques with low smoke plenum cable shall provide conduit in all inaccessible locations, inside concealed walls, all mechanical/electrical rooms, or other areas where wiring might be exposed or subject to damage.
5. All conduit ends shall have a protective bushing to prevent cable damage. Bushings must be installed prior to installing cable. Cutting bushing to install around installed cables will not be accepted.

3.3 SYSTEM ZONING AND PARTITIONING

A. The system shall employ intelligent initiating devices and interface devices capable of being recognized and enunciated at the main system keypad and devices partition keypad.

3.4 TESTING

A. Submit a written test report from an authorized representative of the equipment manufacturer that the system has been 100% tested and approved. Final test shall be witnessed by Owner and the project’s Technology Consultant and performed by the equipment supplier. Final test report must be received and acknowledged by the Owner prior to substantial completion.

B. Provide instruction as to proper use and operation of system, for the Owner's designated personnel.

3.5 WARRANTY

A. Entire system shall be warranted against defects in materials and workmanship for a period of one (1) year from the date of substantial completion.

3.6 SOFTWARE

A. Provide two electronic copies of the final programming and program software to the Owner’s Security Supervisor after final approval.

SECTION 28 46 02

EXPANSION OF EXISTING FIRE DETECTION AND ALARM SYSTEM

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Provide all detailed engineering, documentation, materials and devices, installation, calibration, software programming and check-out necessary for a complete and fully operational fire detection and alarm system in accordance with the full intent and meaning of the drawings and specifications including, but not limited to, the following:
   1. Supply, install and connect all hardware necessary to provide a complete and operational fire detection and alarm system.
   2. Supply, install and wire all field hardware, power supplies, power circuits, alarm initiating devices, audible and visual alarm devices, auxiliary control relays, signal initiating and signaling devices, conduits, wires, fittings and all accessories required for the system to perform as specified as required. Use and expand the existing fire alarm control panel.
   3. Supply, install, debug and test all software required to provide all software functions described in accordance with the full intent and meaning of the drawings and specifications.
   4. Coordinate the work specified under this Section with other trades and contractors to assure a complete and fully operational system.

B. The intent of fire detection and alarm system work is specified in this section and indicated on the drawings. The installing contractor shall design and provide a complete system, meeting the requirement of this section. The Contractor shall provide all fire alarm and initiation devices in new and renovated areas required for a complete system acceptable to all governing authorities. Provide proper spacing and coverage of all devices.

C. Contractor to expand existing system. Relocate existing panel to new IDF and expand system to new and renovated areas as indicated on drawings.

1.2 RELATED SECTIONS

A. Divisions 22, 23 and 26

B. Fire Suppression Systems

C. Elevators

D. Food Service

1.3 CODES / STANDARDS / REFERENCES (LATEST EDITIONS)

A. National Fire Protection Association (NFPA):

1.	NFPA1	Fire Code
2.	NFPA 13	Systems, Installation
3.	NFPA 17	Dry Chemical Extinguishing Systems
4.	NFPA 70	National Electrical Code
5.	NFPA 72	National Fire Alarm and Signaling Code.
6.	NFPA 80	Fire Doors and Fire Windows
7.	NFPA 90A	Standard for the Installation of Air Conditioning and Ventilating Systems.
8.	NFPA 92A	Smoke Control Systems
9.	NFPA 101	Life Safety code.
10.	NFPA 105	Smoke Control Door Assemblies
11.	NFPA 1221	Standard for the Installation, Maintenance and Use of Emergency Services Communications Systems.
12.	NFPA 2001	Fire Extinguishing Systems, Clean Agent

B. UL: Underwriters Laboratories, Inc.
1. 217 Single and Multiple Station Smoke Detectors.
2. 268 Smoke Detectors for Fire Protective Signaling Services.
3. 864 Control Units for Fire Protective Signaling Services.
4 864 Transient protection
5. 1480 Speakers for Fire Protective Signaling Systems
6. UL Fire Protection Equipment Directory.
7. UL Electrical Construction Materials Directory.

C. Factory Mutual P7825 Approval Guide

D. American National Standards Institute (ANSI).

E. National Electrical Manufacturer's Association (NEMA).

F. Institute of Electrical and Electronic Engineers (IEEE).

G. Electronic Industries Association (EIA-232-C): Interface between Data Terminal Equipment and Data Communication Equipment Employing Serial Binary Data Interchange.

H. Requirements of American Disabilities Act (Public Law 101-336).

I. Local Accessibility Standards, Codes, and Ordinances

J. State Fire Marshall or Requirements of Local Authorities having Jurisdiction

K. State Insurance Code.

L. National Building Code.

M. International Building and Fire Code adopted by Local Authority Having Jurisdiction

N. Uniform Building Code.

O. Local & State Building Codes.

P. In addition the above requirements, comply with all local codes. Where discrepancies exist between codes, drawings or specifications, the more stringent requirement shall prevail. Installation shall be subject to approval, inspection and test of applicable regulatory agencies.

1.4 MANUFACTURER'S, PLANNER'S AND INSTALLER'S QUALIFICATIONS

A. The manufacturer shall regularly and presently produce, as the manufacturer's principle products, the equipment and material of the type and design specified for this project, and shall have manufactured the item for at least 5 years. All components of the system shall be UL compatible with the existing main fire alarm control panel. Manufacturer of all components shall match existing manufacturers of similar or same type components unless otherwise specified or noted on the drawings.

B. The installing contractor shall have been actively engaged in the business of designing, selling, installing, and servicing fire alarm systems for at least ten (10) years.

C. The entire Fire Detection and Alarm System shall be installed by a factory authorized representative of the existing main fire alarm control panel and certified by the manufacturer to distribute, sell, and install the specified fire alarm and smoke detection system. Include all components, elements, and testing and acceptance procedures.

D. If the submitted system is being supplied by an authorized distributor of the equipment manufacturer, the distributor shall have been actively engaged in the sale, installation and service of the type of system proposed for this project for a minimum of 10 years.

E. Any proposed installer who cannot show evidence of such qualifications may be rejected. The services of a technician provided and certified by the equipment manufacturer shall be provided to supervise the installation and tests of the system.

F. Furnish evidence there is an experienced and effective service organization, which carries a stock of repair parts for the system to be furnished.

G. The installing contractor shall be licensed by the State Fire Marshall to design, sell, install, and service fire alarm systems as required by the State Insurance Code.

H. The installing contractor shall have on his staff a minimum of two (2) Fire Alarm Planning Superintendent (APS) licensed by the State Fire Marshall's office for such purpose and under whose supervision installation, final connections, and check out will take place as required by the State Insurance Code.

I. The APS shall be a certified NICET Level III state licensed fire alarm planner under whose supervision system design shall take place. In lieu of a NICET certified state licensed fire alarm planner, the contractor or supplier may provide design supervision by a registered professional engineer, who regularly engages in the design of fire alarm systems.

J. The installing contractor shall provide 24-hour, 365 days per year emergency service with factory trained, state licensed service technicians.

K. Material shall be new and in perfect condition when installed.

L. Electrical or electronic equipment provided under this Division which has been damaged, exposed to weather, or is, in the opinion of the Architect/Engineer otherwise unsuitable because of improper fabrication, storage, or installation, shall be removed and replaced with new equipment, at no additional cost to the owner.

1.5 COORDINATION

A. It shall be the responsibility of the installing contractor to coordinate all requirements surrounding installation of the fire alarm system with all other trades.

1.6 DEFINITIONS

A. General: Wherever mentioned in this specification or on the drawings, the equipment, devices and functions shall be defined as follows:
   1. Alarm Signal: A signal, which signifies a state of emergency requiring immediate action and immediate notification of the Fire Department. These are signals such as:
      a. The operation of a manual station.
      b. The operation of a fire suppression system switch.
   2. Pre-Alarm Signal: A signal, which indicates a detection device, has operated. These signals require and immediate response, but do not require immediate notification of the Fire Department.
   3. Supervisory Signal: A signal, which signifies the impairment of fire protection system, which may prevent its normal operation.
   4. Trouble Signal: A signal, which indicates that a fault, such as an open circuit or ground, has occurred in the system.
   5. Alarm Zone: An alarm initiating device or combination of devices connected to a single alarm initiating device circuit.
   6. Pre-Alarm Zone: A detector or group of detectors connected to a single detector circuit, which can send an alarm to the central control panel.
   7. Supervision Zone: A supervisory signal initiating device or combination of such devices connected to a single supervisory signal circuit.
   8. Communication Zone: A fire alarm indicating device or series of devices arranged to visually and/or audibly indicate a fire alarm signal.

1.7 SUBMITTALS

A. Before the shop drawings are submitted to Architect / Engineer, submit drawings to the Authority

Having Jurisdiction for approval. All approvals shall be noted on the drawings or by letter from the Authority Having Jurisdiction. Submit copies of the Authority Having Jurisdiction approved shop drawings to the Architect for review.

B. Fire alarm submittal shall be bound and separate from all other submittals. The installing contractor and/or equipment supplier shall provide complete and detailed shop drawings and include:
1. Provide a complete written, item-by-item, line-by-line, specification review stating compliance or deviation in full description.
2. Complete point-to-point wiring diagrams of new equipment.
3. Complete floor plan drawings locating all new system devices and existing panels used for expansion.
4. Complete system bill of material.
5. Detailed system operational description. Any specification differences and deviations shall be clearly noted and marked.
6. Provide a complete description of system operation.
7. Manufacturer’s installation instruction.
8. Bound form with contractor's name, supplier's name, project name, state fire alarm license, Fire Alarm Planning Superintendent license and all Technician(s) license adequately identified.
9. Submittal sheets sequentially numbered with the format: sheet number of number total. For example: 1 of 3.
10. Complete set of manufacturer’s operating instructions, circuit diagrams and the information necessary for proper installation, operation and maintenance.
11. Field and factory wiring diagrams of all new systems and for typical devices showing all connections with all terminals and interconnections identified.
12. Complete schematic circuit diagrams for all new equipment, including panel modules.
13. Floor plan drawings including all existing main and new panel and device locations, conduit sizes between devices and panels; number, size and type of conductors between devices and panels; walls, doors and graphic room numbers; exact power requirements and conduit routing with the location of all junction boxes and exact locations of devices and equipment. Submit a floor plan drawing circuiting/zoning shall be identified on the drawings.
14. Complete wiring, routing, and schematic diagrams, software descriptions, and details required to demonstrate that the system has been coordinated and will function as a system.
15. Manufacturers catalog cut sheets shall be provide for each piece of equipment with the appropriate model or part number highlighted in cases where multiple model numbers or part numbers are shown.
16. Detailed list of all hardware components, which are included.
17. Installation details for each type of field mounted device installed under this contract.
18. Point-to-point termination schedules with cable identification numbers and terminal strip numbers.
19. New fire detection and alarm system’s panel configuration complete with peripheral devices, batteries, power supplies, and interconnection diagrams.
20. Submit a riser diagram of trunk wiring and device-to-device wiring and device to fire alarm control panel wiring. Riser shall show:
    a. Conduit sizes and types.
    b. Number, size and type of conductors.
    c. Fire detection and alarm devices arranged in the required circuiting/zoning, as defined in the specifications and on the drawing.
    d. Battery calculations to show compliance with the requirements of the specifications for both alarm and supervisory mode.
21. Indicate visual alarm device candela setting required for coverage.
22. Sample of proposed graphic/text annunciation.

1.8 OPERATION AND MAINTENANCE MANUALS

A. Submit complete sets of operation and maintenance manuals. Manual, less as-builts, and sign-off sheets, shall be provided upon completion of the work. Approval of the manual will be required prior to substantial completion.

B. The Operation and Maintenance Manual shall consist of the following:
   1. The manual shall include the names, addresses and telephone numbers of each Contractor installing products, and of the nearest service representative for each product. The manual shall have a Table of Contents and tab sheets. Update manuals to include modifications made during installation, checkout and acceptance. The manual shall include the sections described in the following paragraphs.
   2. The Functional Design Section shall identify the operational requirements for the system and explain the theory of operation, design philosophy, and specific functions. Hardware and software functions, interfaces, and requirements shall be provided for system operating modes.
   3. The Hardware Section shall describe equipment provided, including general description and specifications, installation and checkout procedure, electrical schematics and layout drawings. Alignment and calibration procedures, manufacturer's repair parts list indicating source of supply, interface definition, signal identification and wiring diagrams. Also, include a complete parts list of all components as well as a list of recommended spare parts. The spare parts list shall include, for each item, the manufacturer's name, the model of the part, and serial number, if appropriate, and a physical and electrical description of the part.
   4. The Software Section shall describe programming and testing, starting with a system overview and proceeding to a detailed description of each software module, to instruct the user on programming or reprogramming any portion of the system and other information necessary to enable proper system usage.
   5. The Operation Section shall provide instructions for operation of the system, including system start-up procedures, use of system and applications software, alarm presentation (where applicable), failure and recovery procedures, preventive maintenance schedule, parameter schedules and sequence definition, and system access requirements.
   6. The Maintenance Section shall provide descriptions of maintenance for equipment including inspection, periodic preventive maintenance, fault diagnosis, and repair or replacement of defective components.
   7. The Shop Drawings section shall include copies of all approved shop drawings and submittal materials updated to "AS BUILT".

1.9 AS-BUILT DRAWINGS

A. Prepare and submit detailed "As-Built" drawings. The drawings shall include certified test of the system, testing and acceptance sign-off sheets, and other items specified elsewhere to be performed after initial submission of operation and maintenance manuals, complete wiring diagrams showing connections between all devices and equipment, both factory and field wired. Include a riser diagram and drawings showing the as built location of all devices and equipment. The drawings shall show the system as installed, including all deviations from both the project drawings and the approved shop drawings. The drawings shall be prepared on uniform sized sheets, the same size as the project drawings. The plan drawings shall be 11x17 inch and inserted in the specified Operations and Maintenance Manuals. Provide electronic copies in PDF and Autocad.dwg format.

1.10 WARRANTY

A. All new fire alarm devices, new panels, new equipment and new accessories, including labor and material, shall be free from defects in workmanship and materials, under normal use and service, for a period of one year from the date of substantial completion. Any equipment or workmanship shown to be defective shall be repaired, replaced or adjusted during normal working hours at no cost to the owner within 4-hour notification.

B. Repair services and replacement parts for the system to be furnished under this Contract shall be available for a period of ten years after the date of final acceptance. Service during the warranty period shall be provided within four hours after notification and all repairs shall be corrected within 24 hours after notification throughout the warranty specified in this section.

C. The installing contractor shall provide 24 hour, 365 days per year emergency service with factory trained, state licensed service technicians.

D. The equipment manufacturer shall be represented by a local service organization and the name of

such shall be furnished to the Owner, Architect, and Engineer.

E. Provide a certified fire alarm test of the complete system at the end of the warranty period and correct any and all items located in the area of renovation to bring the system to an approved status at no cost to the Owner. Clean all smoke detectors and replace all defective parts within the area of renovation at no cost to the Owner.

F. Guarantee labor, materials, and equipment provided under this contract against all defects for a period of one year after the date of final acceptance and receipt and approval of “As-Built” drawings and schematics of all equipment.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturers acceptable contingent upon Products’ compliance with the specifications:
1. Match Existing main fire alarm panel manufacturer.
a. Notifier NFS2-640e

2.2 SYSTEM DESCRIPTION

A. System shall be a fully functional fire detection and alarm system, tested and left in first class operating condition. Voice evacuation systems where required or specified shall have voice alarm notification wherever audible notification is required.

B. The system shall provide communication with initiating and control devices individually. All of these devices shall be individually annunciated at the fire alarm control panel. Annunciation shall include the following conditions for each point:
1. Alarm
2. Trouble.
3. Open
4. Short
5. Device missing/failed.

C. System circuits shall be wired as follows: Initiating device circuit (IDCs) shall be Style B, indicating appliance circuit (IACs) shall be Style Y, and signal line circuit (SLCs) shall be Style 4 as describe in NFPA 72.

D. The system shall contain independently supervised initiating device circuits. The alarm activation of any initiation circuit shall not prevent the subsequent alarm operation of any other initiation circuit.

E. There shall be supervisory service initiation device circuits for connection of all sprinkler water flow switches and valves. Device activation shall cause a general alarm at the fire alarm control panel. Each flow and tamper switch shall have an individual address.

F. There shall be independently supervised and independently fused indicating appliance circuits for all alarm signaling devices. Disarrangement conditions of any circuit shall not affect the operation of other circuits.

G. Auxiliary manual controls shall be supervised so that an “off normal” position of any switch shall cause an “off normal” system trouble.

H. The incoming power to the system shall be supervised so that any power failure must be audibly and visually indicated at the fire alarm control panel. A green “power on” LED shall be displayed continuously while incoming power is present at the building fire alarm control panel.

I. The system batteries shall be supervised so that a low battery condition or disconnection of the battery shall be audibly and visually indicated at the building fire alarm control panel.

J. The system modules shall be electrically supervised for module placement. Should a module become disconnected, the system trouble indicator shall illuminate and the audible trouble signal

shall sound.

K. The system shall have provisions for disabling and enabling all circuits individually for maintenance or testing purposes.

L. The system shall be provided with sufficient battery capacity to operate the entire system upon loss of normal 120 VAC power in a normal or supervisory mode for a period of 24 hours with 20 minutes of alarm operation at the end of this period as a minimum. The system shall automatically transfer to the standby batteries upon power failure. All battery charging and recharging operations shall be automatic. If batteries are fully discharged, the charger shall recharge them back to full charge in four hours.

M. All external circuits requiring system operating power shall be 24 VDC and shall be individually fused at the respective fire alarm control panel.

N. All addressable devices shall have the capability of being disabled or enabled individually from the fire alarm control panel.

O. A maximum of 90 addressable devices shall be multi-dropped from a single pair of wires. Systems that require factory reprogramming to add or delete devices within the capability of the designed system are unacceptable. Expansion of the designed system shall be accomplished by factory reprogramming.

P. The communication format to the addressable devices shall be a completely digital poll/response protocol to allow t-tapping of the circuit wiring. A high degree of communication reliability must be obtained by using parity data bit error checking routines for address codes and check sum routines for the data transmission portion of the protocol.

Q. Each addressable device must be uniquely identified by an address code. The system must verify that proper type device is in place and matches the desired software configuration. All remote or external panels shall have an individual address for monitoring.

R. Wiring type, distances, survivability, and wiring configuration types shall be approved by the equipment manufacturer. The system shall allow a line distance of up to 2,500 feet to the furthest addressable device on a Style Y circuit. Fire alarm cable shall have an outer jacket insulation color of red. Minimum wire size shall be #18 AWG.

S. Each panel extender shall have an individual address.

2.3 FIRE ALARM CONTROL PANEL (FACP)

A. Existing to remain.

B. The fire alarm control panel shall be left with 25% spare initiating point and battery capacity for future use.

C. New power supplies (if required) shall provide all control panel and peripheral power needs with filtered power as well as unregulated 24VDC power for external audio-visual devices. The audio-visual power shall be increased as needed by adding additional modular expansion power supplies. All power supplies shall be designed to meet UL and NFPA requirements for POWER LIMITED operation on all external signaling lines, including initiating circuits and indicating circuits. Design the system power supplies and power trunk wiring for all annunciation devices required, and to add a minimum of two (2) 110cd visual devices in the future. Individual circuit design loading shall not exceed 70% of power supply and system wiring capacity when including the additional spare capacity for the 110cd visual devices

1. Input power shall be 120VAC 60Hz. The power supply shall provide internal supervised batteries and automatic charger. The power supply shall provide positive and negative ground fault supervision, battery/charger fail condition, and AC power fail indicators. The power supply shall also provide supervision of modular expansion power supplies as may be required.
2. Surge protection shall be integral to the control panels.
3. Each power supply shall be monitored and have an individual address.

2.4 DIGITAL FIRE ALARM COMMUNICATOR

A. Existing to remain.

2.5 EMERGENCY VOICE ALARM COMMUNICATION SYSTEM

A. Existing to remain.

B. Compatible and UL listed with existing fire alarm system.

2.6 NEW FIELD DEVICES WHERE REQUIRED

A. All devices shall be supervised for trouble conditions. The fire alarm control panel shall be capable of displaying the type of trouble condition (open, short, device missing/failed). Should a device fail, it shall not hinder the operation of other system devices.

B. Visual Signals
1. Strobe lights shall be low profile and operate on 24 VDC. The strobe light shall be capable of producing 75 candela on axis to comply with ADA and UL 1638 requirements, and 15, 30, or 110 candela to comply with UL 1971 requirements. Visual signals in common areas of illumination shall have synchronized flash. Provide white with red letters.
2. All wall mounted strobe units installed in student's toilets, gymnasiums, corridors, student locker/dressing rooms shall have a protective cover.

C. Combination Alarm Signal and High Intensity Visual Signals
1. Strobe lights shall operate on 24 VDC. The strobe light shall be capable of producing 75 candela on axis to comply with ADA requirements, and 15, 30 or 110 candela to comply with UL 1971 requirements. Visual signals in common areas of illumination shall have synchronized flash. Each unit shall provide a Code 3 Temporal tone. The horn shall be capable of an output of 95dB at 10', and intensity adjusted accordingly for the area of coverage. Electronic Mini-Sounder or horn set on low setting shall be provided in interior rooms 900 square feet or less. Mini-sounder shall not be used in any corridors, mechanical electrical rooms and similar large spaces and areas of high ambient noise level. Provide white with red letters.
2. All wall mounted combination units installed in student toilets, gymnasiums, corridors, student locker/dressing rooms shall have a protective cover
3. The audible emergency alarms shall produce a sound that exceeds the prevailing sound level in the room or space by at least 15 dba or shall exceed any maximum sound level with a duration of 60 seconds by 5 dba, whichever is louder. Sound levels for alarm signals shall not exceed 110 dba at the minimum hearing distance from the audible appliance.

D. Exterior Audible Signal:
1. Semi-flush mounted, molded of high impact red thermoplastic and listed for weatherproof locations.

E. Combination Voice Signal and High Intensity Visual Signals (where indicated or required by local AHJ):
1. Strobe lights shall operate on 24 VDC. The strobe light shall be capable of producing 75 candela on axis to comply with ADA requirements, and 15, 30 or 110 candela to comply with UL 1971 requirements. Visual signals in common areas of illumination shall have synchronized flash.
2. All combination units installed in student toilets, gymnasiums, student locker / dressing rooms shall have a protective cover.
3. The visual signal lens housing shall be white with red lettered FIRE or as approved by Architect. The speaker and visual signal shall be mounted to a common white speaker baffle. The visual signal shall flash at a rate of minimum of 1 Hz and maximum of 3 Hz, and shall use a strobe type lamp or other high intensity long life light source. The lamp intensity shall be a minimum of 75 candela.
4. The speaker shall be UL 1480 compatible with the control equipment. Unit shall operate

within a temperature range of 150°F to -30°F. High output speakers, UL minimum 87dB at 10 feet with speaker taps of .33.66/1.25/2.5 watts. Standard output speakers, UL 75-81 dB at 10 feet with speaker taps of .5/1/1.75/2.75 watts. Capacitor for line supervision.

F. Ceiling mounted recessed mounted speakers (where indicated or required by local AHJ) shall be UL 1480 compatible with the control equipment. Unit shall operate within a temperature range of 150°F to -30°F. UL minimum 78-87 dB at 10 feet with speaker taps of .25, .5/1.0/2.0 watts. Round, white baffle or 2x2 lay-in grid with UL enclosure, tile bridge supports when recessed in lay-in ceiling tiles (where indicated or required by local AHJ) and capacitor for line supervision.

G. Surface mounted speakers (where indicated or required by local AHJ) shall be UL 1480 compatible with the control equipment. Unit shall operate within a temperature range of 150°F to -30°F UL minimum 100 dB at 15 watts at 10 feet. Speaker taps via 7-position selector switch, 25-vol., .48/.94/1.8/7.5/15 watts. Fully enclosed wiring terminals. Capacitor for line supervision.

H. Manual Pull Station: Addressable pull stations shall contain electronics that communicate the station's status (alarm, normal) to the control panel over two wires which also provide power to the pull station. They shall be manufactured from high impact red Lexan with white lettering. Station shall mechanically latch upon operation and remain so until manually reset by opening with a key common to all system locks. Pull stations shall be double action without glass rods. The front of the station shall be hinged to a back plate assembly and shall be opened with a key to reset the station. The key shall be common with the control panels. The addressable manual station shall have address setting programmed electronically and automatically from the fire alarm control panel. Manual stations shall be designed for semi-flush (surface) mounting on standard electrical box. All pull stations units shall have a protective cover, STI Stopper II #STI-1130 surface mounted cover with local alarm horn. Provide STI, Weather Stopper II #STI3150 for locations where dampness, water or dust is present, except when mounted next to main FACP, staff supervised locations, and remote annunciators.

I. Intelligent Multi-Criteria Photoelectric Smoke Detectors
1. The intelligent multi-criteria detection device shall include the ability to combine the signal of the thermal sensor with the signal of the photoelectric signal in an effort to react hastily in the event of a fire situation. It shall also include the inherent ability to distinguish between a fire condition and a false alarm condition by examining the characteristics of the thermal and smoke sensing chambers and comparing them to a database of actual fire and deceptive phenomena.
2. The detectors shall use the photoelectric principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the ANALOG level of smoke density. The detector shall provide automatic sensitivity "drift" compensation. The detector shall also provide a "maintenance alert" feature whereby the detector shall initiate a trouble condition should the unit's sensitivity approach the outside limits of the normal sensitivity window.
3. The detectors shall provide address setting means electronically and automatically at the control panel.
4. The detectors shall provide operational status and alarm state LED. Under normal conditions, the LED shall flash, indicating the detector is operational and in regular communication with the control panel. An output connection shall also be provided in the base for connecting an external remote alarm LED.
5. The detector shall be semi-flush ceiling mounted and be provided with modular detector head with twist lock base. No radioactive material shall be used.
6. Voltage and RF transient suppression techniques shall be employed as well as smoke signal verification circuit and an insect screen.

J. Intelligent Photoelectric Smoke Detectors
1. The detectors shall use the photoelectric principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the ANALOG level of smoke density. The detector shall provide automatic sensitivity "drift" compensation. The detector shall also provide a "maintenance alert" feature whereby the detector shall initiate a trouble condition should the unit's sensitivity approach the outside limits of the normal sensitivity window.
2. The detectors shall provide address setting means electronically and automatically at the control panel.

3. The detectors shall provide operational status and alarm state LED. Under normal conditions, the LED shall flash, indicating the detector is operational and in regular communication with the control panel. An output connection shall also be provided in the base for connecting an external remote alarm LED.
4. The detector shall be semi-flush ceiling mounted and be provided with modular detector head with twist lock base. No radioactive material shall be used.
5. Voltage and RF transient suppression techniques shall be employed as well as smoke signal verification circuit and an insect screen.

K. Duct photoelectric smoke detectors:
1. Detectors shall be analog addressable type.
2. To minimize nuisance alarms, detectors shall have an insect screen and be designed to ignore invisible airborne particles or smoke densities that are below the factory set alarm point. No radioactive material shall be used.
3. Removal of the detector head shall interrupt the supervisory circuit of the fire alarm detection loop and cause a trouble signal at the control panel.
4. Voltage and RF transient suppression techniques shall be employed as well as smoke signal verification circuit and an insect screen.
5. Remote alarm/power LED indicator with test switch shall be provided. Unit shall be wall or ceiling mounted in readily visible and accessible area near the location of detector; exact location of unit to be approved by the Architect/Engineer.
6. Detectors shall operate on the same principles and exhibit the same basic characteristics as area type photoelectric smoke sensors. The detector shall operate in air velocities of 300 FPM to 4,000 FPM. Each detector shall interface directly to the system SLC loop without the requirement of interface zone modules.
7. The unit shall consist of a clear molded plastic enclosure (or remote mounted LED status indicator shall be provided next to the smoke detector) with integral conduit knockouts to provide visual viewing of detector/sensor for monitoring sensor operation and chamber condition. The duct housing shall be provided with gasket seals to insure proper seating of the housing to the associated ductwork. Each unit's sampling tubes shall extend the width of the duct and be provided with porosity filters to reduce sensor/chamber contamination.
8. The detectors shall provide alarm and power status indication by LED. Under normal conditions, the LED shall flash, indicating the detector is operational and in regular communication with the control panel. Steady illumination of the LED shall indicate that the control panel has detected and verified an alarm condition. An output connection shall also be provided in the base for connecting an external remote alarm LED.
9. The detectors shall provide address setting means electronically and automatically from the control panel.

L. Intelligent Thermal Detectors
1. The detectors shall use dual electronic thermostats to measure temperature levels in its chamber and shall, on command from the control panel, send data to the panel representing the analog temperature level.
2. The detectors shall provide address setting means electronically and automatically at the control panel.
3. The detectors shall provide operational status and alarm state LED. Under normal conditions, the LED shall flash, indicating the detector is operational and in regular communication with the control panel. An output connection shall also be provided in the base for connecting an external remote alarm LED.
4. The detector shall be semi-flush ceiling mounted and be provided with modular detector head with twist lock base.
5. Thermal Detectors shall be combination rate-of-rise and fixed temperature- rated at 135°F for areas where ambient temperatures do not exceed 100°F and shall be 200°F for areas where ambient temperatures exceed 100°F but not 150°F. The fixed temperature element shall consist of a fusible alloy retainer and actuator shaft. Detectors shall have a smooth ceiling rating of 2,500 square feet. Detectors shall be located as shown on the drawings and where required by local code authority.
6. Provide fixed temperature 190°F detector in kitchen and kiln room in lieu of combination rate-of-rise / fixed-temperature type.

M. Auxiliary AHU Relays: Air Products model MR-101C relays shall be provided for HVAC and AHU

control and interface. Relays shall be heavy-duty type with contacts rated up to 10 amps at 120V AC, 60 HZ. Relays shall be provided with NEMA I dust cover assembly and be provided with DPDT contacts as well as activated LED indicator.

N. Voltage sensing relays: Addressable control modules for voltage sensing relay interface shall be FCM-1.

O. Monitor Module:
1. Addressable monitor modules shall be provided where required to interface to contact alarm devices. The monitor module shall be used to connect a supervised zone of conventional initiating devices to an intelligent SLC loop.
2. The monitor module shall provide address setting means electronically and automatically at the control panel. A status/alarm LED shall be provided which shall indicate that the monitor module is operational and in regular communication with the control panel, and indicate detection of an alarm condition.

P. Control Module
1. Control/relay modules shall be provided where required to provide audible alarm interface and/or relay control interface. The control module shall be used to connect a supervised zone of conventional indicating devices to an intelligent loop. The zone may be wired class A or class B - field selected. The control module may be optionally wired as dry contact (form C) relay.
2. The control module shall provide address setting means electronically and automatically at the control panel. A status/alarm LED shall be provided which shall indicate that the control module is operational and in regular communication with the control panel and indicate when the device is actuated via the fire alarm control panel.

Q. Auxiliary Interface Points: All auxiliary input points (kitchen hoods, water flow, tamper switches, fire extinguishing systems etc.) shall be connected as required, and addressed as a separate initiating point of annunciation at the fire alarm panel and any remote annunciator as required.

R. Water flow switches / Valve supervisory switches shall be provided and installed by the fire protection contractor and connected by the fire alarm contractor. Wiring of these field devices to the fire alarm system shall be the responsibility of the fire alarm contractor. It is the responsibility of this contractor to ensure the proper function of the system. Each fire protection zone (flow switch) and (Valve switch) shall be addressed electronically and automatically at the control panel as a separate point of annunciation at the fire alarm panel. Coordinate exact location with fire protection contractor and civil drawings.

S. Beam detectors:
1. Microprocessor based beam detectors, consisting of a separate transmitter and matching receiver.
2. Coverage up to 350 ft. X 60 ft.
3. LED status indicators for normal (green), alarm (red), and trouble (yellow).
4. The detectors shall provide address setting means electronically and automatically at the control panel.

2.7 MAGNETIC DOOR HOLDERS, AUTOMATIC FIRE DOORS / SHUTTERS, AND SECURITY GRILLES AND INTERIOR SPACE CONTROLLED ACCESS EGRESS DOORS WITH AUTOMATIC EMERGENCY EGRESS ELECTRIC LOCK EMERGENCY RELEASE

A. Magnetic fire door hold open devices, interface for automatic roll down fire doors/shutters, and interface for security grilles and controlled access egress doors with emergency egress shall be provided. Coordinate with Division 8 and Architectural Drawings for exact location.

B. The operation of any alarm in the fire alarm system shall cause the following:
1. Release of the magnetic fire door holding devices, permitting the fire doors to be closed by the door closer.
2. Permit the automatic roll down fire doors/shutters to close automatically.
3. Permit the security grilles with emergency egress to open automatically.
4. Unlock the electrically controlled access doors in all interior spaces.

C. The magnetic door holders, automatic roll down fire doors/shutters, security grilles, and interior electrically controlled access doors with emergency egress, shall be associated with two smoke detectors located on the ceiling with one on either side of the fire door/shutter, security grille opening, or interior egress path electrically controlled door. The operation of either of these detectors shall also cause the magnetic holder to release the fire door, the automatic fire door/shutter to close, and the security grille with emergency egress to open.

D. The operation of smoke detectors associated with a magnetic door holder, automatic roll down fire door, security grille, or electrically controlled access door shall transmit a pre-alarm signal to the fire alarm panel.

2.8 REMOTE PAGING UNIT

A. Remote all-call paging unit or to activate one of the pre-recorded messages over the speaker circuits.

2.9 REMOTE ALPHANUMERIC DISPLAY ANNUNCIATORS

A. (Where indicated or required by Local Authority Having Jurisdiction) Remote alpha-numeric annunciator(s) to annunciate all system events and duplicate the displayed status at the main FACP. The annunciator(s) shall be an 80-character display similar to the main FACP and operate via the system RS485 or RS232 serial output terminal from the main FACP. The unit shall operate from FACP 24VDC power and function during system power failure while the system resides on standby batteries. The remote annunciator(s) shall include:
1. Integral time/date clock
2. System reset
3. System silence
4. System acknowledge
5. Display/step switch
6. Integral trouble buzzer
7. LCD contrast adjust
8. Fire Drill Operation
9. Owner’s list of additional remote annunciator control buttons.

B. Annunciator shall upon command display the first system alarm, last alarm, and system alarm count. The following primary controls shall be visible through a front access panel:
1. 80 character alphanumeric display, LCD, LED, or gas plasma
2. Individual red system alarm LED
3. Individual yellow supervisory service LED
4. Individual yellow trouble LED
5. Green “POWER ON” LED
6. Alarm acknowledge key
7. Trouble acknowledge key
8. Alarm silence key
9. System reset key
10. LED test
11. Additional control buttons as directed by Owner.

2.10 AUXILIARY EQUIPMENT MONITORING

A. The fire alarm system shall monitor for alarm, supervisory, and trouble conditions; and annunciate the status of the following equipment when provided, or is existing to remain, as part of this project. A failed status shall activate the trouble alarm.
1. Emergency Generator: Run Status
2. Emergency Generator: Trouble Signal
3. Fire Pump: Run Status
4. Fire Pump: Trouble Signal
5. Emergency Service Communications Systems, as required by NFPA 72 and NFPA 1221.

PART 3 - EXECUTION

3.1 EXPANSION OF EXISTING SYSTEM

A. Testing of existing systems:
1. Provide complete operational test of existing fire alarm system prior to any demolition or construction. Verify operation of each device, control panel, distribution equipment and associated accessories.
2. Provide a complete written report to the Architect, indicating any deficiencies of the existing system in relation to each component's intended function. In addition, provide deficiencies of the existing system with regard to current Code, ADA, and Local Accessibility Standards requirements. Provide the written report 14 days prior to any work related to the expansion of the existing system.
3. Testing of the existing system shall include all areas and all buildings served by the existing system.

B. Expand the existing system in all expansion or renovation areas to include requirement specified and as required by the local authority having jurisdiction. Verify compatibility of new equipment with existing system.

C. Provide smoke detectors in the following locations in addition or renovated areas:
1. All paths of egress and adjoining spaces within the same envelope including but not limited to: corridors, hallways, stairs, lobbies, and elevator landings.
2. At each electrical room, telecommunications/data room, elevator machine room, kiln room, and mechanical room not subject to un-treated or un-filtered outside air.
3. At each computer lab/room.
4. At each library or book storage room.
5. At each storage room, stock room, or warehouse space.
6. At each pre-K and kindergarten classrooms.
7. At nurse's area/clinic and patient care/cot areas.
8. At each special needs, life skills, adaptive behavior, developmental classrooms or similar designated areas without food preparation or cooking equipment.
9. At each student toilet/restroom. Provide STI protective covers. Do not locate over plumbing fixtures or near partitions.

D. Provide heat/thermal detectors in the following locations in addition or renovated areas:
1. At each mechanical room subject to un-treated or un-filtered outside air.
2. At each janitor's closets and laundry rooms.
3. At each commercial kitchen and adjoining storage rooms; at each food preparation area.
4. At each employee break room.
5. At each vocational shop.
6. At each science, physics, chemistry, or biology classroom and their associated preparation and storage rooms.
7. At each special needs, life skills, adaptive behavior, developmental classrooms or similar designated areas with food preparation or cooking equipment.

E. Provide carbon monoxide detection and smoke detection devices in all areas designated as day-care for minors.

F. Provide duct smoke detectors in all air handling units with air volumes of 2,000 cfm or larger.
1. Where duct smoke detectors are installed above ceilings, provide external remote status/alarm LED mounted flush with ceiling in close proximity to the duct detector location. If space is open without ceiling, wall mount remote status/alarm LED in close proximity to the detector between 96 and 108-inches AFF, or as directed by Owner.

G. Provide duct smoke detectors on outside air units only as required by local Code and / or AHJ.

H. Provide VESDA type detectors at the following locations when appropriate:
1. Atriums to avoid exposed conduits.
2. High ceiling areas 25 feet and higher where maintenance of spot type detectors will be difficult.
3. Skylights to avoid exposed conduits.
4. Coolers/Freezers 200 square feet and larger.

I. Provide manual pull stations at each exterior exit and at each exit from all floors only if required by local AHJ or if the building is not fully sprinklered. Provide one manual pull station at the central reception area as directed by Owner.

J. Provide weatherproof exterior audio/visual alarm devices mounted on the building at the exact location as directed by Architect:
1. Main entry.
2. Courtyards and outdoor assembly areas adjacent to the building.
3. Mechanical yards adjacent to the building.
4. Covered playgrounds or covered assembly areas adjacent to the building.
5. Additional locations where indicated on drawings.
6. Outdoor paved play areas.

K. Provide audio and visual alarm devices in all areas normally occupied by students or minors and all common use areas.

L. Provide beam type detectors at the following locations when appropriate:
1. Atriums.
2. High ceiling corridors where maintenance of spot type detectors may be difficult.
3. Areas with skylights.

M. Provide audio and visual alarm devices in all areas normally occupied by students or minors. The renovated and expansion areas' smoke control envelope audio alarm shall be equipped with voice alarm capability regardless of local AHJ requirements. Existing areas shall remain temporal audio alarm only.

N. Provide carbon monoxide detection and smoke detection devices in all areas designated as day-care for minors.

O. Provide carbon monoxide detection in classrooms and other instructional spaces served by a fuel-burning appliance, fuel-burning HVAC equipment (including roof mounted equipment), or with gas fuel outlets for connection to portable fuel-burning space heaters and appliances such as Bunsen burners which are typically used in laboratories or science classrooms.

3.2 GENERAL REQUIREMENTS

A. Installation shall include the delivery, storage, setting in place, fastening to the building structure, interconnection of the system components, alignment, adjustment and all other work, whether or not expressly specified, which is necessary to result in a tested and operational system.

B. All installation practices shall be in accordance with, but not limited to, the specifications and drawings. Installation shall be performed in accordance with the applicable standards, requirements and recommendations of NFPA 72 and the National Electrical Code and any authorities having jurisdiction. Proper protection against corrosion shall be provided on all electrical equipment in accordance with the requirements of the National Electrical Code. The installation shall conform to all manufacturers' recommendations.

C. All equipment shall be firmly secured in place unless requirements of portability dictate otherwise. Fastenings and support shall be adequate to support their loads with a safety factor of at least three.

D. All boxes, equipment, etc., shall be plumb and square. The contractor must take such precautions as are necessary to prevent and guard against electrostatic hum, to supply adequate ventilation, and to install the equipment to provide reasonable safety for the operator.

E. Visual displays, GUIs, or other indicators for main fire alarm panel and all remote annunciators shall be at maximum 66 inches AFF.

F. All remote booster and associated equipment panels shall be mounted with top of enclosure maximum 66 inches AFF.

G. In the installation of equipment and cables, coordinate with Architectural drawings for possible conflicts with millwork, casework, marker boards, furniture, lockers, etc., and notify the architect of any discrepancies. Verify modifications before proceeding with installation.

H. Mount end-of-line resistor for each box circuit in backbox located at the last manual alarm station or automatic initiating device in a circuit. Mark device accordingly in the field.

I. Provide three dedicated Cat 6 cables from MDF/IDF to fire alarm panel. Cable shall be installed in 3/4" conduit. Two cables for phone POT lines and one Ethernet data connection.

J. Upright and/or Wall Post-Indicating Valve: Provide conduit and wiring from fire alarm control panel to post-indicating valve if electronically supervised, coordinate exact location of PIV with fire sprinkler contractor prior to rough-in. Coordinate final location with Civil Drawings and Fire Protection Contractor. Where equipment is located inside a vault, stub required conduit inside vault, turn up and cap.

K. Contractor shall submit on completion of system verification, a point-by-point check list indicating the date and time of each item inspected and issue a certificate confirming that the inspection has been completed and the system is installed and functioning in accordance with the Specifications prior to date of substantial completion.

L. Provide remote alphanumeric display annunciators in the administrative area in constantly attended area, as required by the Local AHJ, and additional annunciators where indicated on the drawings, as directed by Owner / Architect.

M. Alarm devices shall be ceiling mounted unless indicated specifically otherwise. Alarm devices in Mechanical, Electrical, Communications, IDF / MDF Rooms and Central Plant shall be wall mounted and coordinated with other equipment, piping and ductwork.

N. Provide combination speaker strobes. Provide strobe only alarms when additional speaker placement will compromise voice intelligibility. Provide horn/strobes in coolers and freezers.

O. Detectors shall be installed per NFPA 90A and be listed with the fire alarm control panel.

P. Auxiliary Equipment Monitoring Wiring and connection to equipment shall be the responsibility of the fire alarm contractor.

Q. Power for magnetic door holders shall be provided from the nearest receptacle circuit wired through fire alarm relay.

R. Smoke detectors shall be mounted to a 4-inch octagon box with hanger bar or with box secured to building structure.

S. Provide power via 120-volt, 20-Amp dedicated circuits with lock-on provisions at the respective circuit breaker for each new main fire alarm control panel, each new panel extender and each new remote power supply at no additional cost to the Owner. The complete fire alarm system shall be powered under emergency power when emergency life safety power is available at the project site. When emergency life safety power is not available at the project site, power shall originate from the nearest available 120-volt panel, or as indicated.

3.3 CABLE AND BOXES INSTALLATION

A. All circuits shall be protected to avoid interruption of service due to short-circuiting or other conditions, which might adversely affect the connected devices. Each individual signaling circuit shall be classified as a circuit pair.

B. All cabling in racks, cabinets and junction boxes shall be neatly strapped, dressed and adequately supported. Cable installation shall conform to good engineering practices and to the standards of the National Electrical Code.

C. Cables shall be terminated with the proper connector required for the associated operation of the equipment to which it is connected. Screw terminal blocks shall be furnished for all cables, which

interface with racks, cabinets, consoles or equipment modules.

D. All cables within a rack, console or junction box shall be grouped according to the signals being carried to reduce signal contamination.

E. Where shielded conductors enter a panel or enclosure, and where power wiring exists, provision shall be made to provide physical isolation of signal and power conductors.

F. Supply and install all fittings and accessories whether or not they are specified, required for proper, safe and reliable operation of the system.

G. All wire shall be installed in an approved conduit/raceway system (except where permitted by NEC and the local authority having jurisdiction). Maximum conduit fill shall not exceed 40%.

H. Minimum conduit size shall be 3/4" EMT with insulated bushings. Install conduit per engineered shop drawings.

I. Systems utilizing open wiring techniques with low smoke plenum cable shall provide conduit in all inaccessible locations, inside concealed walls, all mechanical/electrical rooms, or other areas where wiring might be exposed to view and or subject to damage.

J. All vertical wiring and all main trunk/riser wiring shall be installed in a complete raceway/conduit system. All riser boxes shall be adequately sized for the number of conductors transversing the respective box as well as the number of terminations required.

K. All junction boxes containing fire alarm wiring are to be painted red.

L. All plenum wiring is to be installed parallel and perpendicular to the building structure. Cable shall be bundled with cable ties on a maximum of 2'-6". Install cables in D-ring hangers secured to the structure at a maximum of 5' on center. Cable shall not lie on ceiling grid or ceiling tiles, light fixtures, piping, ductwork or foreign equipment.

M. The system ground is to be connected to the local ground bus. Under no conditions shall the AC neutral either in a power panel or in receptacle outlets be used for a reference ground.

N. All wiring shall be in accordance with NFPA 72, the National Electrical Code, and Local Codes. All wiring sizes shall conform to recommendations of the equipment manufacturer, and as indicated on the engineered shop drawings.

O. All wire shall be UL Listed FPL for limited energy (300V) and fire alarm applications and shall be installed in conduit. Limited energy FPLP or MPP wire may be run open in return air ceiling plenums provided such wire is UL Listed for such applications and is of the low smoke producing fluorocarbon type and complies with NEC Article 760 and approved by the local authority having jurisdiction.

P. No other wiring shall be run in the same conduit as fire alarm wiring.

Q. All fire alarm wiring to be red. All fire alarm circuits shall be identified at each termination and at each 25 feet between terminations.

R. Copper wiring leaving or entering main building shall be protected on both ends with surge suppression; otherwise use fiber-optic cabling.

3.4

ALARM SYSTEM SEQUENCE OF OPERATION

A. General:
1. All fire alarm circuits shall be electrically supervised.
2. Automatic response functions shall be accomplished by the first device initiated. Alarm functions resulting from initiation by the first device shall not be altered by subsequent alarms. An alarm signal shall be the highest priority. A pre-alarm signal shall have second

priority and supervisory or trouble signals shall have third and fourth level priority. Signals of a higher level priority shall take precedence over signals of lower priority even though the lower priority condition occurred first.

B. Fire alarm operating sequences shall be as follows:

1. Activation of any automatic detector, manual station, fire suppression system, sprinkler flow switch or any other system required by NFPA 72 to be monitored to initiate an alarm condition shall cause the location of the alarm to be identified in an audible and visual manner at the building fire alarm control panel (FACP), and shall initiate the following events:
   a. The system common alarm LED on the CPU Module shall flash. The internal audible trouble device shall sound. Acknowledging the alarm condition shall silence the audible trouble device and revert the flashing common alarm LED to a steady state.
   b. The 80-character display shall indicate all applicable information associated with the alarm condition including: zone, device type, device location based on actual room graphic name and number (not architectural plan names and numbers), and time of alarm. Location and zoning messages shall be custom field programmed to respective premises.
   c. Any remote or local annunciator LED's associated with the alarm point shall be illuminated as herein specified.
   d. The remote signaling connection shall be activated relaying the alarm signal to an approved central station (central station connection and service provided by Owner). Point ID and descriptor must be sent and received.
   e. All automatic events programmed to the alarm point shall be executed and the associated indicating devices and/or outputs activated.
   f. De-activate local sound reinforcement systems that are not UL listed nor integrated with the fire alarm system control panel for providing fire alarm or mass notification instructions. Building wide public address systems shall remain active only for manual mass notification. Public address system auxiliary audio inputs used for background music or other remote non-emergency audio sources shall be silenced to only allow priority level manual mass notification using the public address system.
   g. Activate all audible/visual alarm devices. Where prerecorded voice announcement is required or specified, the prerecorded announcement shall be preceded with attention tone(s), followed by the approved prerecorded announcement and continue in a cycle until the system is reset. Manual voice announcement shall interrupt the prerecorded cycle and the prerecorded cycle shall resume automatically after three minutes.
   h. De-activate all HVAC systems including low speed high volume (LSHV) circulating blade type fans.
   i. De-energize the kitchen hood supply/exhaust fans as required by local authority having jurisdiction.
   j. Close all related smoke dampers.
   k. Close all related smoke/fire dampers.
   l. Release all magnetic door hold open devices.
   m. Release the electric strike, unlocking, but not unlatching, locked doors controlled by an access control system.
   n. Release Counter Shutters and hold-open devices on all fire and smoke doors.
   o. Open all security grilles with emergency egress.
   p. Activate to close all related fire and smoke doors and shutters.
   q. Activate signaling connection to the elevator as required by the local authority having jurisdiction.
   r. Signal the building automation system and Owner’s security / police personnel as directed by Owner / Architect. The audible alarms shall be inhibited from being silenced for a period of 3 minutes after commencing operation unless alarm is acknowledged, and appropriate action has been taken.
   s. Activate automatic recall operation of elevators as required by local authority having jurisdiction.
   t. Record all events on the system printer.
2. Activation of duct mounted smoke detector on the HVAC equipment, or a smoke detector mounted in the return/supply air stream of any fan shall shut down all units as required by

NFPA. The activation of one of these detectors shall initiate the Alarm Sequence of Operation.

3. Activation of a control valve supervisory switch shall initiate the following events:
   a. The activation of any sprinkler valve supervisory (tamper) switch shall activate the system supervisory service audible signal and illuminate the LED at the building fire alarm control panel (FACP). Differentiation between valve tamper activation and opens and/or grounds on the initiation circuit wiring shall be provided.
   b. Activation of a sprinkler system control valve supervisory switch shall not prevent the events listed under Article 3.4.
   c. Restoring the valve to the normal position shall cause the supervisory service audible signal to pulse, indicating the restoration to normal position. The supervisory service reset key shall be provided to silence the audible signal.
4. Activation of the smoke detector and heat detector in the elevator machine room and at top of elevator shaft shall cause the elevators' controllers to be tripped by way of the shut trip breaker, and shall also initiate the events listed under Article 3.4.
5. Any subsequent fire alarm shall reactivate the alarm indicating appliances and activate the respective control sequences described above.
6. Upon silencing the alarm, all visible alarm devices shall remain active until system reset, and all local sound reinforcement systems de-activated by the fire alarm system shall resume normal operation.
7. Upon reset of the fire alarm control panel, HVAC units shall be capable of being started, and resume normal operation.

C. Activation of the manual evacuation pull (drill) switch shall operate the alarm indicating appliances and de-activate local sound reinforcement system without causing other control circuits to be activated. However, should true alarm occur, all alarm functions should occur as described.

D. ALARM VERIFICATION shall be field programmed for each respective detector. Global verification will not be acceptable. The verification sequence is activated after a "check" procedure and the panel will wait a field programmable delay period (0-50 seconds) then proceed to re-sample the detector for continued presence of smoke. If the alarm condition still exists or a non-verified device is actuated during the verification period, the system will then initiate all alarm sequences specified herein. The system shall incorporate the ability to log in memory the number of verification events that have occurred for each selected device.

3.5 EQUIPMENT IDENTIFICATION

A. Each new panel or equipment enclosure shall be provided with a permanently engraved or embossed or silkscreen identification tag. The tag shall include the following information:
   1. Name of manufacturer.
   2. Manufacturer's equipment description.
   3. Serial number and model number.
   4. Voltage and current rating.

3.6 SPARE PARTS AND TOOLS

A. Interchangeable Parts: All spare parts furnished shall be directly interchangeable with the corresponding components of the installed system. Spare parts shall be packaged and identified by nameplate, tagging, or stamping. Spare parts shall be delivered to the site in unopened cartons for storage as directed by the Owner.

B. Spare Parts: Provide minimum of one, or 5% of renovation area total, whichever is greater unless noted otherwise.
   1. Spare shut down modules
   2. Spare detectors of each type in the system
   3. Spare alarm indicating devices of each type in the system
   4. Spare manual pull stations
   5. Spare protective covers of each type in the system.
   6. Spare relays/controls required for connection to smoke and fire/smoke dampers
   7. Devices listed above are to be installed as directed by Architect/Engineer or local code

authorities at no additional cost to the Owner. Unused spare parts are to be parts for Owner's cabinet.

C. Provide one smoke, heat and carbon monoxide detector testing kit. SDfire #TF2823 with Solo Testfire #2001 tester with 15-foot access pole and three 4-foot pole extensions, detector removal tool, and carrying bag.

D. Provide two copies of the final software programmed into the fire alarm system.

E. Parts list: Furnish a list, in duplicate, of all other parts and accessories the manufacturer of the system recommends to be stocked for maintenance.

3.7 KEYS

A. Keys and locks for all equipment shall be identical to the existing building master key for the fire alarm system.

3.8 SMOKE DAMPERS AND FIRE/SMOKE DAMPERS

A. Smoke dampers and combination fire/smoke dampers shall be controlled by an automatic alarm initiating device. Smoke dampers installed to isolate the air handling system shall be arranged to close automatically when the system is in alarm.

B. Coordinate motor operator voltage with supplier.

C. Open all dampers prior to starting air handling equipment.

D. Provide 120V power from nearest general purpose 20A receptacle circuit as required, or as noted otherwise.

3.9 GRAPHIC FLOOR PLANS FOR AHJ SITE PERMITTING INSPECTION AND OWNER USE

A. It is the intent of these specifications that the fire alarm system shall pass AHJ inspection on the first try. The fire alarm system shall be fully functional, commissioned, and mapped both on fire alarm graphic maps and fire alarm annunciator device descriptions to fully and correctly described the device type and detailed location. Provide color coded floor plans detailed with actual room names, actual graphic room numbers as directed by the Owner and adequate information to direct people to the fire alarm devices in alarm and to exits with non-fading floor plan media. Do not use architectural plan room names and numbers. Fire alarm maps shall include all relevant building information and fire alarm device information as required for the local AHJ permitting site walk-through inspection.

B. Each plan shall clearly relate the room numbers on the annunciator to the area description on the floor plan. All fire alarm devices located to correspond with the annunciator.

C. Provide two color coded floor plans for Owner use that shall be solvent welded in acrylic plastic.
1. Mount in an extruded aluminum frame next to the main fire alarm control panel.

D. Install graphic floor plans as directed by Architect/Owner prior to substantial completion. Each area or room designation shall be verified with the fire alarm device during testing.

3.10 ADDITIONAL REQUIREMENTS

A. Coordinate with Owner for appropriate off-site monitoring service and communication technology to be used. Provide all necessary programming for interfacing with the Owner's on-site and off-site remote signaling receiving station, including programming of descriptors and addresses at the receiving station.

B. The contractor is to ensure all areas of the renovation and new construction are covered with visual and audio alarm devices for occupant notification of a fire alarm including remote portable or temporary buildings.

C. Coordinate door hold devices with door and door hardware.

D. Provide interface with and coordinate shunt-trip circuit breakers and control devices with kitchen hood fire control systems (where new kitchen hood fire control systems are provided) and elevator equipment (where new elevators are provided).

E. Alarm circuit power supplies and circuiting shall be designed and installed to accept an additional five (2) 110cd visual devices for future expansion. The initial design shall not exceed 70% of the rated power supply and circuit capability with the two additional 110cd devices installed.

F. Provide programming or re-programming of all hot keys as directed by Owner including, but not limited to, fire drill, AHU shutdown bypass, horn/strobe disable, elevator test.

3.11 COMMISSIONING THE SYSTEM

A. The installing contractor shall be responsible for verifying that each new or relocated component of the system is fully operational and in conformity with the specifications. He shall also be responsible for insuring that all elements function together as a system in accordance with the specifications.

B. A state licensed and factory trained technical representative of the manufacturer with NICET Level 3 minimum certification shall supervise the final control panel connections and testing of the system. Upon completion of the acceptance tests, the owner and/or his representatives shall be instructed in the proper operation of the system.

C. The installing contractor shall functionally test each and every device in the entire system for proper operation and response. Any new or relocated items located within the construction or renovation area found not properly installed or non-functioning shall be replaced or repaired and retested. The final test indicating a fully functional fire alarm system shall be recorded; electronic Excel and printed copy submitted to the Architect, Engineer and Owner.

D. The installing contractor shall provide a complete written report and printout of the functional test of the entire system after all existing deficiencies of the existing system have been corrected by the Owner, or as directed by the Owner. The test report shall be signed and dated by the licensed fire alarm superintendent responsible for supervising the final system test and checkout. This test shall be completed and accepted by the Owner prior to testing for the local Fire Marshall.

E. The installing contractor's fire alarm superintendent shall test the entire system in the presence of the local authorities having jurisdiction. The contractor shall be responsible for making any changes, adjustments, or corrections, as may be required by the local authorities. The Contractor shall affix his certification label and installation certificate to the interior of the main fire alarm control panel.

F. The testing and acceptance shall be performed within 30 days after the fire alarm installation is completed. The test shall be performed by a minimum of two qualified fire alarm system technicians acceptable to the authority having jurisdiction. The test which is a comprehensive 100 percent inspection and test of all fire alarm system equipment shall include the following:
1. Fire alarm control equipment: a visual and functional test of the fire alarm control and auxiliary control equipment.
2. A visual inspection shall be conducted to establish that all electrical connections and equipment, as required, are properly installed and operating.
3. A functional fault simulation test shall be conducted on all relevant field wiring terminations to ensure that wiring is properly supervised as required.
4. Indicators shall be tested to ensure proper function and operation.
5. Control panel auxiliary functions shall be functionally tested to verify proper operation.
6. Control panel supervisory and alarm current readings shall be taken to verify that the control panel has the appropriate power supplies and standby batteries to operate the system as required. A three-minute general alarm stress test, both under AC power and standby power, shall be conducted to further ensure complete operation of the system.
7. Fire alarm peripheral devices; All fire alarm peripheral devices shall be functionally tested and the location and testing information recorded for each device.

8. Manual initiating devices:
   a. Each manual fire alarm station shall be functionally tested for alarm operation.
   b. Each manual fire alarm station shall be functionally tested for proper wiring supervision.
9. Automatic initiating devices:
   a. Each automatic initiating device shall be activated in accordance with manufacturer's instructions to ensure proper operation.
   b. Each automatic initiating device shall be functionally tested for proper wiring supervision.
   c. Each automatic initiating device shall be inspected to ensure proper placement and mounting as required by specifications.
10. Alarm signaling devices:
   a. Each alarm signaling device shall be tested and decibel reading taken at 10' from the device and recorded to ensure proper operation. Each area's voice alarm signaling devices shall be tested for intelligibility.
   b. Each alarm signaling device shall be functionally tested for proper wiring supervision.
   c. Decibel reading shall be taken to ensure that the alarm signal level can be clearly heard in all areas of the facility.
   d. All visual alarm indicators shall be functionally tested to ensure proper operation and that they are clearly visible.
11. Elevators: Each elevator shall be tested and automatic recall function verified.
12. Reporting: Upon completion of the initial verification audit, a report shall be sent to the Architect/Engineer indicating that all fire alarm equipment has been tested and is in 100 percent operation. The report shall also contain the audit testing information as to the location and operational status of each peripheral device. The 100 percent audit shall be performed by a factory-trained representative. The report shall include the voice intelligibility performance in each area and indicate compliance with NFPA and local AHJ requirements.

G. It is the intent of these specifications and of the Architect/Engineer that a continued program of system maintenance will be provided by the Owner in compliance with NFPA 72. It is mandatory that the installing Contractor provide such services and make available these services to the Owner upon completion of the project.

H. Upon completion of installation and full acceptance testing, submit NFPA 72 certificate of compliance that the total fire alarm system, including any subsystems, is fully functional and that the components are UL listed for function intended.

3.12 SUBSTANTIAL COMPLETION

A. Final acceptance of the FIRE ALARM SYSTEM by the owner, local code authorities and Occupancy Permit has been issued.

B. All fire alarm system shop drawings, operating and maintenance manuals, maps and as-built drawings shall be submitted to and accepted by the Architect / Owner prior to date of substantial completion.

END OF SECTION

SECTION 32 18 13.10

SYNTHETIC GRASS SURFACING



10/17/2025

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Section Includes: Furnish all labor, materials, tools and equipment necessary to install, in place, all synthetic turf material as indicated on the plans and as specified herein. The installation of all materials shall be performed in strict accordance with the manufacturer's written installation instruction, and in accordance with all approved shop drawings.

B. Related Sections:
1. Section 01 23 00 - Alternates.
2. Section 11 68 00 - Play Field Equipment and Structures
3. Section 32 11 16 - Graded Stone Base.
4. Section 32 18 14 - Paved Elastic Layer

1.2 SUBMITTALS

A. Shop drawings shall be prepared at the scale of the construction documents and contain all pertinent information regarding installation. These drawings shall be submitted to the Architect/Owner for approval prior to the manufacturing and shipment of materials.

B. Submit drawings for:
1. Installation details; edge detail, goal post detail, other inserts and covers, etc.
2. Striping plan; layouts showing any field lines, markings and boundaries, and field logos per project drawings.

C. Prior to order of materials, the Turf Contractor shall submit the following:
1. Product Data including Independent Test Lab Results
2. Installation details
3. Sample Warranty
4. Field layout and striping plans
5. Details on construction, especially any details that may deviate from plans and specifications.

D. Prior to the beginning of installation, the manufacturer/installer of the synthetic turf shall inspect the subbase and supply a Certificate of Subbase Acceptance for the purpose of obtaining manufacturer's warranty for the finished synthetic playing surface.

E. Prior to Final Acceptance, the Contractor shall submit to the Owner three (3) copies of Maintenance Manuals, which will include necessary instructions for the proper care and preventative maintenance of the synthetic turf system, including painting and striping.

1.3 QUALITY ASSURANCE

A. Manufacturer/Installer's Experience: The synthetic turf installer/manufacturer shall have the experience of at least ten (10) acceptable installations of full-size football or soccer fields (minimum of 70,000 SF) in the United States within the past five (5) years of tufted, mono-fiber grass-like fabric that are infilled with a layered system of pea gravel and rubber. Provide this listing with the bid. The Turf Contractor shall employ only qualified, experienced supervisors and technicians skilled in the installation of the specified system.

B. Turf Contractor shall meet the following criteria:
1. Have proper license, in good standing, and have never had a license revoked.
2. Have not had a Surety or Bonding Company finish work on any contract within the last five (5) years.
3. Have not been disqualified or barred from performing work for any public Owner or other contracting entity.

1.4 EXISTING CONDITIONS

A. The Synthetic Turf Contractor will be responsible for any damage to the subbase during installation of the synthetic turf system after the deficiencies (if any) have been corrected as noted on the Certificate of Subbase Acceptability. New football goal posts and/or infield dirt mix backfill within the contiguous turf limits or immediately adjacent thereto are not to be installed by the Owner/Prime Contractor until after the new synthetic turf system has been completed.

1.5 SCHEDULE

A. Turf Contractor shall complete all work on the synthetic turf system in accordance with the published project schedule.

B. The Turf Contractor will require unencumbered use of an area within 30 feet of the synthetic turf area(s) being installed in order to complete his work. Turf Contractor shall also be afforded unencumbered access through the construction site to reach the turf field area being installed.

1.6 SURFACE AREA

A. The Turf Contractor is to verify all measurements.

1.7 UTILITIES

A. Owner/Prime Contractor will supply necessary water, adequate lighting and electricity for installation.

1.8 WARRANTY

A. Warranty: The Contractor shall submit its Manufacturer's Warranty with (3rd party) verification manufacturing was to standards. The warranty guarantees the usability and playability of the synthetic turf system for its intended uses for an eight (8) year period commencing with the date of Substantial Completion.
   1. The warranty submitted must have the following characteristics:
      a. Must provide coverage for eight (8) years from the date of Substantial Completion.
      b. Must warrant materials and workmanship.
      c. Must verify through a (3rd party) that the materials installed meet or exceed the product specifications.
      d. Must have a provision to either make a cash refund or repair or replace such portions of the installed materials that are no longer serviceable to maintain a serviceable and playable surface.
      e. Must be a manufacturer’s warranty from a single source covering workmanship and all self-manufactured or procured materials.
      f. Warranty shall cover the designated uses enumerated, including, but not limited to:
         1) Athletics/Sports/Practice activities or competitions.
         2) Marching band
         3) Physical exercises
         4) Physical education activities
         5) Pneumatic rubber-tired maintenance and service vehicles
         6) Pedestrian traffic and other similar uses
         7) Ceremonial and Entertainment Events
         8) Wheelchairs.
   2. NOTE: Prior to the final pay application being approved, the warranty documents must be received.

B. Guarantee that throughout the 8-year warranty period, the synthetic turf system shall have a maximum "G" value according to ASTM F1936-98 and Procedure A, ASTM F355, not to exceed 130G's at any location upon installation and shall not exceed 175G's throughout life of the warranty period. This shall be determined by conducting dynamic cushioning tests at the locations designated in ASTM F1936-98 and at corners of the soccer penalty boxes at opposite sides of the field. Any increase from 130G's to allowable 175G's maximum shall be at a relative uniform rate not to exceed 15 G's in any single yearly period. Manufacturer will be responsible for testing and documenting the result every year of the warranty period.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Refer to SECTION 32 18 14 - PAVED ELASTIC LAYER for e-layer pad at Practice Fields.

B. Practice Fields:
1. Basis of Design: “Matrix 46 oz Helix” as manufactured Hellas Construction. Material shall be a tufted, mono-fiber grass-like fabric coated with a secondary backing of high grade polyurethane. The fibers shall be tufted to a finished pile height of approximately 54mm. The turf fabric shall be filled with a layered system of silica pea gravel and rubber granules.
2. All components and their installation method shall be designed and manufactured for use on outdoor athletic fields. The materials as hereinafter specified, should be able to withstand full climatic exposure in all climates, be resistant to insect infestation, rot, fungus and mildew; to ultra-violet light and heat degradation, and shall have the basic characteristic of flow through-drainage allowing free movement of surface run-off through the turf fabric where such water may flow to the existing subbase and into the field drainage system.
3. The finished playing surface shall appear as mowed grass with no irregularities and shall afford excellent traction for conventional athletic shoes of all types. The finished surface shall resist abrasion and cutting from normal use.
4. Pile yarn (Polyethylene) shall be a proven athletic caliber yarn designed specifically for outdoor use and stabilized to resist the effect of ultraviolet degradation, heat, foot traffic, water and airborne pollutants. The pile fiber shall possess the following physical characteristics:
5. Infill: Infill material shall be a layered system of pea gravel and rubber in accordance with the manufacturer’s recommendations and the Owner’s preference.
6. Perimeter and interior edge details, underground storm sewer piping and connections, and goal post foundations required for the system shall be as detailed and recommended by the manufacturer, and as approved by the Owner.
7. Product Characteristics:

	Standard	**Property**	**Specification**
1	ASTM D418/D5848	Pile Weight	46 oz. /Sq. Yd.
2	ASTM D5848	Primary and Secondary Backing Weight	9.2 oz. /Sq. Yd.
3	ASTM D5848	Secondary Coating Weight	26 oz. /Sq. Yd.
4	ASTM D5848	Total Weight	81.2 oz. /Sq. Yd.
5	ASTM D1907	Yarn Denier	4 single monofilament yarn ends in 1,710 denier lime green 4 single monofilament yarn ends in 1,450 denier dark green
6	ASTM D5848	Pile Height	Finished 2 1/4"
7	ASTM D5793	Tufting Gauge	1/2”
8	ASTM D5848	Primary Backing	Tri-layer woven Polypropylene
9	ASTM D5848	Secondary Coating	Polyurethane
10	ASTM D1335	Tuft Bind without Infill	8 lbs. +/-
11	ASTM D5034	Grab Tear (width)	250.1 - 273.1 lbs. Force
12	ASTM D5034	Grab Tear (length)	197.6 - 236.1 lbs. Force
13	ASTM D4991	Carpet Permeability	10 - 15 inches/hour
14	ASTM D2859	Flammability (Pill Burn)	Pass

15	ASTM F355	G-max (Impact Attenuation)	<130 at installation <190 over warranty life
16	ASTM E-11	Realfill™ Infill	6 -7 lbs +/- per square foot
17		Fabric Width	15’
18		Perforation	3/16” Holes 4” X 4”
19	Yarn		160 microns x 1.6 mm (lime green) 170 microns x 1.2 mm (grass green)

All Characteristics listed above nominal +/- 5%

C. Practice Fields Alternate Product Option: Provide “MMTH M48 Pro” as manufactured by MMTH Turf.
   1. The turf fabric shall be filled with a layered system of silica pea gravel and rubber granules.
   2. All components and their installation method shall be designed and manufactured for use on outdoor athletic fields. The materials as hereinafter specified, should be able to withstand full climatic exposure in all climates, be resistant to insect infestation, rot, fungus and mildew; to ultra-violet light and heat degradation, and shall have the basic characteristic of flow through-drainage allowing free movement of surface run-off through the turf fabric where such water may flow to the existing subbase and into the field drainage system.
   3. The finished playing surface shall appear as mowed grass with no irregularities and shall afford excellent traction for conventional athletic shoes of all types. The finished surface shall resist abrasion and cutting from normal use.
   4. Pile yarn shall be a proven athletic caliber yarn designed specifically for outdoor use and stabilized to resist the effect of ultraviolet degradation, heat, foot traffic, water and airborne pollutants. The pile fiber shall possess the following physical characteristics:
   5. Infill: Infill material shall be a layered system of pea gravel and rubber in accordance with the manufacturer’s recommendations and the Owner’s preference.
   6. Perimeter and interior edge details, underground storm sewer piping and connections, and goal post foundations required for the system shall be as detailed and recommended by the manufacturer, and as approved by the Owner.
   7. Product Characteristics:

	Standard	**Property**	**Specification**
1	ASTM D418/D5848	Pile Weight**	48 oz. /Sq. Yd.
2	ASTM D5848	Primary Backing Weight**	8 oz. /Sq. Yd.
3	ASTM D5848	Secondary Backing Weight	20 oz. /Sq. Yd.
4	ASTM D5848	Total Weight****	76 oz. /Sq. Yd.
5	ASTM D1577	Linear Density – Total Denier	14,000 denier
6	ASTM D5848	Pile Height**	Finished 2.25"
7	ASTM D5793	Tufting Gauge	1/2”
8	ASTM D1335	Tuft Bind Strength	> 10 lbs. +/-
9	ASTM D5034	Grab Tear Strength	> 200
10	ASTM D2859	Flammability (Pill Burn)	Pass
11	ASTM F355	G-max (Impact Attenuation)	<165

All Characteristics listed above nominal. ** All values are ± 5% **** All values are ± 10%.

D. Practice Fields Alternate Product Option: Provide “XM360” UV-resistant rigid monofilament 1.75” as manufactured by FieldTurf, a Tarkett Sports Company with sand and SBR rubber infill.
   1. The turf fabric shall be filled with a layered system of sand and rubber granules.

2. All components and their installation method shall be designed and manufactured for use on outdoor athletic fields. The materials as hereinafter specified, should be able to withstand full climatic exposure in all climates, be resistant to insect infestation, rot, fungus and mildew; to ultra-violet light and heat degradation, and shall have the basic characteristic of flow through-drainage allowing free movement of surface run-off through the turf fabric where such water may flow to the existing subbase and into the field drainage system.
3. The finished playing surface shall appear as mowed grass with no irregularities and shall afford excellent traction for conventional athletic shoes of all types. The finished surface shall resist abrasion and cutting from normal use.
4. Pile yarn shall be a proven athletic caliber yarn designed specifically for outdoor use and stabilized to resist the effect of ultraviolet degradation, heat, foot traffic, water and airborne pollutants. The pile fiber shall possess the following physical characteristics:
5. Infill: Infill material shall be a layered system of sand and rubber in accordance with the manufacturer's recommendations and the Owner's preference.
6. Perimeter and interior edge details, underground storm sewer piping and connections, and goal post foundations required for the system shall be as detailed and recommended by the manufacturer, and as approved by the Owner.

7. Product Characteristics:

	Standard	**Property**	**Specification**
1	ASTM D418/D5848	Pile Weight	50 oz. /Sq. Yd.
2	ASTM D5848	Primary Backing Weight	8 oz. /Sq. Yd.
3	ASTM D5848	Secondary Backing Weight (Perfo-rated)	16 oz. /Sq. Yd.
4	ASTM D5848	Total Weight	74 oz. /Sq. Yd.
5	ASTM D1577	Linear Density – Total Denier	14,500 denier
6	ASTM D5848	Pile Height	Finished 1.75"
7	ASTM D5793	Tufting Gauge	3/8"
8	ASTM D1335	Tuft Bind without Infill	8 lbs. +/-
9	ASTM D5034	Grab Tear Strength	> 200
10	ASTM D2859	Flammability (Pill Burn)	Pass
11	DIN 18-035	Water permeability	> 40

Variation of +/-5% on above listed property values is within normal manufacturing tolerances

E. Weight Room Turf:
1. Basis of Design: Slit_Film/Thatch 0.75" UV-resistant polyethylene with 5-millimeter pad as provided by Field Turf.
2. Product Characteristics:

	Standard	**Property**	**Specification**
1	ASTM D418/D5848	Pile Weight	40 oz. /Sq. Yd.
2	ASTM D5848	Primary Backing Weight	8 oz. /Sq. Yd.
3	ASTM D5848	Secondary Backing Weight	20 oz/Sq. Yd.
4	ASTM D5848	Total Weight	132 oz. /Sq. Yd.
5	ASTM D5793	Stitch gauge	3/16 inch centers
6	ASTM D1577	Yarn Denier	10,000 denier
7	ASTM D5848	Pile Height	0.75"

8	ASTM D5793	Tufting Gauge	1/4”
9	ASTM D2859	Flammability (Pill Burn)	Pass

F. Weight Room Turf:
1. Provide polyethylene/Nylon “Elevate 48” with 5-millimeter pad as provided by MMTH Turf.
2. Product Characteristics:

	Standard	**Property**	**Specification**
1	ASTM D418/D5848	Pile Weight	48 oz. /Sq. Yd.
2	ASTM D5848	Backing Matrix	84 oc./Sq. Yd Stabilized dual layered woven polypropylene/urethane with 5mm attached pad
3		Fiber Mass	8,000 denier PE 4,400 denier Nylon
4	ASTM D5848	Total Weight	132 oz. /Sq. Yd.
5	ASTM D1577	Linear Density – Total Denier	14,500 denier
6	ASTM D5848	Pile Height	Finished 0.75"
7	ASTM D5793	Tufting Gauge	1/4”
8	ASTM D2859	Flammability (Pill Burn)	Pass

G. Weight Room Turf Alternative Product:
1. Provide TXT polyethylene “Duraplay Arena Pro-5mm Foam (DPPE1-5W)” as provided by Challenger Turf, Envylawn.
2. Product Characteristics:

	Standard	**Property**	**Specification**
1	ASTM D418/D5848	Face Weight	40 oz. /Sq. Yd.
2		Total Weight	123.5 oc./Sq. Yd TXT polyethylene with 5mm attached pad
3		Fiber Mass	8,000 denier PE 4,400 denier Nylon
4		Total Weight	132 oz. /Sq. Yd.
5	ASTM D1577	Primary Yarn Denier	5600 denier
6	ASTM D5848	Pile Height	Finished 7/16”
7	ASTM D5793	Tufting Gauge	3/16”
8		Primary Backing	K-29
9		Primary Weight	7.5 oz/Sq. Yd.
10		Secondary Coating	5W

11		Secondary Coating WEight	76 oz/Sq. Yd.

H. Provide infill per each manufacturer's recommendations and as needed per location.

PART 3 - EXECUTION

3.1 GENERAL

A. The installation shall be performed in full compliance with approved shop drawings.

B. Only factory-trained technicians, skilled in the installation of athletic caliber synthetic turf systems working under the direct supervision of the synthetic turf manufacturer's installation supervisors shall undertake the placement of the system.

C. The surface to receive the synthetic turf shall be inspected and certified by the turf manufacturer as ready for the installation of the synthetic turf system and must be perfectly clean as installation commences and shall be maintained in that condition throughout the process.

3.2 INSTALLATION

A. The subbase and curbs shall be inspected by means of a laser level and plotted on a 10-foot grid. Based upon the Contractor's inspection of the topological survey, the Sitework Contractor shall fine grade the subbase suitably, including properly rolling and compacting the base to achieve a surface planarity within 1/4" in 10 feet (+0, -1/4"). OWNER, ENGINEER OR PRIME CONTRACTOR SHALL NOT APPROVE THE SUBBASE FOR TOLERANCE TO GRADE WITHOUT OBTAINING THE TOPOLOGICAL SURVEY.

B. The Turf Project Superintendent shall thoroughly inspect all materials delivered to the site both for quality and quantity to assure that the entire installation shall have sufficient materials to maintain the schedule and proper mixing ratios.

C. Synthetic turf shall be loose laid across the field and attached to the perimeter edge detail. Turf shall be of sufficient length to permit full cross-field installation. No head or cross seams will be allowed, except as required for inlaid fabric striping or to accommodate programmed cut-outs.

D. All seams shall be flat, tight, and permanent with no separation or fraying. All seams and markings shall be adhered to a special tape with a two-part, high strength polyurethane adhesive applied per the Turf Supplier's standard procedures for outdoor applications.

E. Refer to manufacturer's recommendations for infill material per turf.

F. Infill materials shall be properly applied in numerous thin lifts using special broadcasting equipment to produce a layered system of pea gravel and SBR rubber particles or manufacturer's recommended layering system. The turf shall be raked and brushed properly as the mixture is applied. The infill material shall be installed to a depth of about 1.75 inches. The layered system of pea gravel and rubber infill materials can only be applied when the turf fabric is dry.

G. Should the ambient outdoor temperature fall below 45 degrees F, the Contractor and Owner will discuss available options and/or stoppage of work.

3.3 FIELD MARKINGS AND DECORATIONS

A. The field will have the lines tufted or inlaid according to NCAA or National Federation standards, as applicable.

B. Line width tolerance is (+) 1/4 inch. Alignment tolerance on any one line (sideline, goal line, end line, yard line) is (+) 1/2 inch. Any incorrectly installed line shall be immediately removed. If such as line permanently discolors the synthetic turf, that section shall be removed and replaced at the Contractor's expense. All line marking and numbers, etc., shall be per the current University Interscholastic League (U.I.L), NCAA, NFSHSA, and Owner's recommendations and approval.

3.4 CLEANING

A. Protect installed turf from subsequent construction operations.

B. Do not permit traffic over unprotected turf surface.

C. Contractor shall provide the labor, supplies, and equipment as necessary for final cleaning of surfaces and installed items.

D. All usable remnants of new material shall become the property of the Owner.

E. The Contractor shall keep the area clean throughout the project and clear of debris.

F. Surfaces, recesses, enclosures, etc., shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by the Owner.

3.5 OTHER MATERIALS AND EQUIPMENT

A. Maintenance Equipment: Provide one (1) Clean Sweep Jr., towed, non-powered Turf Sweeper with hitch, excluding prime mover vehicle. The sweeper attachment shall be of sufficient size to cover a 36” wide swath in a single pass. The sweeper attachment shall be fitted with synthetic bristle brushes as recommended by the synthetic turf manufacturer and shall be used primarily to collect surface debris.

END OF SECTION

North Shore Multi-Use Indoor Facility

GALENA PARK ISD

HOUSTON, TEXAS

ABBREVIATIONS

A

AFF	ABOVE FINISH FLOOR
ACT	ACOUSTICAL CEILING TILE
ADDL	ADDITIONAL
AB	AIR BARRIER
ACM	ALUMINUM COMPOSITE PANEL
ADA	AMERICANS WITH DISABILITIES ACT
AL/ALUM	ALUMINUM
APPROX	APPROXIMATE OR APPROXIMATELY
ARCH	ARCHITECT OR ARCHITECTURAL

B

BD	BOARD
BOW	BOTTOM OF WALL
BUR	BUILT-UP ROOFING
BLDG	BUILDING

C

℄	CENTER LINE
CR	CLASSROOM
CFS	COLD-FORMED STEEL
CONC	CONCRETE
CMU	CONCRETE MASONRY UNIT
CM	CONSTRUCTION MANAGER
CONT	CONTINUOUS
CI	CONTINUOUS INSULATION
CJ	CONTROL JOINT
COORD	COORDINATE
CORR	CORRIDOR

D

DIA	DIAMETER
DO	DOOR OPENING
DN	DOWN
DS	DOWNSPOUT

E

EA	EACH
EW	EACH WAY
ELEC	ELECTRICAL
EWC	ELECTRIC WATER COOLER
ELEV	ELEVATION
EQ	EQUAL
EQPT	EQUIPMENT
EXIST	EXISTING
EJ	EXPANSION JOINT
EXT	EXTERIOR
EIFS	EXTERIOR INSULATION & FINISH SYSTEM

F

FT	FEET or FOOT
FRP	FIBERGLASS REINFORCED PLASTIC
FV	FIELD-VERIFY
FIN	FINISH
FF	FINISH FLOOR
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER & CABINET
FHC	FIRE HOSE CABINET
FHCS	FLAT-HEAD COUNTERSUNK
FL	FLOOR
FD	FLOOR DRAIN
FLR	FLUORESCENT

G / H

GALV	GALVANIZED
GA	GAGE
GC	GENERAL CONTRACTOR
GO	GLAZED OPENING
GYP	GYPSUM
HT	HEIGHT
HP	HIGH POINT
HM	HOLLOW METAL
HORZ	HORIZONTAL
HB	HORIZONTAL BLINDS
HDG	HOT-DIP GALVANIZED
HR	HOUR

I / J / K

ID	INSIDE DIAMETER
INSUL	INSULATION
IFP	INTERACTIVE FLAT PANEL
IMB	INTERACTIVE MARKERBOARD
INT	INTERIOR
IBC	INTERNATIONAL BUILDING CODE

L

LAV	LAVATORY
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LOW POINT
LVT	LUXURY VINYL TILE

M

MFR	MANUFACTURER
MFG	MANUFACTURING
MB	MARKER BOARD
MO	MASONRY OPENING
MAX	MAXIMUM
MECH	MECHANICAL

M (CONT.)

MOD BIT	MODIFIED BITUMEN
MULL	MULLION
MEP	MECHANICAL-ELECTRICAL-PLUMBING
MCM	METAL COMPOSITE MATERIAL
MIN.	MINIMUM
MISC	MISCELLANEOUS

N

NOM	NOMINAL
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NO. / #	NUMBER

O

OC	ON CENTER
OD	OUTSIDE DIAMETER
OPP HAND	OPPOSITE HAND
OH	OVERHEAD
OFCI	OWNER-FURNISHED, CONTRACTOR-INSTALLED
OFOI	OWNER-FURNISHED, OWNER INSTALLED

P / Q

PR	PAIR
P.LAM.	PLASTIC LAMINATE
PLT	PLATE
PLMB	PLUMBING
PT	POINT
PCF	POUNDS PER CUBIC FOOT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PREFAB	PREFABRICATED
PROJ	PROJECTOR or PROJECTION
QT	QUARRY TILE

R

R.	RADIUS
REBAR	REINFORCING BAR
REF.	REFERENCE or REFER TO
RCP	REFLECTED CEILING PLAN
RE:	REGARDING
REFG	REFRIGERATOR
REINF	REINFORCE or REINFORCING
REQD	REQUIRED
R.	RISER (STAIR)
	ROLLING WINDOW SHADES
RD	ROOF DRAIN
RO	ROUGH OPENING

S

SIM.	SIMILAR
SC	SOLID CORE
SAB	SOUND ATTENUATION BLANKET
SAFB	SOUND ATTENUATION FIRE BLANKET
STC	SOUND TRANSMISSION CLASS
SPEC	SPECIFICATION
SQ	SQUARE
SF	SQUARE FOOT
SS	STAINLESS STEEL
STRUC.	STRUCTURAL
SUSP.	SUSPENDED

T

TB	TACKBOARD
TS	TACKSTRIP
TW	TACK WALL
TC	TEACHER'S CABINET
TAS	TEXAS ACCESSIBILITY STANDARDS
T.	TREAD (STAIR)
T&B	TOP & BOTTOM
TO.	TOP OF
TC	TOP OF CURB
TOD	TOP OF DECK
TOJ	TOP OF JOIST
TOS	TOP OF STEEL
TOW	TOP OF WALL
TYP.	TYPICAL

U / V

U/C	UNDER COUNTER
U.L.	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
VIF	VERIFY IN FIELD
VERT	VERTICAL
VCT	VINYL COMPOSITION TILE
VWC	VINYL WALL COVERING

W / X / Y / Z

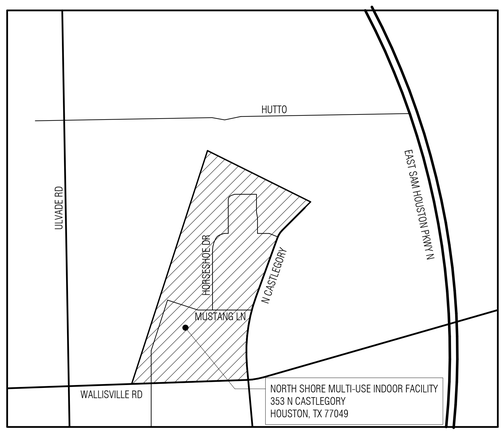
WC	WATER CLOSET
WRB	WATER-RESISTIVE BARRIER
WT	WEIGHT
W	WIDE
W/	WITH
W/O	WITHOUT
WP	WORKING POINT
WWF	WELDED WIRE FABRIC

SYMBOLS LEGEND

ROOM NAME 101	ROOM NAME & NUMBER	SXX	ALUMINUM-FRAMED GLAZED OPENING SYSTEM
101	DOOR NUMBER	G.O. 1	HOLLOW METAL-FRAMED GLAZED OPENING SYSTEM
AC	ACCESS CONTROL	X1	PARTITION TYPE
X	SIGNAGE TAG	X1	TOILET ACCESSORY
HB	HORIZONTAL BLINDS	X1	SPECIALTY EQUIPMENT
1	DEMO/PLAN NOTE		
XXX-01	ROOF TYPE MARK	XXX-01	FLOOR TYPE MARK
XXX-01	ASSEMBLY TYPE	1ft 1' - 0"	CEILING TAG
1/ A101	DETAIL SECTION MARKER	X HR	FIRE RESISTANCE TAG
X1	PLUMBING TAG	←C→	FLOOR TRANSITION TAG
1 A101 SIM	BUILDING SECTION MARKER	1 Ref ←Ref A101 →Ref 1 Ref	BUILDING ELEVATION MARKER
1 A101 SIM	WALL SECTION MARKER	1/ A101 Ref	INTERIOR/ CASEWORK ELEVATION MARKER
1 A101 SIM	CALLOUT HEAD	N	PLAN NORTH/ TRUE NORTH MARKER
Name Elevation			DATUM ELEVATION

MATERIAL LEGEND

EARTH	CERAMIC TILE
POROUS FILL	GLASS (LARGE SCALE)
CONCRETE/ GROUT	INSULATION (RIGID FOAM BOARD)
BRICK	INSULATION (EPS FOAM BOARD)
CMU (LARGE SCALE)	INSULATION (BATT/ BLANKET)
MARBLE	INSULATION (SEMI-RIGID BOARD)
METAL (LARGE SCALE)	WOOD, ROUGH (CONTINUOUS)
METAL (SMALL SCALE)	WOOD, ROUGH (BLOCKING)
RESILIENT FLOORING	WOOD, FINISH
ACOUSTICAL TILE	PLYWOOD (LARGE SCALE)
TERRAZZO	FIBER CEMENT PANEL
PLASTER, SAND, GROUT, GYPSUM BOARD	METAL LATH
	GYPSUM BOARD



SITE LOCATION MAP

PROJECT INFORMATION

TDLR PROJECT REGISTRATION NUMBER: TABSXXXXXXXX

APPROXIMATE BUILDING AREAS

GROUND LEVEL AREA.:	92,856 S.F.
UPPER LEVEL AREA.:	1,598 S.F.
TOTAL BLDG AREA.:	94,454 S.F.
LEGAL DESCRIPTION:	RES A BLK 1 SENIOR HIGH SCHOOL COMPLEX GALENA PARK ISD NORTHSHORE

BUILDING CONSTRUCTION INFORMATION

TYPE OF CONSTRUCTION (TABLE 601 - IBC):	TYPE II-B
FIRE PROTECTION SYSTEM:	AUTOMATIC SPRINKLER SYSTEM THROUGHOUT

GENERAL NOTES

1. Refer to the CODE-series sheets for Code Information, Design Criteria and Fire Protection Requirements.
2. Verify and document existing dimensions and conditions at the site before beginning construction. Notify the Architect of conflicts or variations prior to commencement of construction.
3. Based on the applicable design criteria, submit Shop Drawings of the proposed pattern of control joints in masonry veneer, CMU, gypsum board, plaster and stucco to the Architect for review and approval prior to construction.
4. In case of discrepancies in or between the Contract Documents, the greater quantity or better quality shall be bid. Clarifications regarding the discrepancies shall be requested from the Architect prior to construction, and the resulting interpretations implemented in accordance with the Contract Documents.

INDEX OF DRAWINGS

SHEET NUMBER	SHEET TITLE
COVER, INDEX, CODE	
C0.00	COVER
INDEX	INDEX, GENERAL NOTES AND ABBREVIATIONS
CODE1.1	FIRE CODE REVIEW
CODE1.2	FIRE CODE REVIEW - ALTERNATE
CODE2.1	CODE REVIEW
CODE2.2	LIFE SAFETY PLAN
CODE2.3	LIFE SAFETY PLAN - ALTERNATE
CIVIL	
C0.00	COVER SHEET
C1.00	GENERAL NOTES
C2.00	TOPOGRAPHIC SURVEY (1 OF 2)
C2.10	TOPOGRAPHIC SURVEY (2 OF 2)
C3.00	OVERALL SITE LAYOUT PLAN
C4.00	DEMOLITION PLAN
C5.00	SITE DIMENSION PLAN
C6.00	SITE UTILITY PLAN
C7.00	GRADING & DRAINAGE PLAN
C8.00	PAVING PLAN
C9.00	DRAINAGE AREA MAP
C10.00	FIRE ACCESS LANE
C11.00	STORM WATER POLLUTION PREVENTION PLAN
C12.00	STORM WATER POLLUTION PREVENTION DETAILS
C13.00	PAVING AND GRADING DETAILS
1 C14.00	MISCELLANEOUS DETAILS
ARCHITECTURAL	
A0.21	TEXAS ACCESSIBILITY STANDARDS REQUIREMENTS
A1.01	OVERALL DEMO SITE PLAN
A1.11	OVERALL SITE PLAN
A1.21	ENLARGED ARCHITECTURAL SITE PLANS, CANOPY PLANS
A1.22	ENLARGED ARCHITECTURAL SITE PLANS AND DETAILS
A1.31	ARCHITECTURAL SITE DETAILS
A2.01	DEMO FLOOR PLAN - LEVEL ONE - UNIT A
A2.11	ORIENTATION PLAN - LEVEL ONE
A2.11.1	ORIENTATION PLAN - LEVEL ONE - ALTERNATE
A2.11A	FLOOR PLAN - LEVEL ONE - UNIT A
A2.11B	FLOOR PLAN - LEVEL ONE - UNIT B
A2.11C	FLOOR PLAN - LEVEL ONE - UNIT C
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Sheet Count: 226

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GALENA PARK ISD
HOUSTON, TEXAS

REGISTERED ARCHITECT MONIKA C. CASTILLO 26558 STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Todd Hangar
Drawn By	VLK

PROJECT NO.

25-0056.00

SHEET TITLE

INDEX, GENERAL NOTES AND ABBREVIATIONS

SHEET NO.

North Shore Multi-Use Indoor Facility

INDEX

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LIFE SAFETY PLAN LEGEND

- EXIT ACCESS PATH
- EXISTING EXIT ACCESS PATH
- EXIT ACCESS PATH NUMBER / TRAVEL DISTANCE → PATH-00 / Length — EXIT ACCESS PATH NUMBER & TRAVEL DISTANCE
- EXIT ACCESS PATH NUMBER / TRAVEL DISTANCE → PATH-X00 / Length — EXISTING EXIT ACCESS PATH NUMBER & TRAVEL DISTANCE
- EXIT NUMBER / EGRESS WIDTH PROVIDED → EXIT-00 / XX" — MEANS OF EGRESS EXIT
- EXIT DOOR NUMBER / NUMBER OF OCCUPANTS THRU EXIT / EGRESS WIDTH REQUIRED/PROVIDED → EDN- 00 / OCC- ## / XX" | XX" — MEANS OF EGRESS EXIT AT DOOR (w/ Occupant Load)
- ROOM NAME / OCCUPANT LOAD → ROOM NAME / # — ROOM NAME & OCCUPANT LOAD
- FEC — FIRE EXTINGUISHER W/ CABINET & BRACKET
- FE — FIRE EXTINGUISHER W/ BRACKET
- FHC — FIRE HOSE CABINET
- KB — KNOX BOX
- FIRE RISER — FIRE RISER LOCATION

NOTES:
1. All CODE1 sheets to be printed in color.

1 OVERALL LIFE SAFETY FLOOR PLAN - LEVEL ONE
SCALE: 1/16" = 1'-0"

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT — MONIKA C. CASTILLO — 29555 — STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

25-0056.00

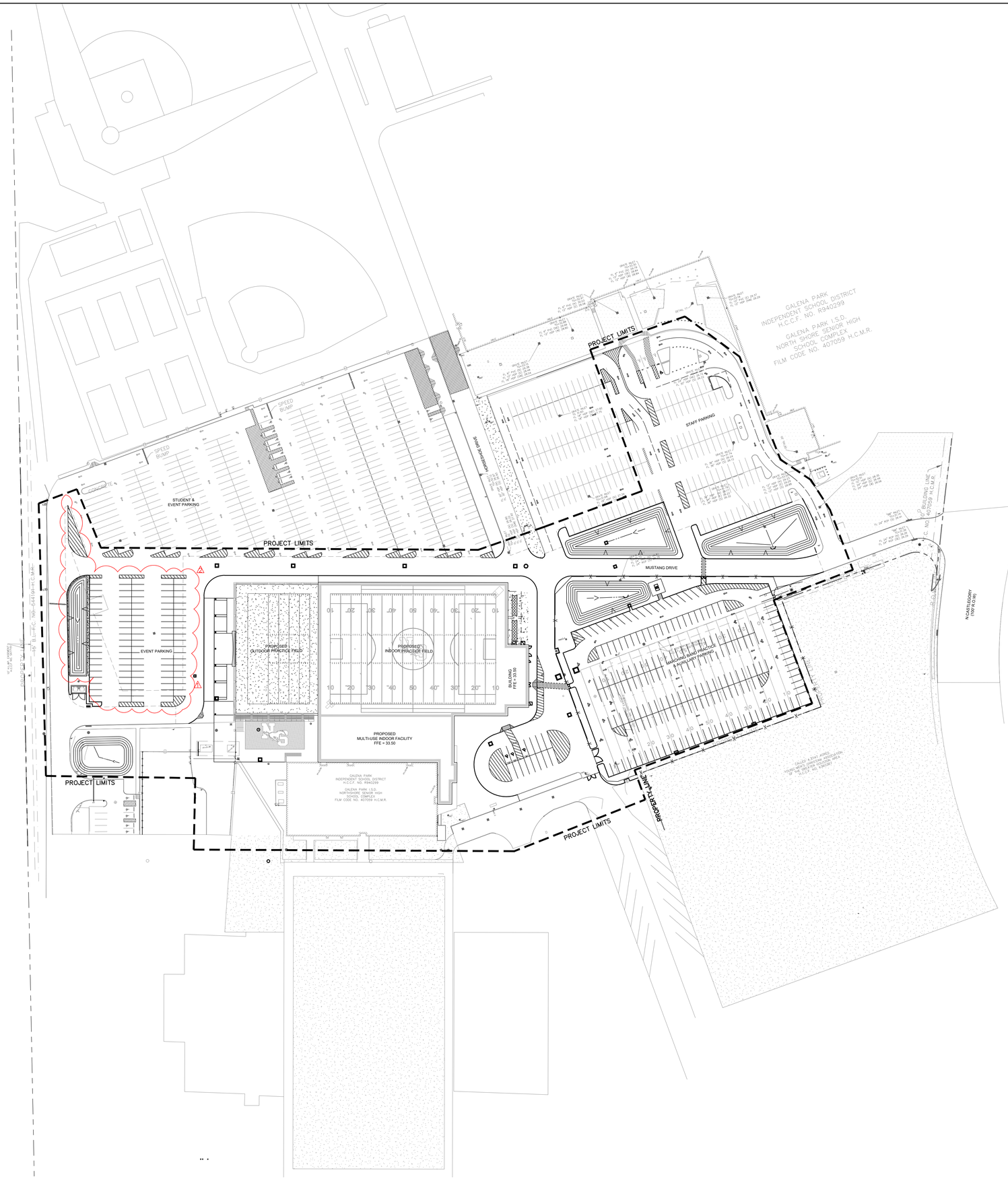
SHEET TITLE

LIFE SAFETY PLAN

SHEET NO.

CODE2.2

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North Shore Multi-use Indoor Facility

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TBPE FIRM NO. F-16423

STATE OF TEXAS
NANTHAVONG NANSY
99284
LICENSED
PROFESSIONAL ENGINEER
10-17-2025

ISSUED: SEPTEMBER 22, 2025

REVISIONS

Revision No.	Revision Date
⚠1 ADDENDUM 1	10-08-25
⚠2 ADDENDUM 3	10-17-25

Principal DH
Proj. Eng. SN

PROJECT NO.
25-0056.00

SHEET TITLE
OVERALL SITE LAYOUT PLAN

SHEET NO.
C3.00 ⚠

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CONSTRUCTION KEY NOTES

KEY	NOTE
1	REMOVE EXISTING TREES
2	REMOVE EXISTING STRIPING
3	SAWCUT & REMOVE EXISTING CURBS
4	REMOVE EXISTING SIDEWALK
5	REMOVE EXISTING UNGERGROUND UTILITY & STORM
6	REMOVE EXISTING SIGNS
7	REMOVE EXISTING LIGHT POLES
8	AFTER RE-ROUTE STORM SEWER SYSTEM COMPLETED, CUT 60" STM 4-FT FROM MANHOLE AND PLUG PER HC STANDARD

LEGEND

- AREA OF DEMOLITION
- REMOVE CONCRETE PAVEMENT & CURB
- CLEARING AND GRUBBING AREA 1.19 ACRES
- REMOVE UNDERGROUND UTILITIES AND STORM

NOTE:
ALL MATERIALS CLEARED FROM THE DESIGNATED AREAS SHALL BE DISPOSED OF OFFSITE. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL LOCAL RULES AND REGULATIONS AND THE PAYMENT OF ANY ALL FEES THAT MAY RESULT FROM DISPOSAL AT LOCATIONS AWAY FROM THE PROJECT SITE.

WARNING:

CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITY LINES BY CONTACTING "TEXAS 811" AT 811 OR 713-223-4567 AT LEAST 48 HOURS BEFORE YOU DIG, DRILL OR BLAST.

EXISTING, WATER, SANITARY, GAS, ELECTRICAL, TELECOMMUNICATIONS AND ALL OTHER UTILITY LINES ARE SHOWN PER RECORD DRAWINGS. CONTRACTOR SHALL VERIFY LOCATION AT THE SITE PRIOR TO CONSTRUCTION.

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ISSUED: SEPTEMBER 22, 2025

REVISIONS

Revision No.	Revision Date
1 ADDENDUM 1	10-08-25
2 ADDENDUM 3	10-17-25

Principal DH
Proj. Eng. SN

PROJECT NO.
25-0056.00

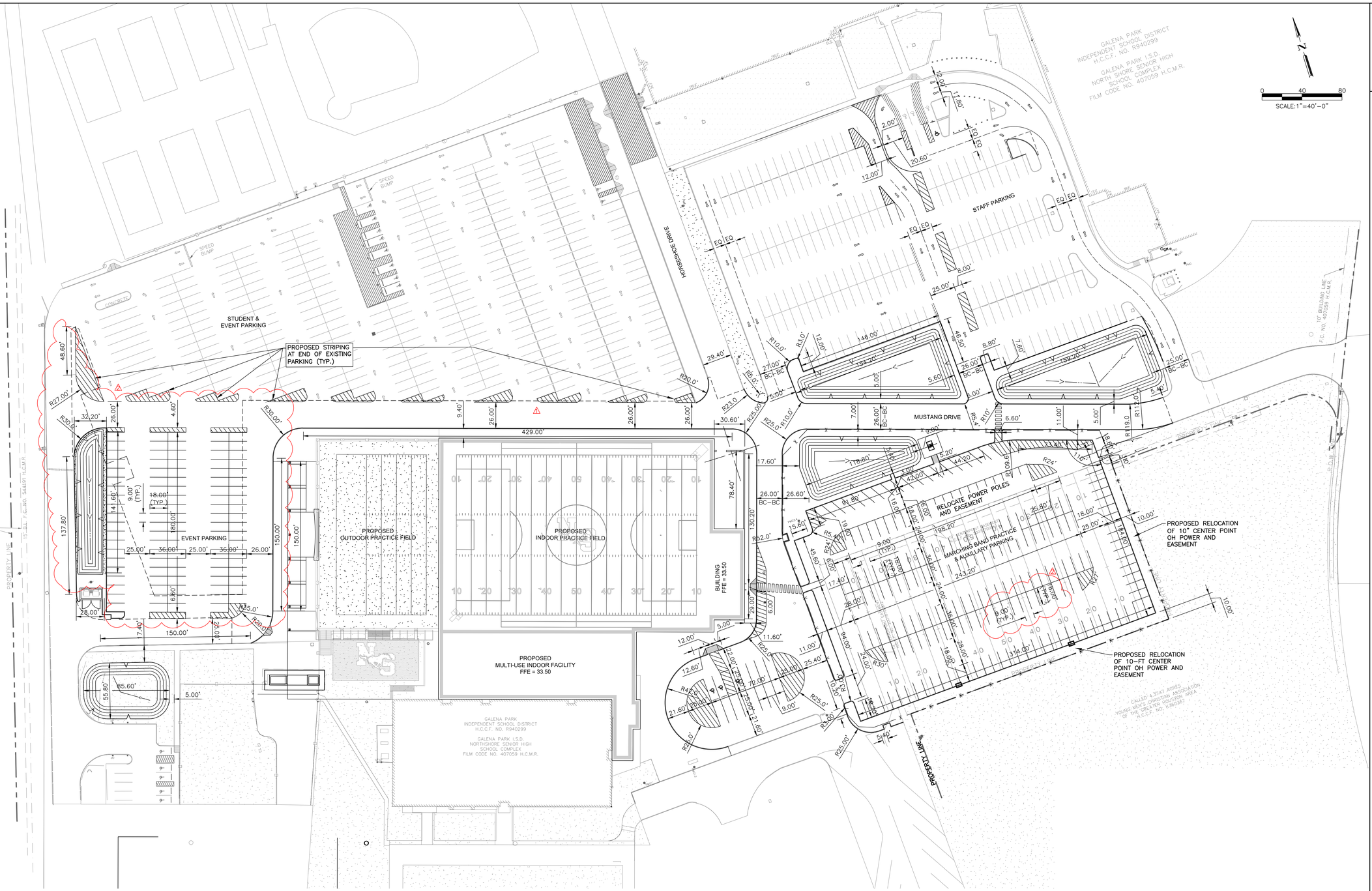
SHEET TITLE
DEMOLITION PLAN

SHEET NO.
C4.00

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SITE PLAN NOTES

1. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL CITY/COUNTY REGULATIONS AND CODES AND O.S.H.A. STANDARDS.
2. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF VESTIBULES, SLOPE PAVING, SIDEWALKS, EXIT PORCHES, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
3. ALL DISTURBED AREAS ARE TO RECEIVE FOUR INCHES OF TOPSOIL, SEED, MULCH AND WATER UNTIL A HEALTHY STAND OF GRASS IS ESTABLISHED.
4. ALL ISLANDS WITH CURB SHALL BE LANDSCAPED PER LANDSCAPE PLAN.
5. NOT ALL DIMENSIONS ARE SHOWN ON THIS PLAN, SEE ARCHITECTURAL SITE PLAN FOR DETAILED DIMENSIONS.
6. ALL DIMENSIONS AND RADII ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATIONS, INCLUDING BUT NOT LIMITED TO, ALL UTILITIES, STORM DRAINAGE, SIGNS, TRAFFIC SIGNALS & POLES, ETC. AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH GOVERNING AUTHORITIES SPECIFICATIONS AND SHALL BE APPROVED BY SUCH. ALL COST SHALL BE INCLUDED IN BASE BID.
8. REFER TO TOPOGRAPHICAL SURVEY ON SHEET C2 FOR EXISTING CONDITIONS, REFER TO PLAT FOR PROPERTY BOUNDARIES.
9. THE SITE WORK FOR THIS PROJECT SHALL MEET OR EXCEED THE STANDARD SITE WORK SPECIFICATION.
10. PROVIDE SOLID SOD AT ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES.

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⚠1 ADDENDUM 1	10-08-25
⚠2 ADDENDUM 3	10-17-25

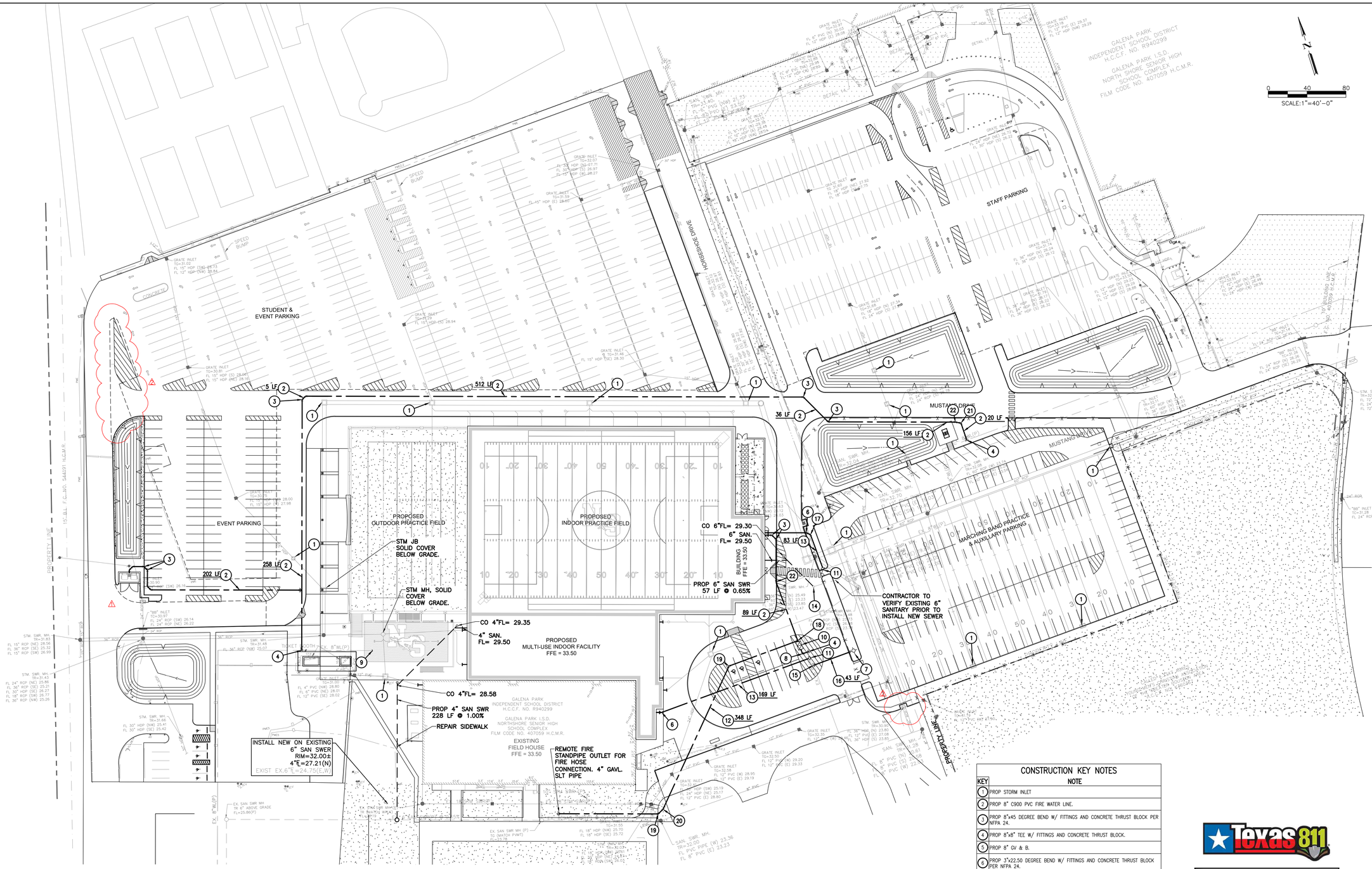
Principal DH
Proj. Eng. SN

PROJECT NO.
25-0056.00

SHEET TITLE
SITE DIMENSION PLAN

SHEET NO.
C5.00

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WATER LINE AND SANITARY SEWER NOTES:

1. CONTRACTOR TO ALLOW A MINIMUM OF 12 INCHES VERTICAL CLEARANCE BETWEEN PROPOSED WATER LINE AND OTHER EXISTING OR PROPOSED UTILITIES. MINIMUM 2 FT CLEAR FROM SANITARY SEWER.
2. ALL WATER LINES TO HAVE A MINIMUM COVER OF 4' BELOW FINISHED GRADE. VARY THE FLOWLINE UNIFORMLY FROM DEPTH AND LOCATION SHOWN TO ACHIEVE COVER.
3. ALL WATER LINE FITTINGS TO BE EITHER: BRONZE, PVC, OR DUCTILE IRON.
4. ALL WATER LINE FITTINGS TO BE INSTALLED WITH ADEQUATE CONCRETE THRUST BLOCKS.
5. ALL WATER LINES TO BE TESTED AS PER THE CITY OF PEARLAND SPECIFICATIONS, DETAILS AND FIRE MARSHALL AS APPLICABLE.
6. ALL WATER LINES TO BE WRAPPED IN A MINIMUM OF 12-INCHES OF CLEAN BANK SAND, OR ONSITE SUITABLE FILL MATERIAL, UNLESS OTHERWISE NOTED. REMAINING BACKFILL TO BE MADE WITH COMPACTED SELECT MATERIAL UNLESS OTHERWISE NOTED.
7. WHENEVER NEW WATER LINES CROSS SANITARY SEWER LINES WITH LESS THAN TWENTY FOUR (24) INCHES OF VERTICAL CLEARANCE, THE SEWER LINE SHALL BE CONSTRUCTED IN A CONTINUOUS CAST IRON CASING FOR A DISTANCE OF NINE (9) FEET EACH SIDE OF THE WATER LINE. MINIMUM VERTICAL CLEARANCE TO BE SIX (6) INCHES WITH THE SEWER LINE LOCATED LOWER THAN THE WATER LINE.
8. ALL SANITARY SEWERS CROSSING WATER LINES WITH A 6 INCHES TO 9 FEET CLEARANCE SHALL HAVE A MINIMUM OF 18' JOINT OF 150 P.S.I. SDR 26 PVC PIPE MEETING ASTM SPECIFICATION D2241 CENTERED ON WATER LINE. WHEN WATER LINE IS BELOW SANITARY SEWER PROVIDE MINIMUM 2 FOOT SEPARATION.
9. REFER TO GENERAL NOTES SHEET C1 FOR WATER AND SANITARY SEWER PIPE MATERIAL AND SPECIFICATIONS REQUIRED BY CITY OF PEARLAND.

UTILITY NOTES:

1. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION AND IMMEDIATELY NOTIFY ENGINEER OF ANY CONFLICT OR DISCREPANCIES.
2. CONTRACTOR TO COORDINATE WITH UTILITY COMPANIES FOR SERVICE ORIGINATION AND CONNECTION.
3. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE ANY EXISTING ITEMS ONSITE.
4. CONTRACTOR SHALL KEEP THE SITE CLEAN OF DEBRIS AND ANY EROSION CONTROL MEASURES ARE ADEQUATELY PLACED.
5. CONTRACTOR TO COORDINATE LOCATIONS OF UNDERGROUND IRRIGATION SLEEVING PRIOR TO PAVING. SEE LANDSCAPE PLANS.
6. CONTRACTOR TO COORDINATE LOCATIONS OF UNDERGROUND CONDUIT FOR SITE LIGHTING PRIOR TO PAVING.
7. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION. COPIES OF OSHA STANDARDS MAY BE PURCHASED FROM THE U.S. GOVERNMENT PRINTING OFFICE. INFORMATION AND RELATED REFERENCE MATERIALS MAY BE PURCHASED FROM OSHA, 903 SAN JACINTO, RM 319, AUSTIN, TX. 78701. TEL: (512) 916-5783.
8. REFERENCE MEP PLANS FOR UTILITY CONDUIT LOCATIONS.
9. GAS LINE SHALL BE POLYETHYLENE (PE) PIPE ASTM D 2513 SDR 11 WITH FITTINGS POLYETHYLENE ASTM D 2683, SOCKET FUSION TYPE OR ASTM D 3261 BUTT FUSION TYPE WITH DIMENSIONS MATCHING PE PIPE. PE TRANSITION FITTINGS: FACTORY FABRICATED FITTINGS WITH PE PIPE COMPLYING WITH ASTM D 2513, SDR 11; AND STEEL PIPE COMPLYING WITH ASTM A 53/A 53M, BLACK STEEL, SCHEDULE 40, TYPE E OR S, GRADE B. TRANSITION SERVICE RISER: PE TRANSITION FITTING WITH CORROSION PROTECTIVE COATING FOR ABOVE GROUND STEEL PIPE.

CONSTRUCTION KEY NOTES

KEY	NOTE
1	PROP STORM INLET
2	PROP 8" C900 PVC FIRE WATER LINE.
3	PROP 8"x45 DEGREE BEND W/ FITTINGS AND CONCRETE THRUST BLOCK PER NFPA 24.
4	PROP 8"x8" TEE W/ FITTINGS AND CONCRETE THRUST BLOCK.
5	PROP 8" GV & B.
6	PROP 3"x22.50 DEGREE BEND W/ FITTINGS AND CONCRETE THRUST BLOCK PER NFPA 24.
7	PROP FIRE HYDRANT ASSEMBLY INCLUDING, 8"x6" TEE, 6" 90 DEGREE ELBOW 6" G.V. W/ BOX. SEE DETAILS SHEET C14
8	PROP 8"x90 DEGREE BEND W/ FITTINGS AND CONCRETE THRUST BLOCK PER NFPA 24.
9	CUT AND CAP EXISTING 8" WL, MECH. RESTRAIN
10	8" DOUBLE CHECK BACKFLOW PREVENTER IN VAULT, WITH FDC AND PVI
11	PROP 8"x3" T.S&V
12	PROP 4" C900 PVC FIRE WATER LINE FROM FDC TO REMOTE FIRE HOSE CONNECTION.
13	PROP 3" SCH 40 PVC WATER LINE.
14	PROP 6" SAN. DROP CONNECTION TO EXISTING 6" SS. FIELD TO VERIFY LOCATION OF EXISTING 6" SAN. SWR
15	PROP 8"x6" TEE W/ FITTINGS AND CONCRETE THRUST BLOCK.
16	PROP 6" C900 PVC FIRE WATER LINE.
17	PROP 3"x45 DEGREE BEND W/ FITTINGS AND CONCRETE THRUST BLOCK PER NFPA 24.
18	PROP 8"x4" TEE W/ FITTINGS AND CONCRETE THRUST BLOCK.
19	PROP 4"x45 DEGREE BEND W/ FITTINGS AND CONCRETE THRUST BLOCK PER NFPA 24.
20	PROP 4"x22.5 DEGREE BEND W/ FITTINGS AND CONCRETE THRUST BLOCK PER NFPA 24.
21	PROP 8"x60 DEGREE BEND W/ FITTINGS AND CONCRETE THRUST BLOCK PER NFPA 24.
22	PROP 8"x22.5 DEGREE BEND W/ FITTINGS AND CONCRETE THRUST BLOCK PER NFPA 24.

Texas 811

WARNING:

CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITY LINES BY CONTACTING "TEXAS 811" AT 811 OR 713-223-4567 AT LEAST 48 HOURS BEFORE YOU DIG, DRILL OR BLAST.

EXISTING, WATER, SANITARY, GAS, ELECTRICAL, TELECOMMUNICATIONS AND ALL OTHER UTILITY LINES ARE SHOWN PER RECORD DRAWINGS. CONTRACTOR SHALL VERIFY LOCATION AT THE SITE PRIOR TO CONSTRUCTION.

LEGEND:

- PROPOSED STORM SEWER LINE
- PROPOSED SANITARY SEWER LINE
- PROPOSED WATER LINE
- PROPOSED FIRE HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SANITARY MANHOLE
- PROPOSED SANITARY/ STORM CLEAN OUT
- PROPOSED STORM MANHOLE
- PROPOSED STORM INLET
- PROPOSED WATER TAP SLEEVE AND VALVE

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ADICO, LLC
TBPE FIRM NO. F-16423

ISSUED: SEPTEMBER 22, 2025

REVISIONS

Revision No.	Revision Date
ADDENDUM 1	10-08-25
ADDENDUM 3	10-17-25

Principal DH
Proj. Eng. SN

PROJECT NO.
25-0056.00

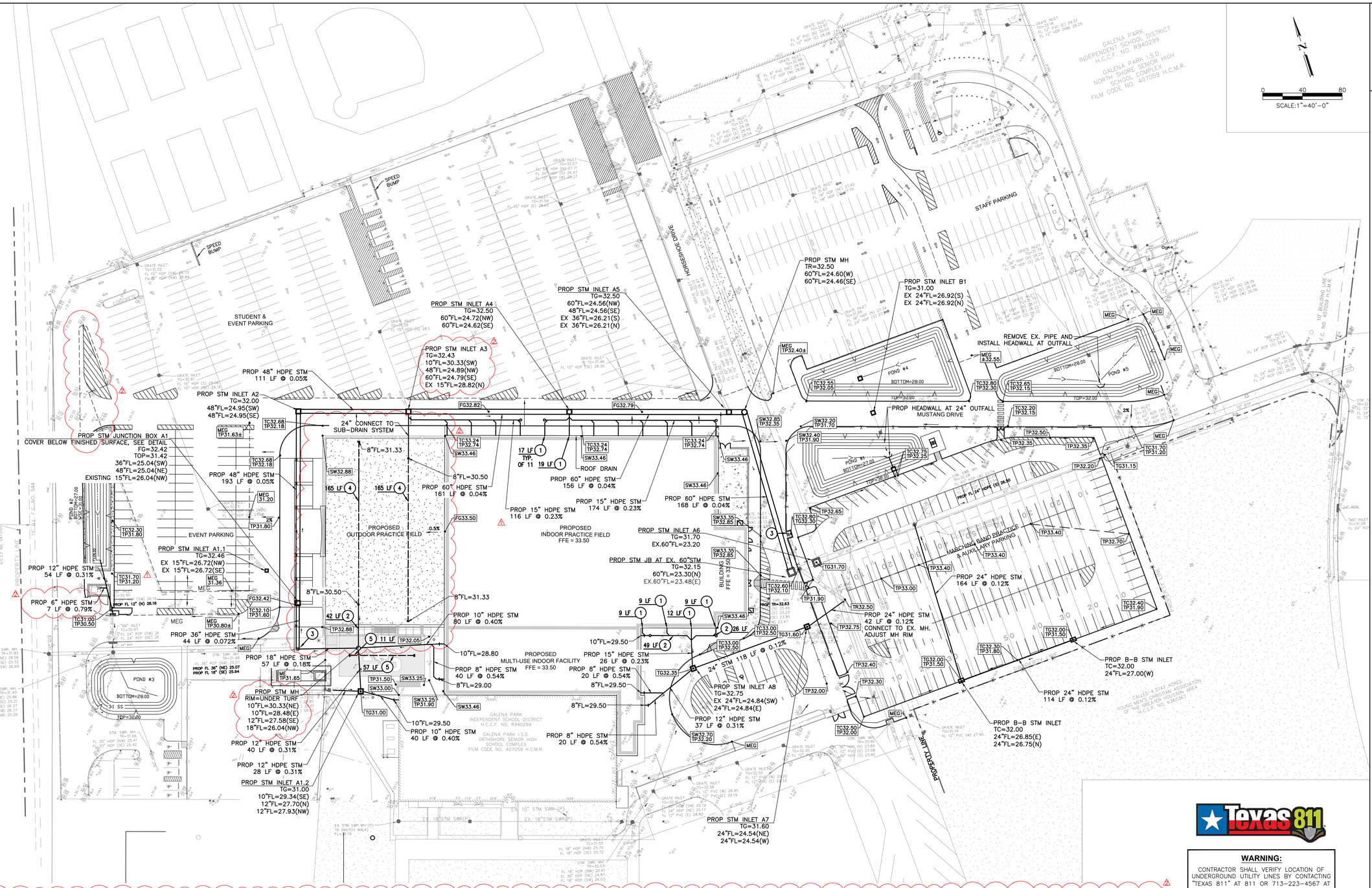
SHEET TITLE
SITE UTILITY PLAN

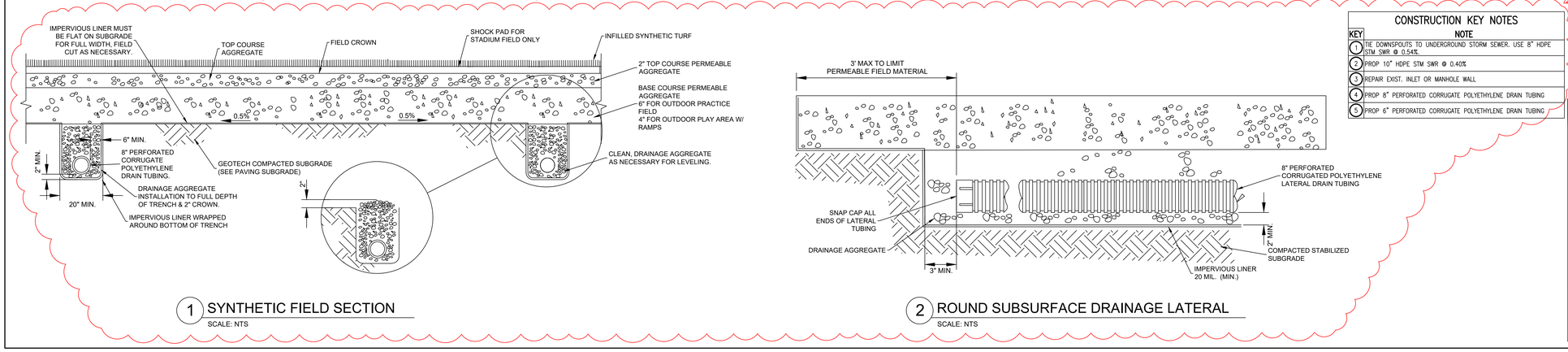
SHEET NO.
C6.00

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1 SYNTHETIC FIELD SECTION
SCALE: NTS

2 ROUND SUBSURFACE DRAINAGE LATERAL
SCALE: NTS

CONSTRUCTION KEY NOTES

KEY	NOTE
1	TIE DOWNSPOUTS TO UNDERGROUND STORM SEWER. USE 8" HDPE STM SWR @ 0.54%.
2	PROP 10" HDPE STM SWR @ 0.40%
3	REPAIR EXIST. INLET OR MANHOLE WALL
4	PROP 8" PERFORATED CORRUGATE POLYETHYLENE DRAIN TUBING
5	PROP 6" PERFORATED CORRUGATE POLYETHYLENE DRAIN TUBING

WARNING:

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EXISTING, WATER, SANITARY, GAS, ELECTRICAL, TELECOMMUNICATIONS AND ALL OTHER UTILITY LINES ARE SHOWN PER RECORD DRAWINGS. CONTRACTOR SHALL VERIFY LOCATION AT THE SITE PRIOR TO CONSTRUCTION.

LEGEND:

- PROPOSED STORM INLET
- PROPOSED STORM SEWER
- PROPOSED SWALES
- 53.00 EXISTING CONTOUR
- MEG MATCH EXISTING GRADE
- TC14.00 PROPOSED TOP OF CURB ELEVATION
- TP14.00 PROPOSED TOP OF PAVEMENT
- SW14.00 PROPOSED TOP OF SIDEWALK ELEVATION
- FG14.00 PROPOSED FINISH GRADE ELEVATION
- FF14.00 PROPOSED FINISHED FLOOR ELEVATION
- TG14.00 PROPOSED TOP OF GRATE ELEVATION
- TW14.00 PROPOSED TOP OF WALL ELEVATION
- FL14.00 PROPOSED FLOW LINE ELEVATION

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GALENA PARK ISD
HOUSTON, TX

ADICO, LLC
TBPE FIRM NO. F-16423

ISSUED: SEPTEMBER 22, 2025

REVISIONS

Revision No.	Revision Date
ADDENDUM 1	10-08-25
ADDENDUM 3	10-17-25

Principal DH
Proj. Eng. SN

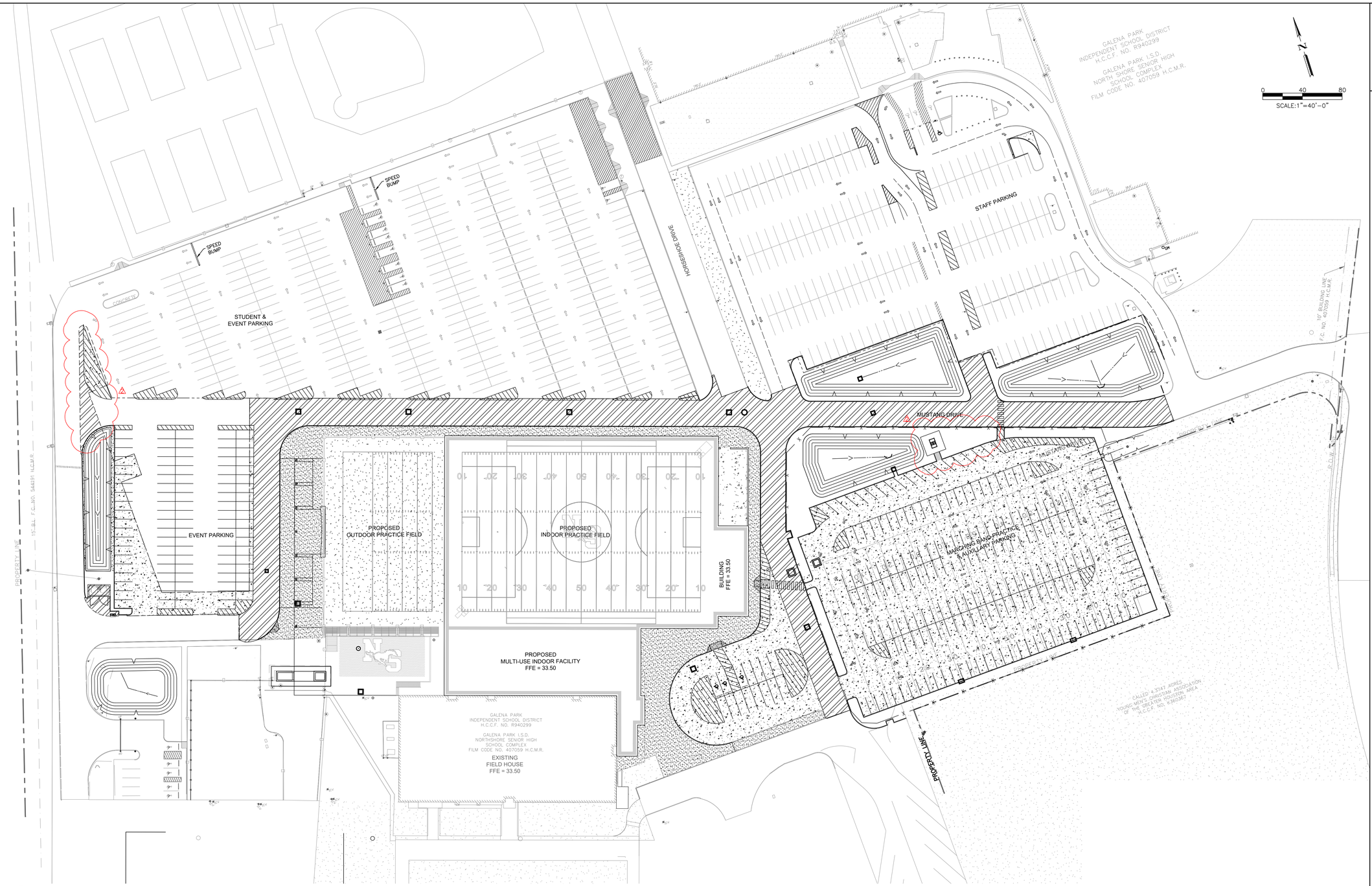
PROJECT NO.
25-0056.00

SHEET TITLE
GRADING & DRAINAGE PLAN

SHEET NO.
C7.00

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UPDATED CONCRETE THICKNESS AND LOCATION

LEGEND

- PROPOSED 4.5"-INCH THICK CONCRETE PAVING W/ #3 REBAR @ 18" OC EA WAY
- PROPOSED 6"-INCH THICK CONCRETE PAVING W/ #3 REBAR @ 12" OC EA WAY OR #4 REBAR @ 18" OC EA WAY
- PROPOSED 7"-INCH THICK CONCRETE PAVING W/ #4 REBAR @ 18" OC EA WAY
- EJ — EXPANSION JOINT

NOTE:
CONTROL JOINT OR SAW JOINT NOT SHOWN. SEE TYPICAL PAVING DETAIL SHEET CX FOR DETAILS

Texas 811

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EXISTING, WATER, SANITARY, GAS, ELECTRICAL, TELECOMMUNICATIONS AND ALL OTHER UTILITY LINES ARE SHOWN PER RECORD DRAWINGS. CONTRACTOR SHALL VERIFY LOCATION AT THE SITE PRIOR TO CONSTRUCTION.

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HOUSTON, TX

North Shore Multi-use Indoor Facility

ADICO, LLC
TBPE FIRM NO. F-16423

STATE OF TEXAS — SHANNON NEWSOM — 99254 — LICENSED PROFESSIONAL ENGINEER — 10-17-2025

ISSUED: SEPTEMBER 22, 2025

REVISIONS

Revision No.	Revision Date
1 ADDENDUM 1	10-08-25
3 ADDENDUM 3	10-17-25

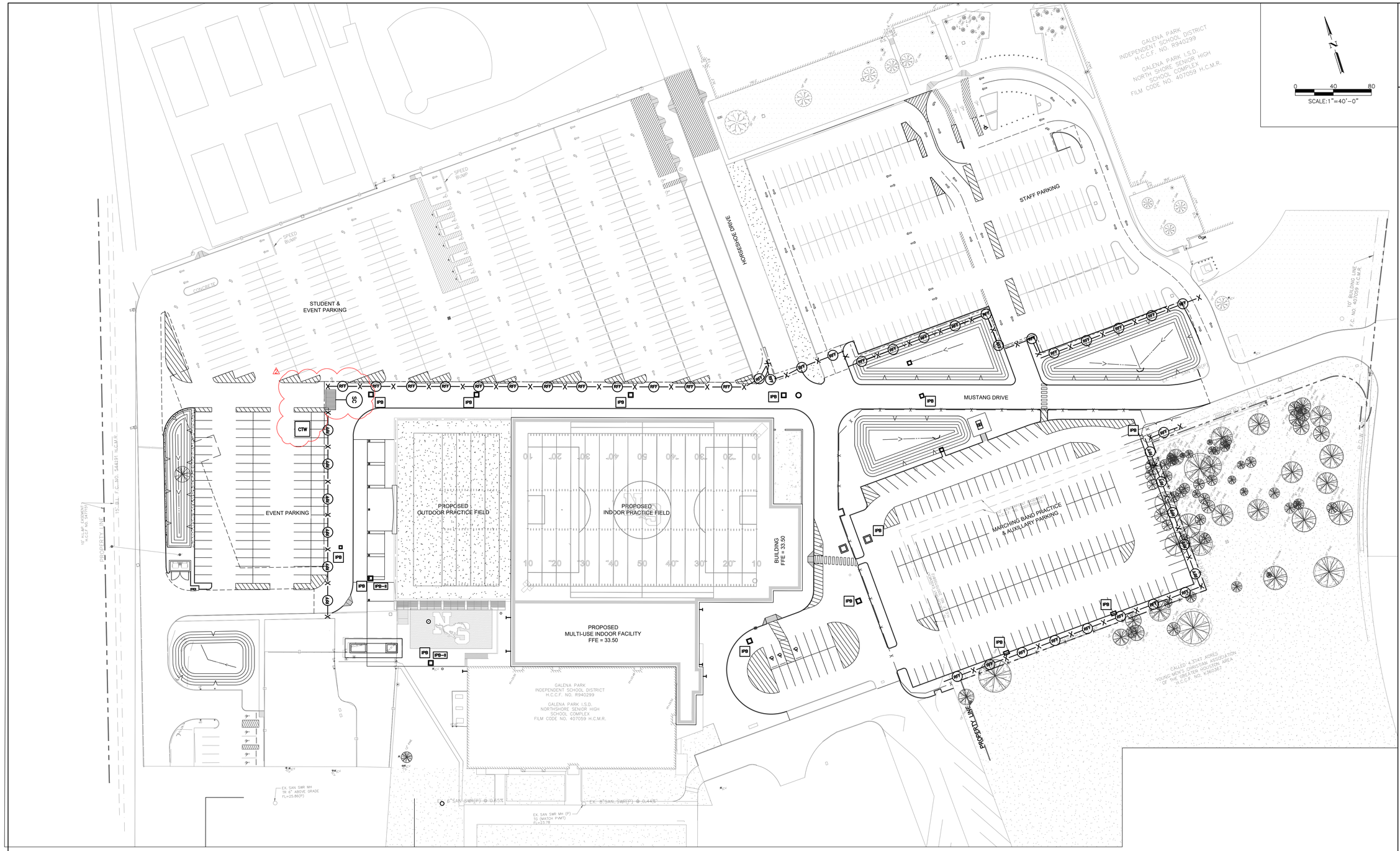
Principal DH
Proj. Eng. SN

PROJECT NO.
25-0056.00

SHEET TITLE
PAVING PLAN

SHEET NO.
C8.00

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SWPPP LEGEND:

FF	FILTER FABRIC FENCE
RFF	REINFORCED FILTER FABRIC FENCE
IPB–II	INLET PROTECTION BARRIER (STAGE II INLET)
IPB	INLET PROTECTION BARRIER
SC	STABILIZED CONSTRUCTION ENTRANCE/EXIT
FD–TYPE1	FILTER DAM – TYPE 1
CTW	CONCRETE TRUCK WASHOUT

NOTE: SEE C12 FOR STORM WATER POLLUTION PREVENTION DETAILS

POLLUTION PREVENTION NOTES:

1. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL INSTALL POLLUTION PREVENTION SYSTEMS AT LOCATIONS SHOWN ON PLANS.
2. IF POLLUTION PREVENTION SYSTEMS ARE EXISTING FROM PRIOR CONTRACTS, OWNER AND/OR OWNER'S REPRESENTATIVE WITH THE CONTRACTOR SHALL EXAMINE THE EXISTING POLLUTION PREVENTION SYSTEMS FOR DAMAGE PRIOR TO CONTRACTOR STARTING CONSTRUCTION OF THE CONTRACT. ANY DAMAGE NOTED AT THIS ITEM SHALL BE REPAIRED AT OWNER'S EXPENSE.
3. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNING AUTHORITY. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH THE TEXAS POLLUTION DISCHARGE ELIMINATION SYSTEM (TPDES) REQUIREMENTS.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ENFORCEMENT OF TPDES REQUIREMENTS PER "GENERAL REQUIREMENTS FOR PERMIT TXR150000".
5. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING GENERAL SOURCE CONTROLS.
6. THE LOCATION OF THE STABILIZED CONSTRUCTION ACCESS IS TO BE DETERMINED BY THE CONTRACTOR.
7. ALL RESERVES AND AREAS BETWEEN BACK-OF-CURB AND RIGHT-OF-WAY SHALL BE HYDRO-MULCHED SEEDED. ALL LOTS AND OTHER AREAS DISTURBED DURING CONSTRUCTION SHALL BE BROADCAST SEEDED.
8. CONTRACTOR SHALL INSPECT ALL POLLUTION PREVENTION SYSTEMS SPECIFIED HEREIN, AS REQUIRED IN THE PERMIT.
9. CONTRACTOR SHALL MAINTAIN, REPAIR AND/OR REPLACE DAMAGED EROSION AND SEDIMENTATION CONTROL SYSTEMS THROUGHOUT THE DURATION OF THE CONTRACT.
10. CONTRACTOR SHALL PROVIDE PROTECTED STORAGE AREAS FOR CHEMICALS, PAINTS, SOLVENTS, FERTILIZERS AND OTHER POTENTIALLY TOXIC MATERIALS.
11. CONTRACTOR SHALL LOCATE FUEL/MATERIAL STORAGE AREAS AWAY FROM STORM WATER CONVEYANCE SYSTEMS. CONTRACTOR SHALL USE A LINER UNDER ABOVE GROUND STORAGE TANKS. CONTRACTOR SHALL USE FILTER FABRIC FENCING, HAY BALES, OR BERMS AROUND FUEL STORAGE AREAS.
12. CONTRACTOR SHALL ADVISE OWNER IMMEDIATELY, VERBALLY, AND IN WRITING OF ANY FUEL OR TOXIC MATERIAL SPILLS ONTO THE PROJECT/CONSTRUCTION AREA AND THE ACTIONS TAKEN TO REMEDY THE PROBLEM.
13. CONTRACTOR IS RESPONSIBLE FOR DISPOSING OF HIS FUELS, MATERIALS, AND CONTAMINATED EXCAVATIONS IN A LEGALLY APPROVED MANNER.
14. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATELY MAINTAINED SANITARY FACILITIES.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR STREET CLEANING, ON A DAILY BASIS, ALL MUD AND DIRT DEPOSITED ON THE EXISTING PAVEMENT DUE TO HIS CONSTRUCTION ACTIVITY.
16. CONTRACTOR SHALL PROVIDE A STABILIZED CONSTRUCTION ENTRANCE/EXIT.
17. SEDIMENT WILL BE REMOVED FROM BEHIND THE FILTER FABRIC FENCE WHEN IT BECOMES ABOUT ONE-THIRD OF THE HEIGHT OF THE FENCE.
18. WHEN ALL CONSTRUCTION ACTIVITY IS COMPLETE AND THE SITE HAS BEEN ESTABLISHED, STRUCTURAL CONTROLS WILL BE REMOVED AND ALL DISTURBED AREAS WILL BE RESTABILIZED.
19. AT THE COMPLETION OF THE PROJECT/CONTRACT, THE OWNER AND/OR OWNER'S REPRESENTATIVE AND THE CONTRACTOR SHALL EXAMINE THE POLLUTION PREVENTION SYSTEM BEFORE RELIEVING CONTRACTOR OF HIS MAINTENANCE RESPONSIBILITIES.

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GALENA PARK ISD
HOUSTON, TX

North Shore Multi-use Indoor Facility

ADICO, LLC
TBPE FIRM NO. F-16423

STATE OF TEXAS
SHANNON NORRIS
95254
LICENSED
PROFESSIONAL ENGINEER
10-17-2025

ISSUED: SEPTEMBER 22, 2025

REVISIONS

Revision No.	Revision Date
⚠ ADDENDUM 1	10-08-25
⚠ ADDENDUM 3	10-17-25

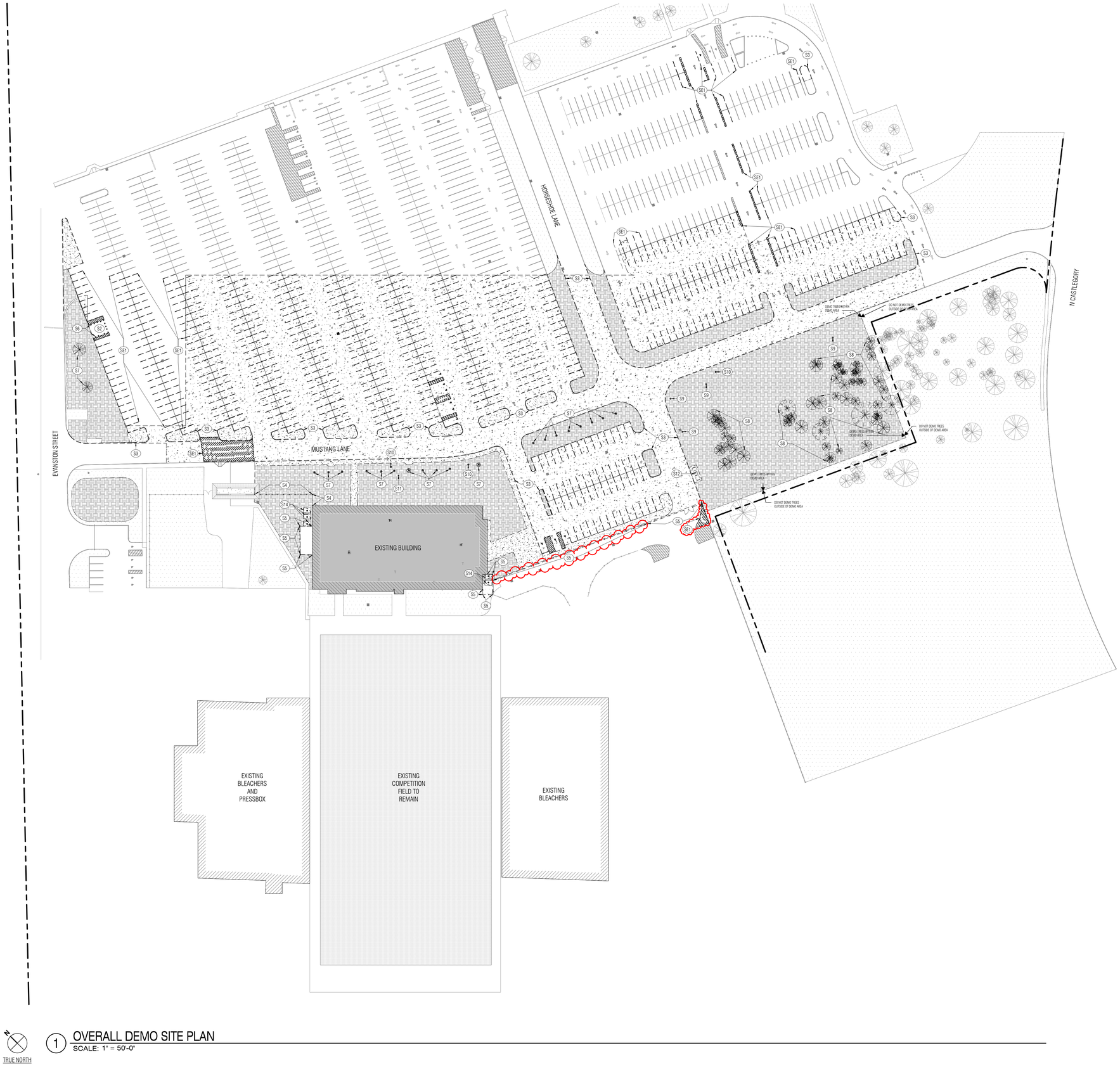
Principal DH
Proj. Eng. SN

PROJECT NO.
25-0056.00

SHEET TITLE
STORM WATER POLLUTION PREVENTION PLAN

SHEET NO.
C11.00

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SITE PLAN NOTES

1. Verify and document existing dimensions and conditions at the site before beginning construction. Notify the Architect of conflicts or variations prior to commencement of construction.
2. To prevent damage to existing trees and shrubs in proximity to the Work, provide and maintain protective barriers around those items in accordance with the specified procedures, or in the absence of those procedures, with recognized landscaping and horticultural practices.

SITE PLAN LEGEND

- FIRE LANE (PER CITY STANDARDS)
- CHAIN LINK FENCE, See Plan for Heights
- EXISTING CHAIN LINK FENCE, See Plan for Heights
- ORNAMENTAL FENCE, See Plan for Heights
- EXISTING ORNAMENTAL FENCE, See Plan for Heights
- EXISTING BUILDING TO REMAIN
- NEW PAVING
- NEW VEGETATION
- EXISTING PAVING TO REMAIN
- EXISTING VEGETATION TO REMAIN
- EXISTING VEGETATION TO BE REMOVED
- DEDICATION PAVERS
- ITEM TO BE REMOVED
- PROPERTY LINE

SITE DEMO KEYNOTE SCHEDULE

NUMBER	NOTE TEXT
S2	EXISTING BAND TOWER TO BE SALVAGED AND RELOCATED 1
S3	DEMOLISH EXISTING CURB
S4	DEMOLISH ORNAMENTAL FENCING
S5	DEMOLISH CHAINLINK FENCING
S6	DEMO BOLLARDS
S7	DEMO TREES
S8	DEMO CLUSTER OF TREES 1
S9	DEMO UTILITY POLE; REF. CIVIL
S10	DEMO MAN HOLE
S11	RELOCATE FIRE HYDRANT
S12	DEMO PAD AND RELOCATE DUMPSTERS
S14	REMOVE EXISTING CONDENSING UNIT; REF. TO MEP DEMOLITION 1
SE1	REMOVE EXISTING STRIPING

PLAN NORTH TRUE NORTH

1 OVERALL DEMO SITE PLAN
SCALE: 1" = 50'-0"

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North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT MONIKA C. CASTILLO 26515 STATE OF TEXAS
10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 3	10/17/2025

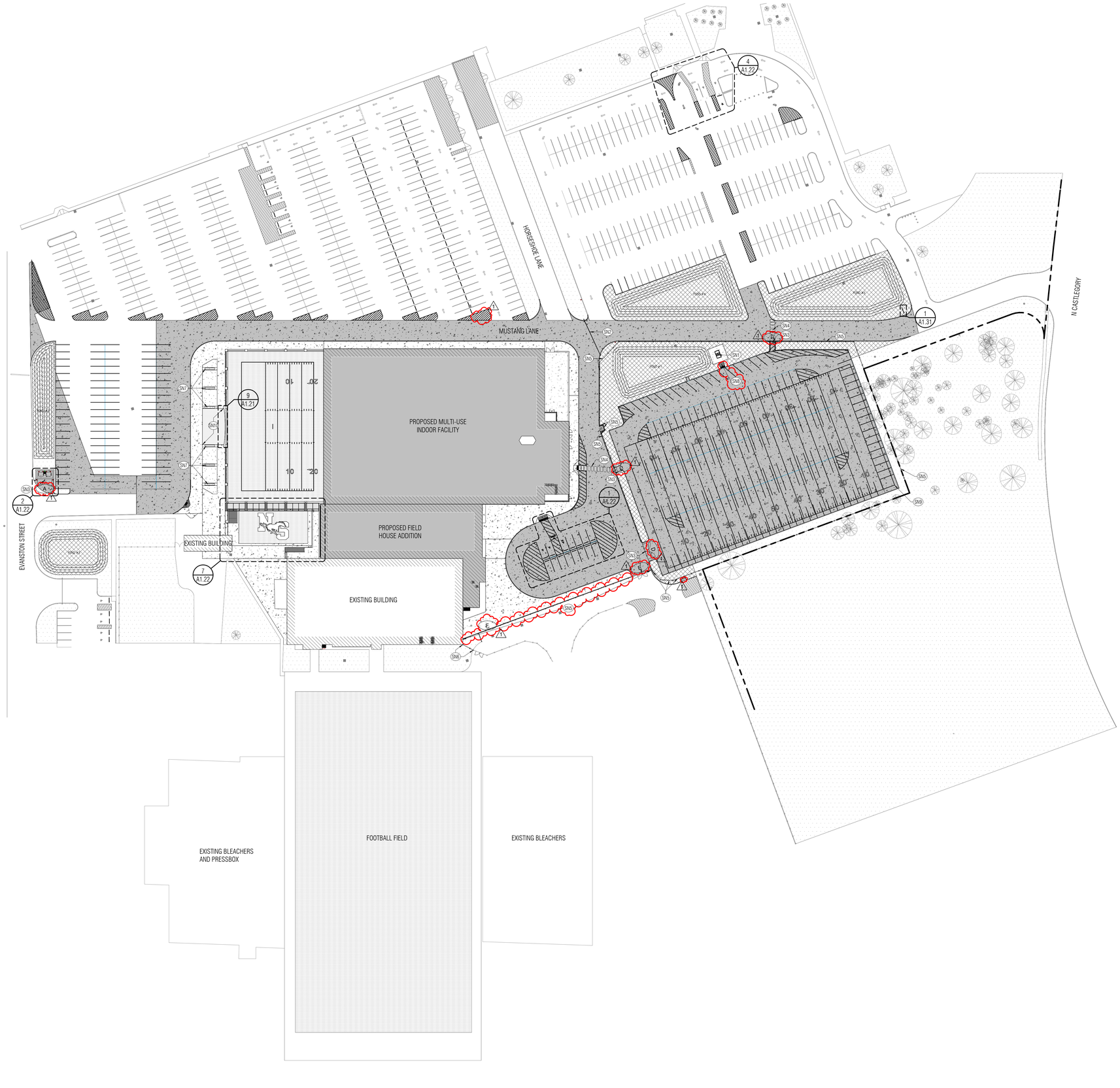
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
OVERALL DEMO SITE PLAN

SHEET NO.
A1.01

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SITE PLAN NOTES

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SITE PLAN LEGEND

- FIRE LANE (PER CITY STANDARDS)
- CHAIN LINK FENCE, See Plan for Heights
- EXISTING CHAIN LINK FENCE, See Plan for Heights
- ORNAMENTAL FENCE, See Plan for Heights
- EXISTING ORNAMENTAL FENCE, See Plan for Heights
- EXISTING BUILDING TO REMAIN
- NEW PAVING
- NEW VEGETATION
- EXISTING PAVING TO REMAIN
- EXISTING VEGETATION TO REMAIN
- EXISTING VEGETATION TO BE REMOVED
- DEDICATION PAVERS
- ITEM TO BE REMOVED
- PROPERTY LINE

SITE KEYNOTE SCHEDULE

NUMBER	NOTE TEXT
SN1	RELOCATED BAND TOWER AND NEW BASE
SN2	50' DOUBLE TRAFFIC GATE
SN3	DOUBLE GATE. REF. DOOR SCHEDULE
SN4	CROSSWALK STRIPING
SN5	8'H BLACK VINYL CHAINLINK FENCE
SN6	BLACK VINYL CHAINLINK FENCE. MATCH EXISTING HEIGHT
SN7	BUILT-IN CONCRETE BENCHES
SN8	RAMP WITH TRUNCATED DOMES
SN9	BAND FIELD STRIPING, 4-INCH WIDE, WHITE
SN10	12" x 12" GRANITE DEDICATION PAVERS

PLAN NORTH | TRUE NORTH

1 OVERALL SITE PLAN
SCALE: 1" = 50'-0"

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MONIKA C. CASTILLO — 26558 — REGISTERED ARCHITECT — STATE OF TEXAS
10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

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1	Addendum 3	10/17/2025

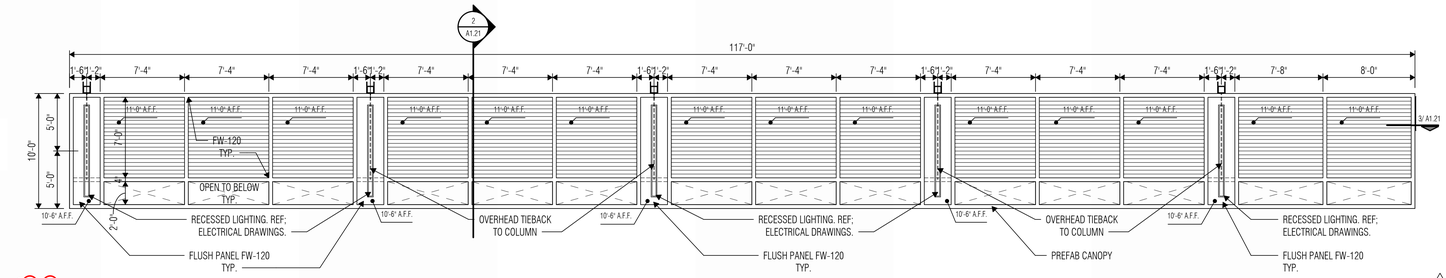
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

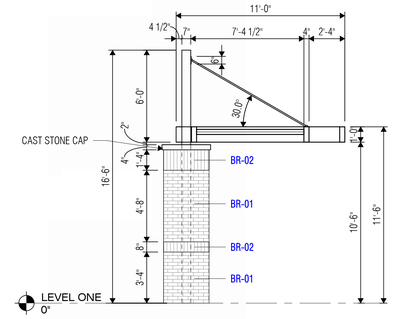
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OVERALL SITE PLAN

SHEET NO.
A1.11

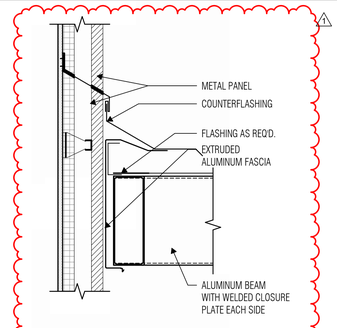
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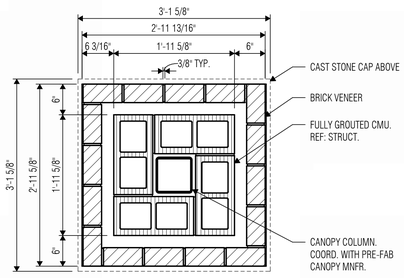
1 CANOPY C
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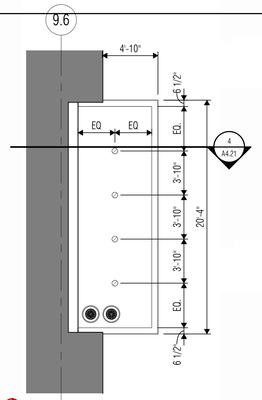
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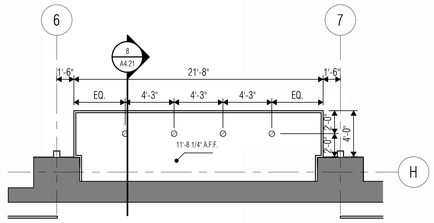
3 CANOPY COUNTER FLASHING
SCALE: 1 1/2" = 1'-0"



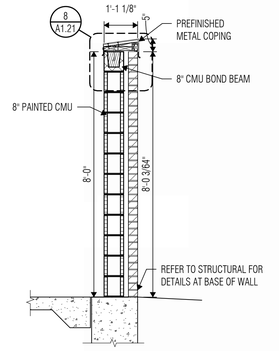
4 CANOPY C - MASONRY POST - PLAN
SCALE: 1" = 1'-0"



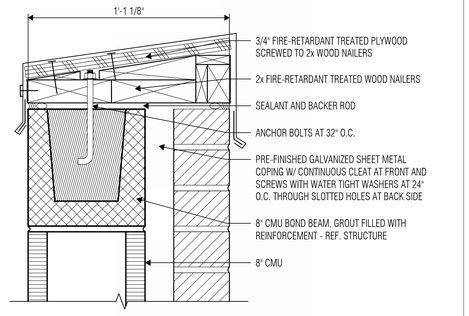
5 CANOPY A
SCALE: 3/16" = 1'-0"



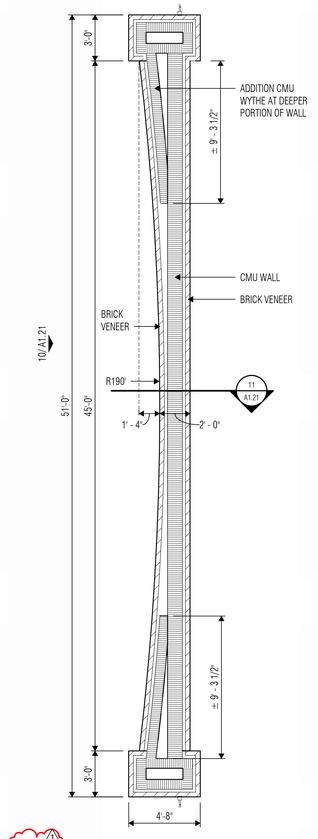
6 CANOPY B
SCALE: 3/16" = 1'-0"



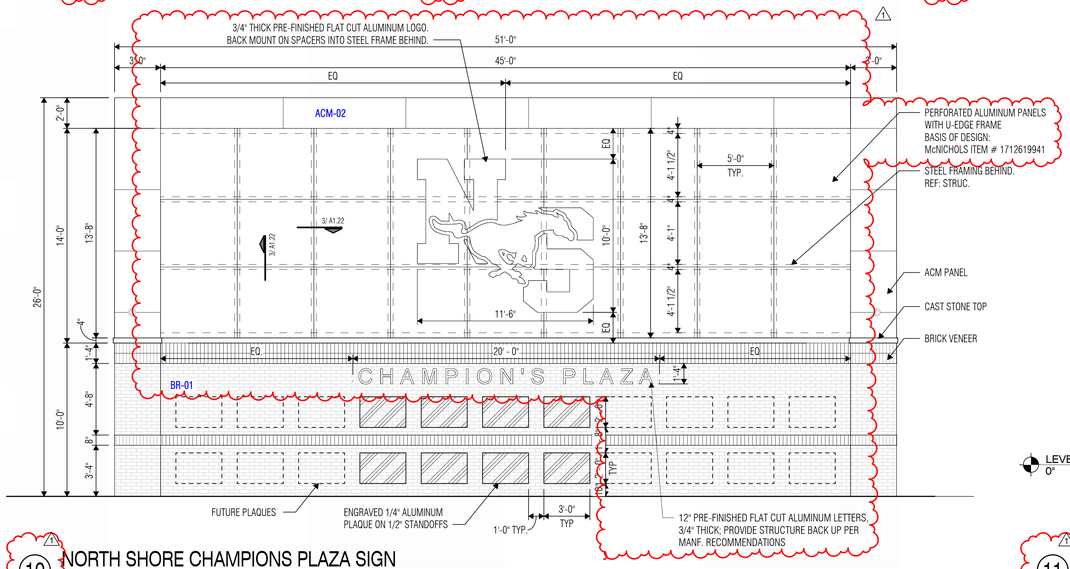
7 DUMPSTER SCREEN WALL
SCALE: 1/2" = 1'-0"



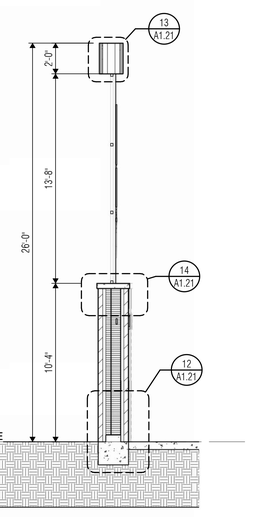
8 DUMPSTER SCREEN WALL DETAIL AT METAL COPING
SCALE: 3" = 1'-0"



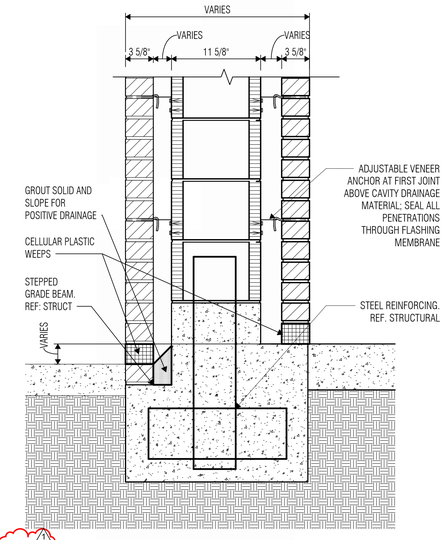
9 CHAMPIONS PLAZA
SCALE: 1/4" = 1'-0"



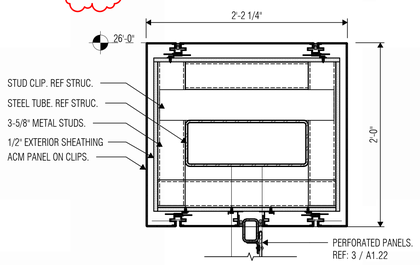
10 NORTH SHORE CHAMPIONS PLAZA SIGN
SCALE: 1/4" = 1'-0"



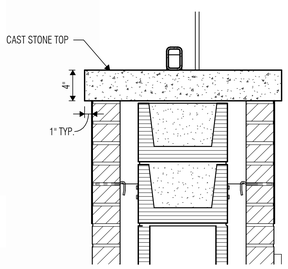
11 CHAMPIONS PLAZA SECTION
SCALE: 1/4" = 1'-0"



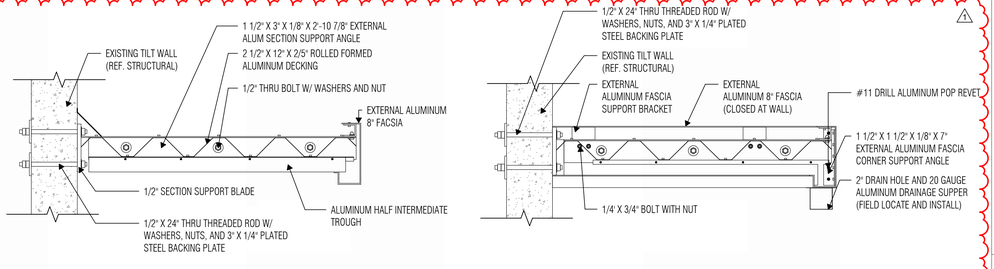
12 CHAMPIONS PLAZA BASE
SCALE: 1 1/2" = 1'-0"



13 CHAMPIONS PLAZA SIGN - TOP
SCALE: 1 1/2" = 1'-0"



14 CHAMPIONS PLAZA - CAPSTONE
SCALE: 1 1/2" = 1'-0"



15 CANTILEVER CANOPY DETAILS
SCALE: 1 1/2" = 1'-0"

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26555
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10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

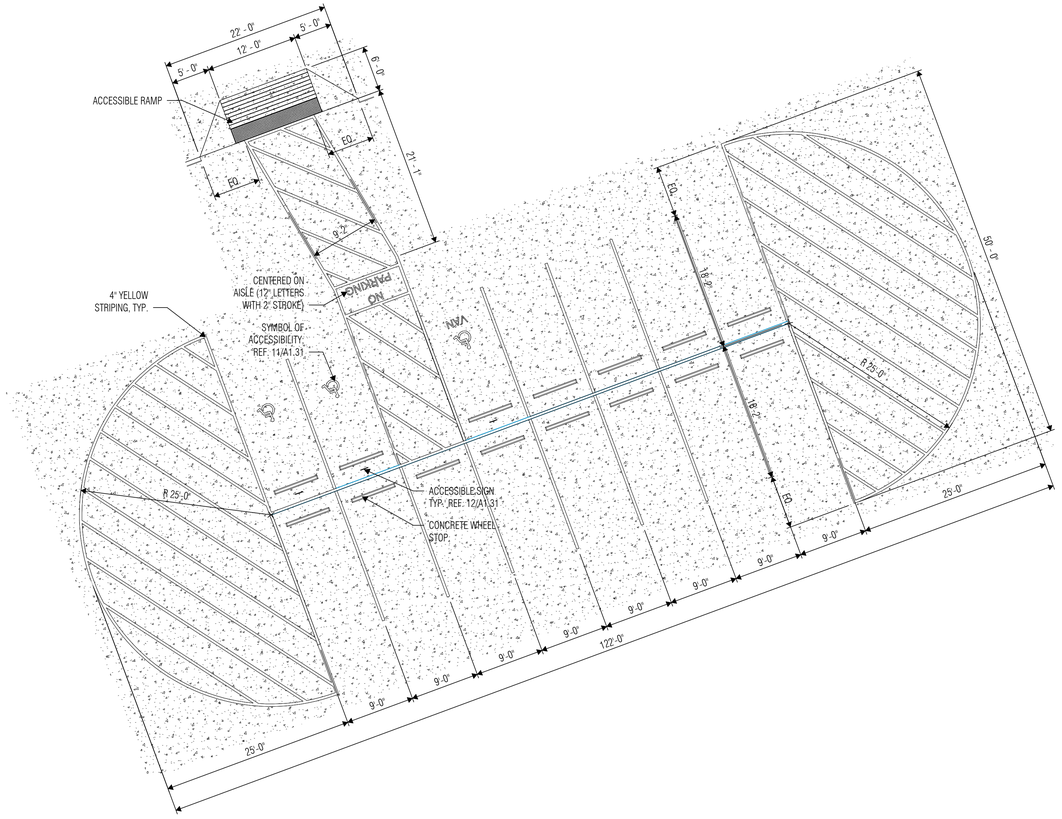
PROJECT NO.
25-0056.00

SHEET TITLE
ENLARGED ARCHITECTURAL SITE PLANS, CANOPY PLANS

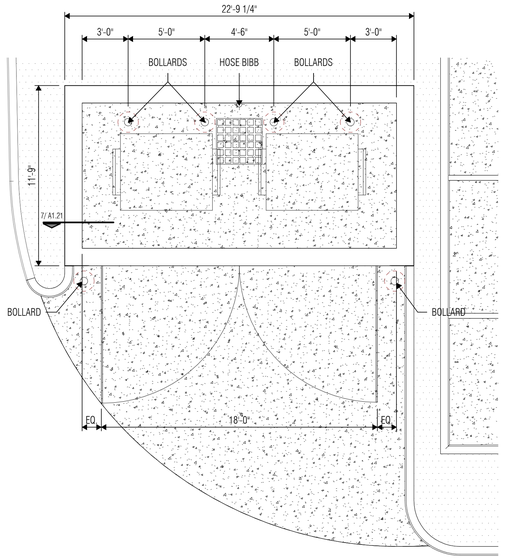
SHEET NO.
A1.21

North Shore Multi-Use Indoor Facility

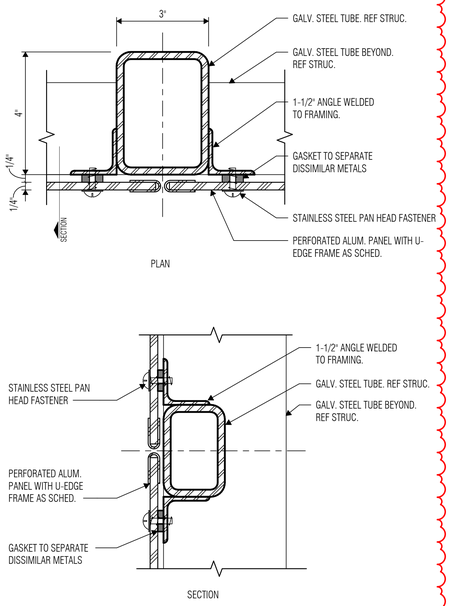
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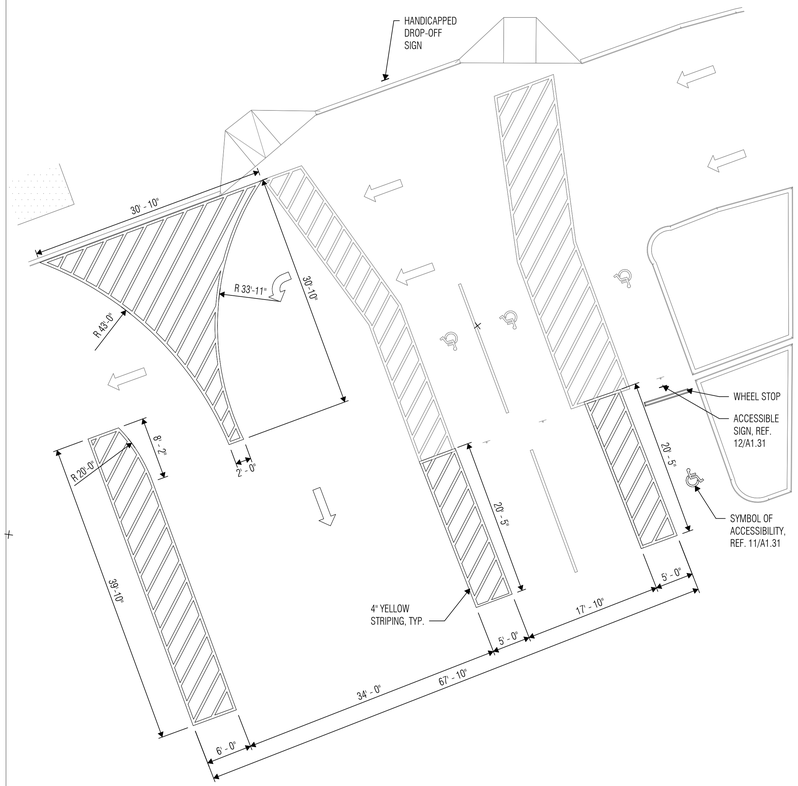
1 STRIPING SPACE 1
SCALE: 1/8" = 1'-0"



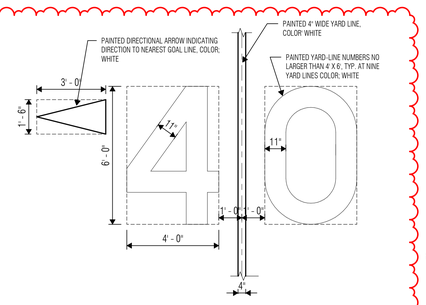
2 DUMPSTER LAYOUT
SCALE: 1/4" = 1'-0"



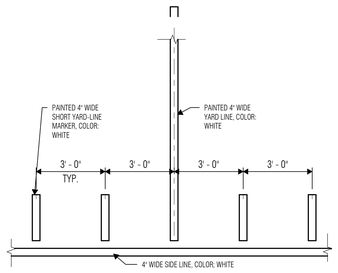
3 PERFORATED PANEL ATTACHMENT
SCALE: 6" = 1'-0"



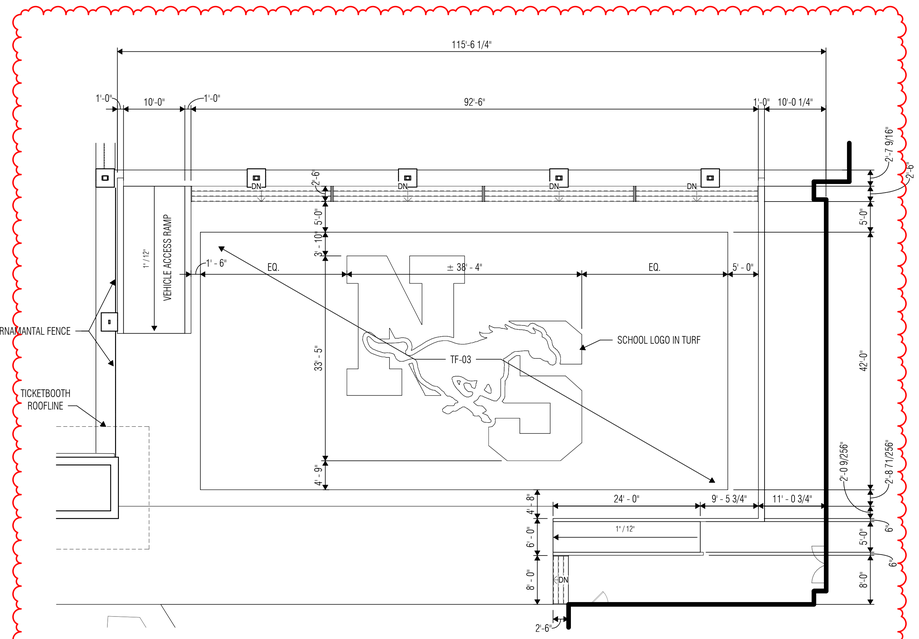
4 STRIPING SPACE 2
SCALE: 1/8" = 1'-0"



5 DETAIL AT YARD-LINE NUMBERS
SCALE: 3/8" = 1'-0"



6 DETAIL AT SIDELINES
SCALE: 3/8" = 1'-0"



7 GAME DAY PLAZA
SCALE: 1" = 10'-0"

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT
MONIKA A. C. CASTILLO
25555
STATE OF TEXAS
10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 3	10/17/2025

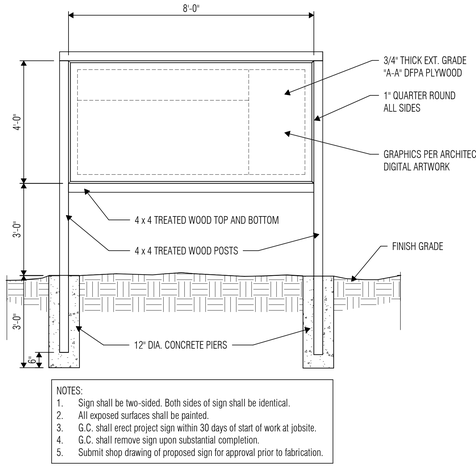
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
ENLARGED ARCHITECTURAL SITE PLANS AND DETAILS

SHEET NO.
A1.22

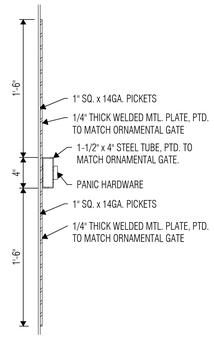
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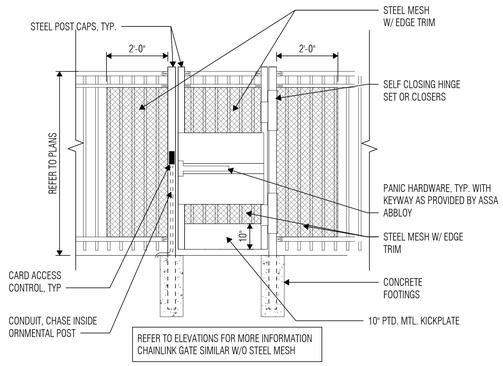
NOTES:
1. Sign shall be two-sided. Both sides of sign shall be identical.
2. All exposed surfaces shall be painted.
3. G.C. shall erect project sign within 30 days of start of work at jobsite.
4. G.C. shall remove sign upon substantial completion.
5. Submit shop drawing of proposed sign for approval prior to fabrication.

MC602

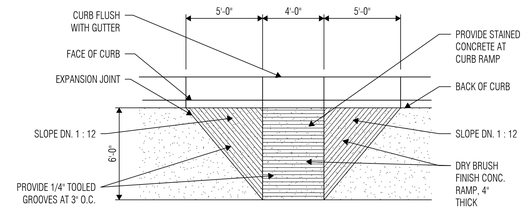
1 MC602 - PROJECT SIGN ELEVATION
SCALE: 1/2" = 1'-0"



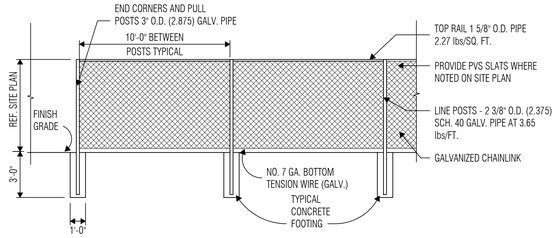
2 ORNAMENTAL EGRESS GATE
SCALE: 1 1/2" = 1'-0"



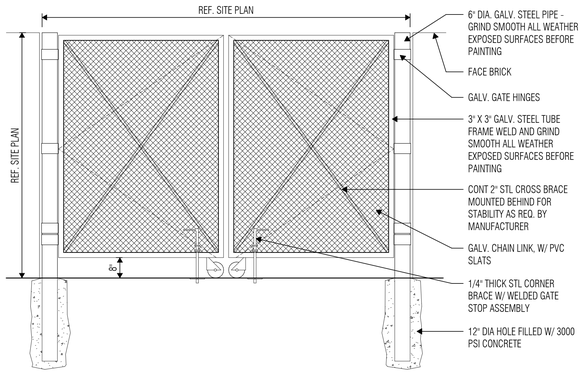
3 ORNAMENTAL GATE
SCALE: 1/2" = 1'-0"



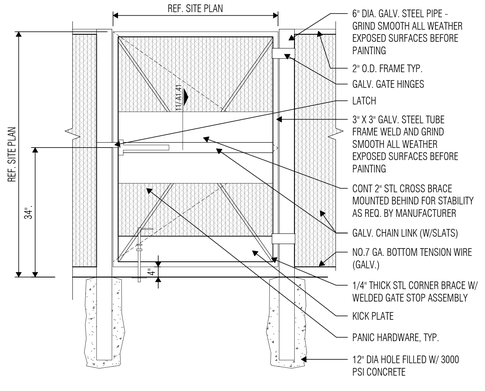
4 CURB RAMP PLAN
SCALE: 1/4" = 1'-0"



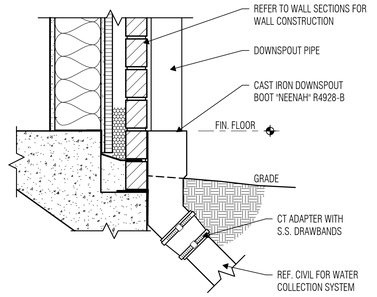
5 CHAINLINK FENCE
SCALE: 1/4" = 1'-0"



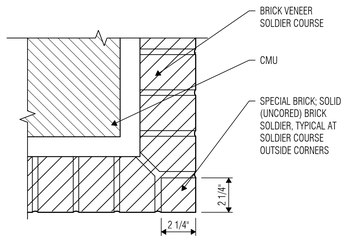
6 CHAINLINK FENCE DOUBLE GATE
SCALE: 1/2" = 1'-0"



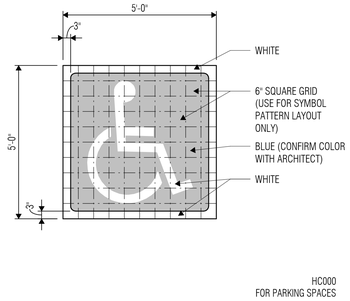
7 CHAINLINK FENCE GATE
SCALE: 1/2" = 1'-0"



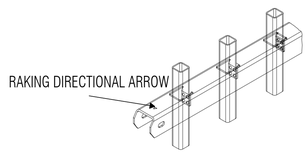
8 MC611 - DOWNSPOUT BOOT
SCALE: 1 1/2" = 1'-0"



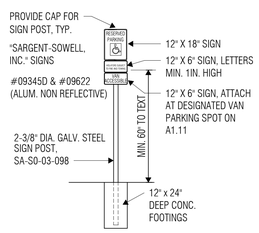
9 SOLDIER COURSE OUTSIDE CORNER
SCALE: 3" = 1'-0"



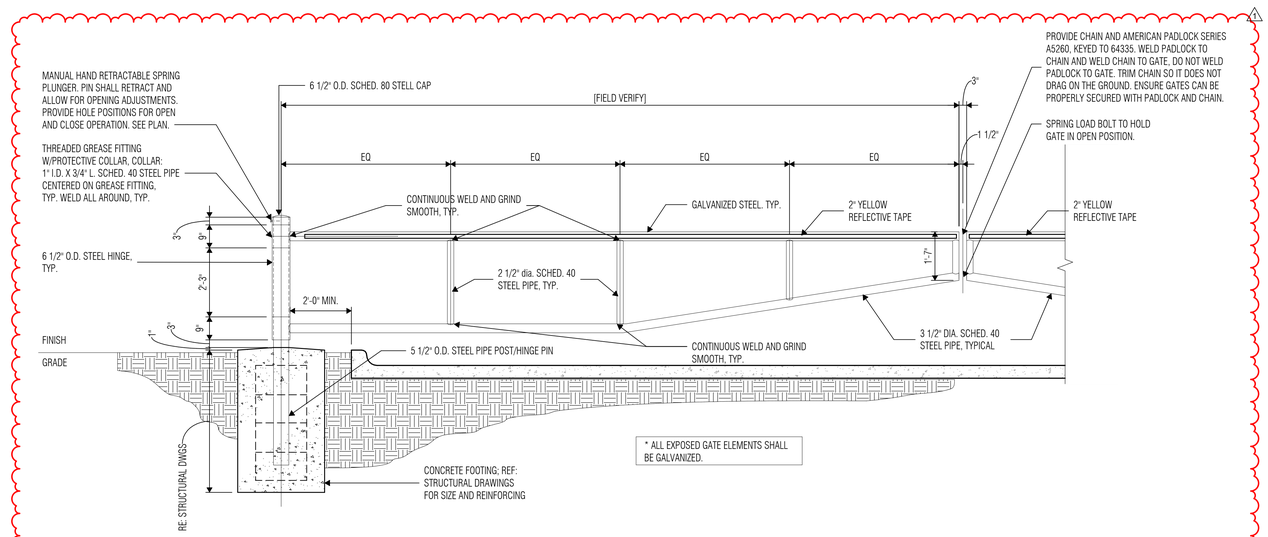
11 SYMBOL OF ACCESSIBLITY
SCALE: 1/2" = 1'-0"



10 RAKING DIRECTION
SCALE: 3/8" = 1'-0"



12 ADA PARKING SIGN
SCALE: 3/8" = 1'-0"



13 SECURITY GATE ELEVATION
SCALE: 1/2" = 1'-0"

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

MONIKA C. CASTILLO — 26556 — REGISTERED ARCHITECT — STATE OF TEXAS
10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
ARCHITECTURAL SITE DETAILS

SHEET NO.
A1.31

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KEY NOTE SCHEDULE

NUMBER	NOTE TEXT
AD01	ALTERNATE: REMOVE EXISTING FLOOR FINISH, BASE AND CASEWORK. REMOVE ALL PLUMBING FIXTURES, SHOWERS AND ALL ACCESSORIES. REMOVE LOCKERS. REMOVE EXSITING CEILING SYSTEM, LIGHTS, AND DEVICES. PREPARE WALLS AND DOOR FRAMES TO RECEIVE PAINT. PREPARE FLOORS TO RECEIVE NEW FINISHES AND CASEWORK. PREPARE TO RECEIVE NEW CEILING SYSTEM, LIGHTS, AND DEVICES.
CD01	REMOVE CANOPY
CD02	REMOVE EXISTING CEILING SYSTEM, LIGHTS AND DEVICES
DD01	CAREFULLY REMOVE AND PROPERLY DISPOSE OF DOOR, HARDWARE, AND FRAME. PREPARE AREA TO RECEIVE NEW CONSTRUCTION.
DD02	PREPARE EXISTING DOOR FRAME AND VISION LITES TO RECEIVE PAINT.
FD01	REMOVE EXISTING FLOOR FINISH AND BASE. CLEAN AND PREPARE EXISTING CONCRETE FOR INSTALLATION OF NEW FINISH AS SCHEDULED
FD02	TRENCH THROUGH EXISTING FLOOR FOR NEW ELECTRICAL WORK. REF: ELEC DWGS.
MD01	EXISTING LOCKERS TO BE REMOVED; CONCRETE BENCHES TO BE SALVAGED.
MD02	CAREFULLY REMOVE AND PROTECT LOCKERS IN PREPARATION FOR RELOCATION. RE: RESPECTIVE UNIT FLOOR PLAN FOR NEW LOCATION.
MD03	REMOVE CASEWORK AND PREPARE AREA FOR NEW CONSTRUCTION.
MD04	REMOVE EXISTING CONCRETE BENCH & PATCH FLOOR TO MATCH EXISTING
MD05	EXISTING CONCRETE BENCH TO REMAIN
MD06	REMOVE ADA BENCH AND PREPARE FLOOR FOR NEW CONSTRUCTION
MD08	SALVAGE METAL SHELVING AND PREPARE AREA FOR NEW CONSTRUCTION.
PD01	REMOVE EXISTING PLUMBING FIXTURE.
PD02	REMOVE SHOWER FIXTURE, GRAB BAR AND BENCH TO PREPARE FOR NEW CONSTRUCTION
PD03	REMOVE SINK AND MIRROR PREPARE FOR NEW CONSTRUCTION
PD04	REMOVE EXISTING PARTITION AND PLUMBING ACCESSORIES.
PD05	REMOVE EXISTING SHOWER FIXTURES.
WD01	REMOVE PARTITION WALL AND PREPARE AREA FOR NEW CONSTRUCTION.
WD02	REMOVE STUD WALL AND PREPARE AREA FOR NEW CONSTRUCTION.
WD03	REMOVE DISPLAY CASE AND WALL. PREPARE AREA FOR NEW CONSTRUCTION.
WD04	REMOVE STOREFRONT AND PREPARE AREA FOR NEW CONSTRUCTION.
WD05	REMOVE EXISTING WALL TILE. PATCH AND REPAIR WALL AS NEEDED TO RECIEVE NEW FINISHES.
WD06	REMOVE PORTION OF WET WALL AS NEEDED TO COMPLETE PLUMBING SCOPE OF WORK.
WD07	REMOVE EXISTING WALL FINISHES AND ROOM SIGNAGE. LEAVE SUBSTRATE SUITABLE FOR NEW FINISH.

DEMOLITION NOTES

1. Drawings show the general extent of demolition work, however it is impractical to indicate or note every item of demolition. Any items shown dashed are to be removed to make way for new construction, unless noted otherwise.
2. Existing materials containing asbestos to be removed under separate contract prior to construction by Owner's asbestos abatement contractor.
3. Contact the Owner prior to the start of demolition to determine items to be salvaged and returned to Owner.
4. Protect items to remain from damage during demolition.
5. Repair or replace at no cost to the Owner any damages to the existing building and site as a result of construction activities.
6. Refer to electrical and mechanical demolition plan for additional information.
7. Patch/repair flooring to match existing at all removed or demolished doors, windows, walls, millwork, lockers and similar items.



TRUE NORTH

1 DEMO FLOOR PLAN - LEVEL ONE - UNIT A

SCALE: 1/8" = 1'-0"

KEY PLAN

C D
B
A

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT
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STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

25-0056.00

SHEET TITLE

DEMO FLOOR PLAN - LEVEL ONE - UNIT A

SHEET NO.

A2.01

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KEY NOTE SCHEDULE

NUMBER	NOTE TEXT
F01	SALVAGED LOCKERS RELOCATION
F02	22" X 44" ADA BENCH
F03	EXISTING CONCRETE BENCH
F04	CONCRETE BENCH TO MATCH EXISTING
F05	REFRIGERATOR
F06	MICROWAVE ABOVE
F07	WHIRLPOOL, MODEL 6206
F08	WARMING CABINET, OFOI
F09	COOLER, OFOI
F10	LOW PROFILE GARBAGE DISPOSAL
F11	UNDERCOUNTER BEVERAGE COOLER
F12	LAUNDRY CHUTE
F13	ALTERNATE: PAINT ALL WALLS AND DOOR FRAMES. REPLACE PLUMBING FIXTURES, FLOORING, AND CASEWORK
F14	ALTERNATE: PREFABRICATED CASEWORK; REF. DW-100.1 THRU DW-400.1
F15	RELOCATED EXISTING LOCKER
F16	RELOCATED EXISTING METAL SHELVING UNITS
F17	DOUBLE TIER CLOTHES ROD W/SHELF
F18	INFILL EXISTING OPENING TO MATCH EXISTING EXTERIOR WALL
F19	DIGITAL EMPLOYEE TIME CLOCK, OFCI
F20	PREFABRICATED WALL SYSTEM; REF. DW-100.1 THRU DW-400.1
F21	PREFABRICATED CASEWORK; REF. DW-100.1 THRU DW-400.1
F22	DISPLAY
F23	PATCH HOLE AT EXISTING GYP. WALL
F24	PROVIDE PRIVACY FILM FOR STOREFRONT
F25	PREFABRICATED WALKWAY COVER ABOVE
F26	UNDERCOUNTER ICE MAKER
F27	PAPER TOWEL DISPENSER; OFCI
F28	SOAP DISPENSER; OFCI
F29	WHIRLPOOL, MODEL 6204
F30	LOCKER FILLER PANEL
F31	INFILL EXISTING TRENCH WITH CONCRETE

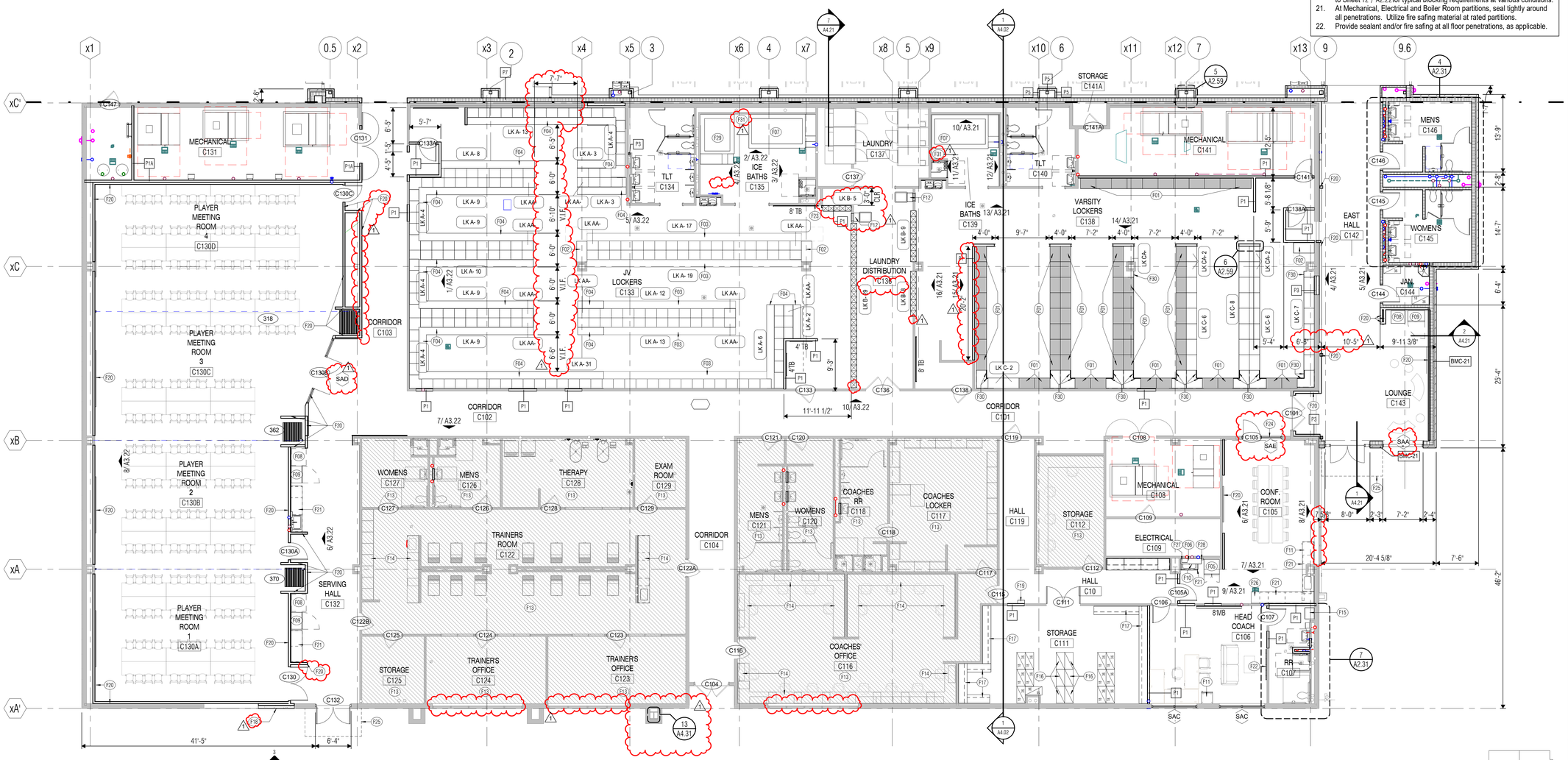
FLOOR PLAN LEGEND

- METAL STUD PARTITION. Extend 4" above highest ceiling plane and brace to structure above as noted in Floor Plan Notes. Refer to Life Safety and Floor Plan sheets for fire, smoke and sound-conditioned partitions that extend to deck above.
- CMU PARTITION. Extend 4" above highest ceiling plane and brace to structure above as detailed. Refer to Life Safety and Floor Plan sheets for fire, smoke and sound-conditioned partitions that extend to deck above.
- LKA-4 — LOCKER TYPE; For locker types, ref. 1 / A2.23; LOCKER QUANTITY
- FURNITURE, FIXTURE OR EQUIPMENT BY OWNER. Coordinate with adjacent electrical devices, casework, etc.
- 18 / 36 — METAL SHELVING UNIT. Depth/width as shown.
- ALTERNATE

MB	MARKERBOARD. Preceding number is length, in feet.
GMB	GLASS MARKERBOARD. Preceding number is length, in feet.
TB	TACKBOARD. Preceding number is length, in feet.
MW	MARKERWALL. Refer to Finish Plans for dimensions.
FEC	FIRE EXTINGUISHER WITH CABINET AND BRACKET
HB	HORIZONTAL BLINDS; EXCLUDE ALL TRANSOMS
RS	ROLLING WINDOW SHADES
DS	DOWNSPOUT

FLOOR PLAN NOTES

1. Primary Ground Level floor elevation is 33.50' (Mean Sea Level), which equals to 100'-0" datum.
2. Dimensions on Floor Plans are to face of stud or CMU unless noted otherwise.
3. Coordinate the location of electrical devices with casework, millwork, lockers, etc. Any electrical device that is not properly coordinated shall be relocated at no additional cost.
4. Exterior wall construction is identified on the Wall Sections. Refer to the A4 series sheets for Wall Sections, and to Sheet A4.11 for Exterior Wall Assemblies.
5. Refer to Exterior Elevation Notes for control joint requirements at all inside corners of masonry veneer.
6. Refer to Sheet A2.21 for Partition Types.
7. Interior partitions are Type "P6" unless noted otherwise.
8. Refer to Detail 4 / A0.21 for Typical Door Maneuvering Clearances. All new doors shall meet the requirements of that detail. If any door is found that does not comply with these requirements, request clarification from the Architect prior to construction.
9. Refer to Sheet 10 / A2.22 for Typical Gypsum Board Control Joint Details at all CFS and light-gage steel stud partition openings.
10. Refer to Sheet A2.22 for Typical Partition Penetration Details, including pipe, conduit and ductwork penetrations.
11. Refer to Sheet A2.22 for Typical Bracing at Non-Loadbearing CMU Partitions.
12. Refer to Exterior Elevations for exact locations of downspouts.
13. Provide factory bullnose units at all interior exposed vertical edges of CMU, except at starter course with applied base material where square-edge units shall be provided in lieu of bullnose units.
14. Provide 8" starter courses at all CMU walls and partitions unless noted otherwise.
15. Provide steel or masonry lintels over all openings in CMU walls, including those required for mechanical ductwork and dampers, whether specifically indicated on the drawings or not.
16. Provide minimum 20 gage (33 mils) light-gage steel studs at all interior partitions scheduled to receive ceramic tile, plaster, abuse-resistant gyp board or impact-resistant gyp board.
17. Provide minimum 18 (43 mils) gage cold-formed steel studs at all interior partitions scheduled to receive anchored masonry or stone veneer as well as interior partitions with steel plate or steel sheet X-bracing.
18. Provide minimum 18 gage (43 mils) cold-formed steel studs as designed by stud engineer for all interior partiti1ons scheduled to receive adhered masonry or stone veneer.
19. At light-gage steel stud partitions that extend above the ceiling, provide diagonal 20 (30 mils) gage stud braces at 4'-0" o.c. to structure above (not to steel deck) as required to provide rigid anchorage and support of partitions.
20. Provide minimum 2 X 6 fire-retardant treated wood blocking in both new and existing stud walls and partitions, at mounting locations for wall-mounted accessories, handrails, casework, markerboards, tackboards, folding partitions, toilet partitions, and all other wall-mounted items. Refer to Sheet 12 / A2.22for typical blocking requirements at various conditions.
21. At Mechanical, Electrical and Boiler Room partitions, seal tightly around all penetrations. Utilize fire safing material at rated partitions.
22. Provide sealant and/or fire safing at all floor penetrations, as applicable.



TRUE NORTH

1 FLOOR PLAN - LEVEL ONE - UNIT A
SCALE: 1/8" = 1'-0"

KEY PLAN

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20445 State Hwy 249, Suite 350
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GALENA PARK ISD
HOUSTON, TEXAS

REGISTERED ARCHITECT MONIKA C. CASTILLO 28558 STATE OF TEXAS
10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
FLOOR PLAN - LEVEL ONE - UNIT A

SHEET NO.
A2.11A

North Shore Multi-Use Indoor Facility

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FLOOR PLAN NOTES

1. Primary Ground Level floor elevation is 33.50' (Mean Sea Level), which equals to 100'-0" datum.
2. Dimensions on Floor Plans are to face of stud or CMU unless noted otherwise.
3. Coordinate the location of electrical devices with casework, millwork, lockers, etc. Any electrical device that is not properly coordinated shall be relocated at no additional cost.
4. Exterior wall construction is identified on the Wall Sections. Refer to the A4 series sheets for Wall Sections, and to Sheet A4.11 for Exterior Wall Assemblies.
5. Refer to Exterior Elevation Notes for control joint requirements at all inside corners of masonry veneer.
6. Refer to Sheet A2.21 for Partition Types.
7. Interior partitions are Type "P6" unless noted otherwise.
8. Refer to Detail 4 / A0.21 for Typical Door Maneuvering Clearances. All new doors shall meet the requirements of that detail. If any door is found that does not comply with these requirements, request clarification from the Architect prior to construction.
9. Refer to Sheet 10 / A2.22 for Typical Gypsum Board Control Joint Details at all CFS and light-gage steel stud partition openings.
10. Refer to Sheet A2.22 for Typical Partition Penetration Details, including pipe, conduit and ductwork penetrations.
11. Refer to Sheet A2.22 for Typical Bracing at Non-Loadbearing CMU Partitions.
12. Refer to Exterior Elevations for exact locations of downspouts.
13. Provide factory bullnose units at all interior exposed vertical edges of CMU, except at starter course with applied base material where square-edge units shall be provided in lieu of bullnose units.
14. Provide 8" starter courses at all CMU walls and partitions unless noted otherwise.
15. Provide steel or masonry lintels over all openings in CMU walls, including those required for mechanical ductwork and dampers, whether specifically indicated on the drawings or not.
16. Provide minimum 20 gage (33 mils) light-gage steel studs at all interior partitions scheduled to receive ceramic tile, plaster, abuse-resistant gyp board or impact-resistant gyp board.
17. Provide minimum 18 (43 mils) gage cold-formed steel studs at all interior partitions scheduled to receive anchored masonry or stone veneer as well as interior partitions with steel plate or steel sheet X-bracing.
18. Provide minimum 18 gage (43 mils) cold-formed steel studs as designed by stud engineer for all interior partiti1ons scheduled to receive adhered masonry or stone veneer.
19. At light-gage steel stud partitions that extend above the ceiling, provide diagonal 20 (30 mils) gage stud braces at 4'-0" o.c. to structure above (not to steel deck) as required to provide rigid anchorage and support of partitions.
20. Provide minimum 2 X 6 fire-retardant treated wood blocking in both new and existing stud walls and partitions, at mounting locations for wall-mounted accessories, handrails, casework, markerboards, tackboards, folding partitions, toilet partitions, and all other wall-mounted items. Refer to Sheet 12 / A2.22for typical blocking requirements at various conditions.
21. At Mechanical, Electrical and Boiler Room partitions, seal tightly around all penetrations. Utilize fire safing material at rated partitions.
22. Provide sealant and/or fire safing at all floor penetrations, as applicable.

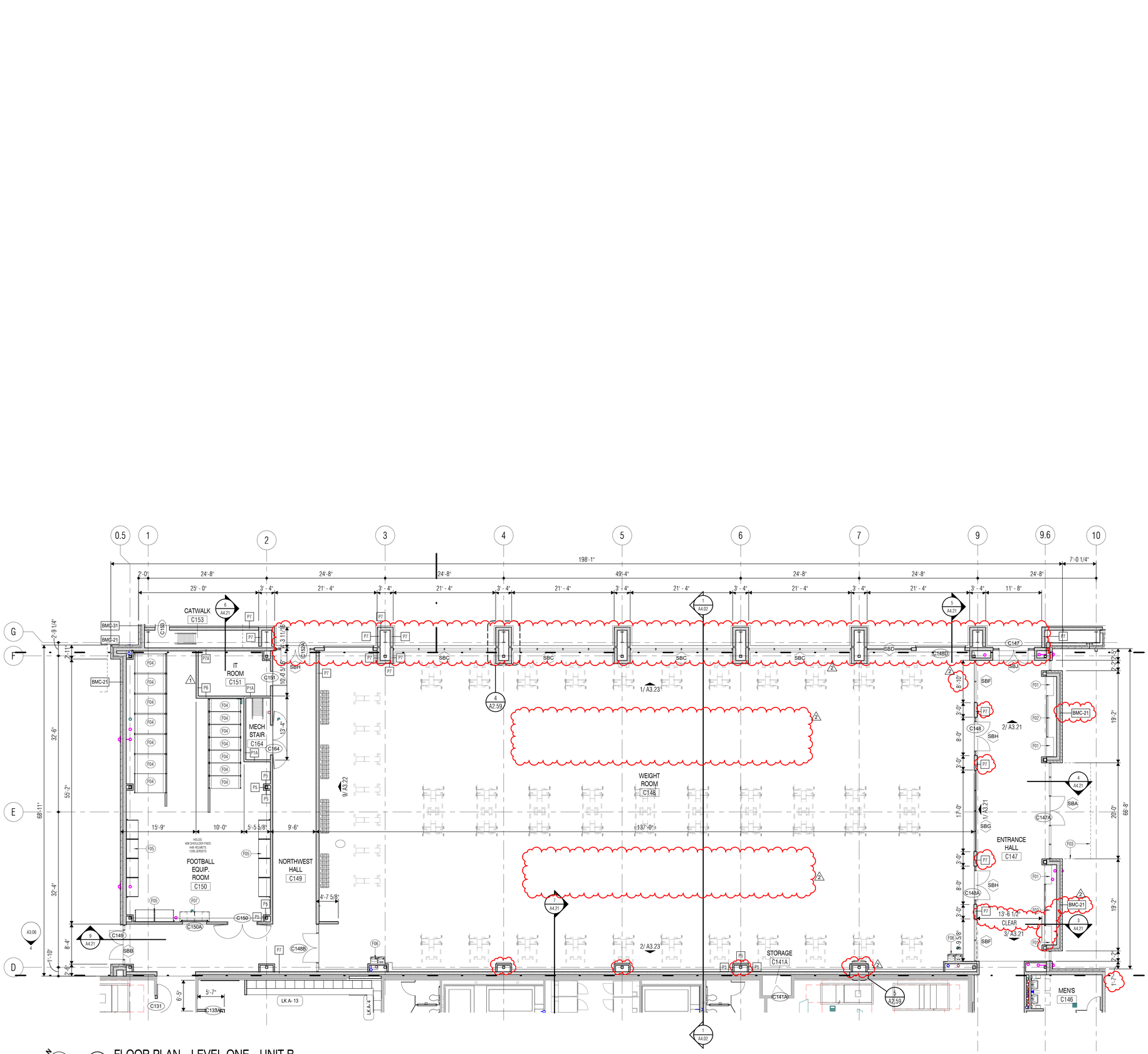
FLOOR PLAN LEGEND

- METAL STUD PARTITION. Extend 4" above highest ceiling plane and brace to structure above as noted in Floor Plan Notes. Refer to Life Safety and Floor Plan sheets for fire, smoke and sound-conditioned partitions that extend to deck above.
- CMU PARTITION. Extend 4" above highest ceiling plane and brace to structure above as detailed. Refer to Life Safety and Floor Plan sheets for fire, smoke and sound-conditioned partitions that extend to deck above.
- LOCKER TYPE (LKA-4) — For locker types, ref. 1 / A2.23 — LOCKER QUANTITY
- FURNITURE, FIXTURE OR EQUIPMENT BY OWNER. Coordinate with adjacent electrical devices, casework, etc.
- 18 / 36 — METAL SHELVING UNIT. Depth/width as shown.

MB	MARKERBOARD. Preceding number is length, in feet.
GMB	GLASS MARKERBOARD. Preceding number is length, in feet.
TB	TACKBOARD. Preceding number is length, in feet.
MW	MARKERWALL. Refer to Finish Plans for dimensions.
FEC	FIRE EXTINGUISHER WITH CABINET AND BRACKET
HB	HORIZONTAL BLINDS; EXCLUDE ALL TRANSOMS
RS	ROLLING WINDOW SHADES
DS	DOWNSPOUT

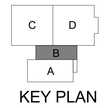
KEY NOTE SCHEDULE

NUMBER	NOTE TEXT
F01	DISPLAY CASE; REF. CONSULTANT DWGS
F02	DIGITAL SIGNAGE DISPLAY; REF. CONSULTANT DWGS
F03	CANOPY ABOVE
F04	HIGH DENSITY STORAGE
F05	WALL MOUNTED ATHLETIC SHELVING
F06	DRINKING FOUNTAIN WITH BOTTLE FILLER
F07	MODULAR CASEWORK; REF. CONSULTANT DWGS



1 FLOOR PLAN - LEVEL ONE - UNIT B
SCALE: 1/8" = 1'-0"

TRUE NORTH



KEY PLAN

VLK

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MONIKA C. CASTILLO 26555 REGISTERED ARCHITECT STATE OF TEXAS
10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

25-0056.00

SHEET TITLE

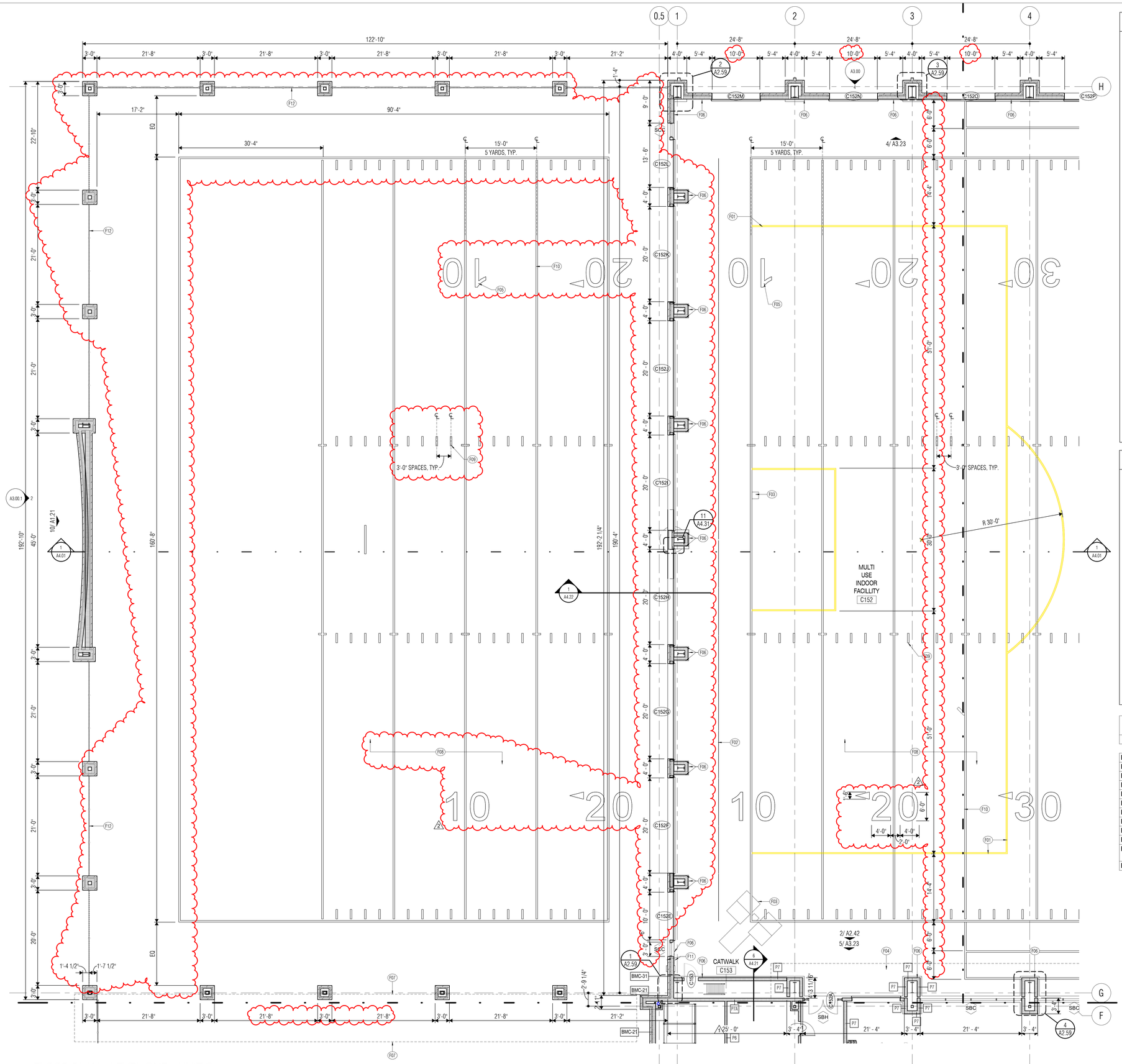
FLOOR PLAN - LEVEL ONE - UNIT B

SHEET NO.

A2.11B

North Shore Multi-Use Indoor Facility

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FLOOR PLAN NOTES

1. Primary Ground Level floor elevation is 33.50' (Mean Sea Level), which equals to 100'-0" datum.
2. Dimensions on Floor Plans are to face of stud or CMU unless noted otherwise.
3. Coordinate the location of electrical devices with casework, millwork, lockers, etc. Any electrical device that is not properly coordinated shall be relocated at no additional cost.
4. Exterior wall construction is identified on the Wall Sections. Refer to the A4 series sheets for Wall Sections, and to Sheet A4.11 for Exterior Wall Assemblies.
5. Refer to Exterior Elevation Notes for control joint requirements at all inside corners of masonry veneer.
6. Refer to Sheet A2.21 for Partition Types.
7. Interior partitions are Type "P6" unless noted otherwise.
8. Refer to Detail 4 / A0.21 for Typical Door Maneuvering Clearances. All new doors shall meet the requirements of that detail. If any door is found that does not comply with these requirements, request clarification from the Architect prior to construction.
9. Refer to Sheet 10 / A2.22 for Typical Gypsum Board Control Joint Details at all CFS and light-gage steel stud partition openings.
10. Refer to Sheet A2.22 for Typical Partition Penetration Details, including pipe, conduit and ductwork penetrations.
11. Refer to Sheet A2.22 for Typical Bracing at Non-Loadbearing CMU Partitions.
12. Refer to Exterior Elevations for exact locations of downspouts.
13. Provide factory bullnose units at all interior exposed vertical edges of CMU, except at starter course with applied base material where square-edge units shall be provided in lieu of bullnose units.
14. Provide 8" starter courses at all CMU walls and partitions unless noted otherwise.
15. Provide steel or masonry lintels over all openings in CMU walls, including those required for mechanical ductwork and dampers, whether specifically indicated on the drawings or not.
16. Provide minimum 20 gage (33 mils) light-gage steel studs at all interior partitions scheduled to receive ceramic tile, plaster, abuse-resistant gyp board or impact-resistant gyp board.
17. Provide minimum 18 (43 mils) gage cold-formed steel studs at all interior partitions scheduled to receive anchored masonry or stone veneer as well as interior partitions with steel plate or steel sheet X-bracing.
18. Provide minimum 18 gage (43 mils) cold-formed steel studs as designed by stud engineer for all interior partiti1ons scheduled to receive adhered masonry or stone veneer.
19. At light-gage steel stud partitions that extend above the ceiling, provide diagonal 20 (30 mils) gage stud braces at 4'-0" o.c. to structure above (not to steel deck) as required to provide rigid anchorage and support of partitions.
20. Provide minimum 2 X 6 fire-retardant treated wood blocking in both new and existing stud walls and partitions, at mounting locations for wall-mounted accessories, handrails, casework, markerboards, tackboards, folding partitions, toilet partitions, and all other wall-mounted items. Refer to Sheet 12 / A2.22for typical blocking requirements at various conditions.
21. At Mechanical, Electrical and Boiler Room partitions, seal tightly around all penetrations. Utilize fire safing material at rated partitions.
22. Provide sealant and/or fire safing at all floor penetrations, as applicable.

FLOOR PLAN LEGEND

- METAL STUD PARTITION. Extend 4" above highest ceiling plane and brace to structure above as noted in Floor Plan Notes. Refer to Life Safety and Floor Plan sheets for fire, smoke and sound-conditioned partitions that extend to deck above.
- CMU PARTITION. Extend 4" above highest ceiling plane and brace to structure above as detailed. Refer to Life Safety and Floor Plan sheets for fire, smoke and sound-conditioned partitions that extend to deck above.
- LOCKER TYPE (LK4-4) — For locker types, ref. 1 / A2.23 — LOCKER QUANTITY
- FURNITURE, FIXTURE OR EQUIPMENT BY OWNER. Coordinate with adjacent electrical devices, casework, etc.
- METAL SHELVING UNIT. Depth/width as shown.

MB	MARKERBOARD. Preceding number is length, in feet.
GMB	GLASS MARKERBOARD. Preceding number is length, in feet.
TB	TACKBOARD. Preceding number is length, in feet.
MW	MARKERWALL. Refer to Finish Plans for dimensions.
FEC	FIRE EXTINGUISHER WITH CABINET AND BRACKET
HB	HORIZONTAL BLINDS; EXCLUDE ALL TRANSOMS
RS	ROLLING WINDOW SHADES
DS	DOWNSPOUT

KEY NOTE SCHEDULE

NUMBER	NOTE TEXT
F01	4" WIDE INLAID SOCCER STRIPING (YELLOW)
F02	MOTORIZED DROP DOWN NETTING
F03	BASEBALL INFIELD STRIPING (BLACK)
F04	CATWALK ABOVE
F05	INLAID YARDAGE BLOCK NUMBERS, (WHITE) TYP.
F06	7' TALL WALL PADS AT ALL EXPOSED WALLS, TYP.
F07	PREFABRICATED WALKWAY COVER ABOVE
F08	SYNTHETIC TURF
F09	INBOUND LINES INLAID (WHITE) TYP.
F10	INLAID YARDLINE MARKERS, (WHITE) TYP.
F11	TIME CLOCK; SYNC WITH ALL TIMERS, COORDINATE MOUNTING HEIGHT WITH OWNER
F12	8'H ORNAMENTAL FENCE

KEY PLAN

VLK

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GALENA PARK ISD
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REGISTERED ARCHITECT — MONIKA C. CASTILLO — 26559 — STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

25-0056.00

SHEET TITLE

FLOOR PLAN - LEVEL ONE - UNIT C

SHEET NO.

A2.11C

North Shore Multi-Use Indoor Facility

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FLOOR PLAN NOTES

1. Primary Ground Level floor elevation is 33.50' (Mean Sea Level), which equals to 100'-0" datum.
2. Dimensions on Floor Plans are to face of stud or CMU unless noted otherwise.
3. Coordinate the location of electrical devices with casework, millwork, lockers, etc. Any electrical device that is not properly coordinated shall be relocated at no additional cost.
4. Exterior wall construction is identified on the Wall Sections. Refer to the A4 series sheets for Wall Sections, and to Sheet A4.11 for Exterior Wall Assemblies.
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6. Refer to Sheet A2.21 for Partition Types.
7. Interior partitions are Type "P6" unless noted otherwise.
8. Refer to Detail 4 / A0.21 for Typical Door Maneuvering Clearances. All new doors shall meet the requirements of that detail. If any door is found that does not comply with these requirements, request clarification from the Architect prior to construction.
9. Refer to Sheet 10 / A2.22 for Typical Gypsum Board Control Joint Details at all CFS and light-gage steel stud partition openings.
10. Refer to Sheet A2.22 for Typical Partition Penetration Details, including pipe, conduit and ductwork penetrations.
11. Refer to Sheet A2.22 for Typical Bracing at Non-Loadbearing CMU Partitions.
12. Refer to Exterior Elevations for exact locations of downspouts.
13. Provide factory bullnose units at all interior exposed vertical edges of CMU, except at starter course with applied base material where square-edge units shall be provided in lieu of bullnose units.
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21. At Mechanical, Electrical and Boiler Room partitions, seal tightly around all penetrations. Utilize fire safing material at rated partitions.
22. Provide sealant and/or fire safing at all floor penetrations, as applicable.

FLOOR PLAN LEGEND

	METAL STUD PARTITION. Extend 4" above highest ceiling plane and brace to structure above as noted in Floor Plan Notes. Refer to Life Safety and Floor Plan sheets for fire, smoke and sound-conditioned partitions that extend to deck above.
	CMU PARTITION. Extend 4" above highest ceiling plane and brace to structure above as detailed. Refer to Life Safety and Floor Plan sheets for fire, smoke and sound-conditioned partitions that extend to deck above.
1 A4.01 LKA-4	LOCKER TYPE For locker types, ref. 1 / A2.23 LOCKER QUANTITY
	FURNITURE, FIXTURE OR EQUIPMENT BY OWNER. Coordinate with adjacent electrical devices, casework, etc.
18 36	METAL SHELVING UNIT. Depth/width as shown.
MB	MARKERBOARD. Preceding number is length, in feet.
GMB	GLASS MARKERBOARD. Preceding number is length, in feet.
TB	TACKBOARD. Preceding number is length, in feet.
MW	MARKERWALL. Refer to Finish Plans for dimensions.
FEC	FIRE EXTINGUISHER WITH CABINET AND BRACKET
HB	HORIZONTAL BLINDS; EXCLUDE ALL TRANSOMS
RS	ROLLING WINDOW SHADES
DS	DOWNSPOUT

KEY NOTE SCHEDULE

NUMBER	NOTE TEXT
F01	4" WIDE INLAID SOCCER STRIPING (YELLOW)
F02	MOTORIZED DROP DOWN NETTING
F03	BASEBALL INFIELD STRIPING (BLACK)
F04	CATWALK ABOVE
F05	INLAID YARDAGE BLOCK NUMBERS, (WHITE) TYP.
F06	7' TALL WALL PADS AT ALL EXPOSED WALLS, TYP.
F07	PREFABRICATED WALKWAY COVER ABOVE
F08	SYNTHETIC TURF
F09	INBOUND LINES INLAID (WHITE) TYP.
F10	INLAID YARDLINE MARKERS, (WHITE) TYP.
F11	INLAID SOCCER PENALTY MARK (YELLOW)
F12	3 YARD LINE INLAID (WHITE)

1 FLOOR PLAN - LEVEL ONE - UNIT C - ALTERNATE
SCALE: 1/8" = 1'-0"

TRUE NORTH

KEY PLAN

VLK

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT MONIKA C. CASTILLO 26555 STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

25-0056.00

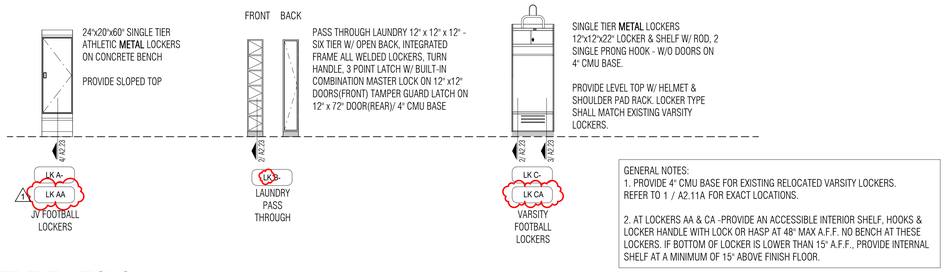
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FLOOR PLAN - LEVEL ONE - UNIT C - ALTERNATE BID

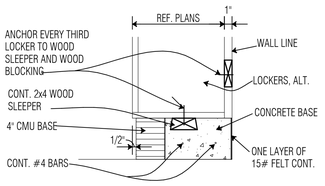
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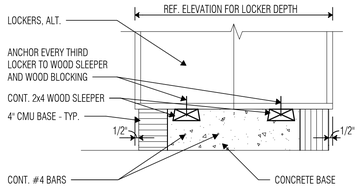
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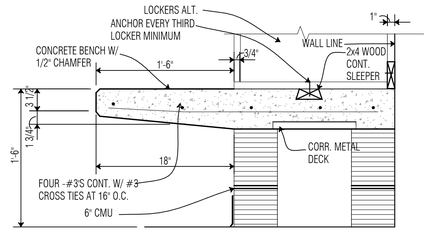
1 LOCKER ELEVATIONS
SCALE: 1/4" = 1'-0"



2 LOCKER BASE DETAIL
SCALE: 1 1/2" = 1'-0"



3 REAR ADJOINING LOCKER BASE DETAIL
SCALE: 1 1/2" = 1'-0"



4 LOCKER BENCH DETAIL
SCALE: 1 1/2" = 1'-0"

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT
MONIKA C. CASTILLO
28556
STATE OF TEXAS
10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 3	10/17/2025

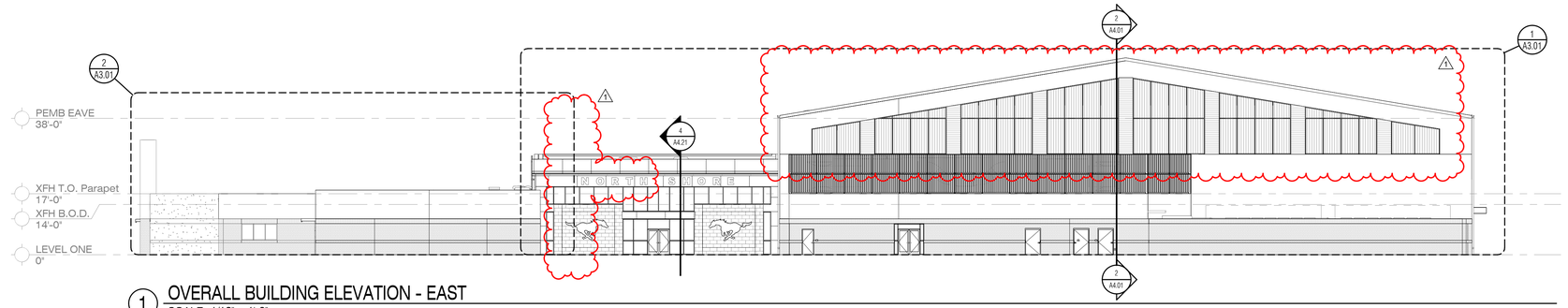
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

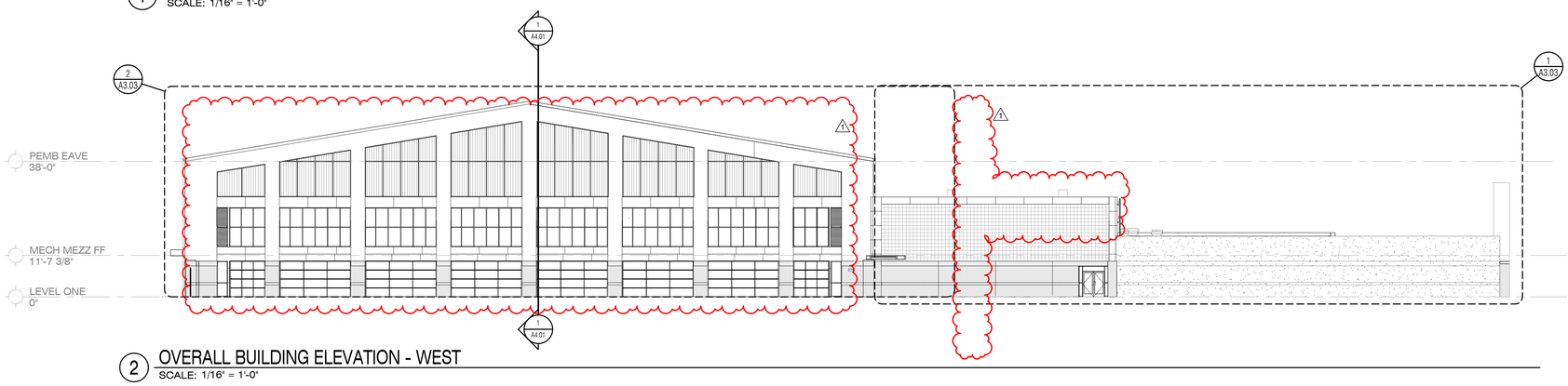
SHEET TITLE
LOCKER DETAILS

SHEET NO.
A2.23

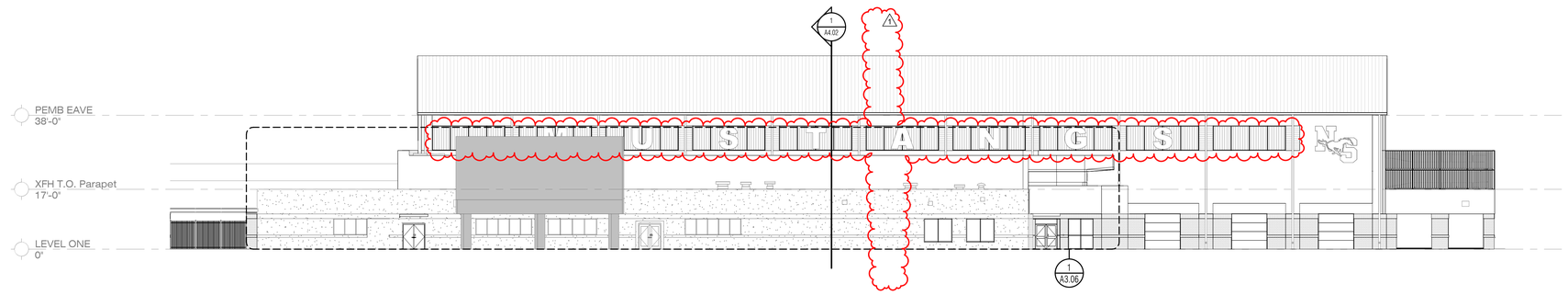
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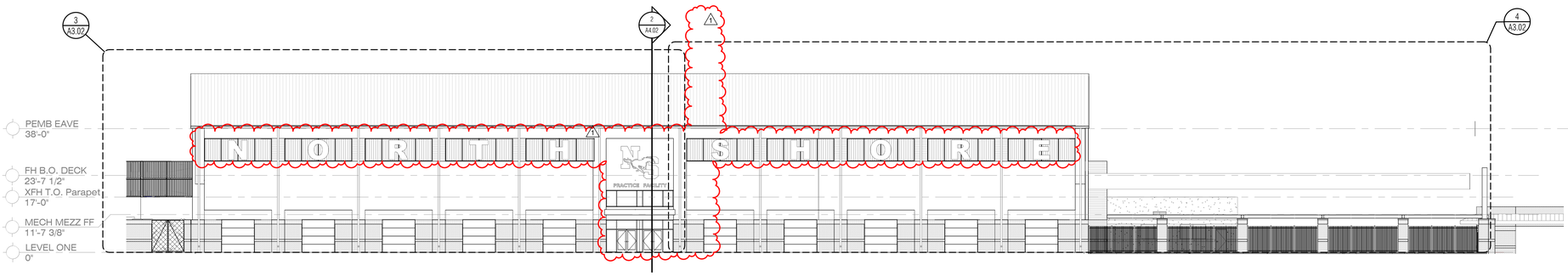
1 OVERALL BUILDING ELEVATION - EAST
SCALE: 1/16" = 1'-0"



2 OVERALL BUILDING ELEVATION - WEST
SCALE: 1/16" = 1'-0"



5 OVERALL BUILDING ELEVATION - SOUTH
SCALE: 1/16" = 1'-0"



4 OVERALL BUILDING ELEVATION - NORTH
SCALE: 1/16" = 1'-0"

VLK

ARCHITECT

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REGISTERED ARCHITECT
MONIKA C. CASTILLO
26556
STATE OF TEXAS

10/17/2025

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REVISIONS

Revision No.		Revision Date
1	Addendum 3	10/17/2025

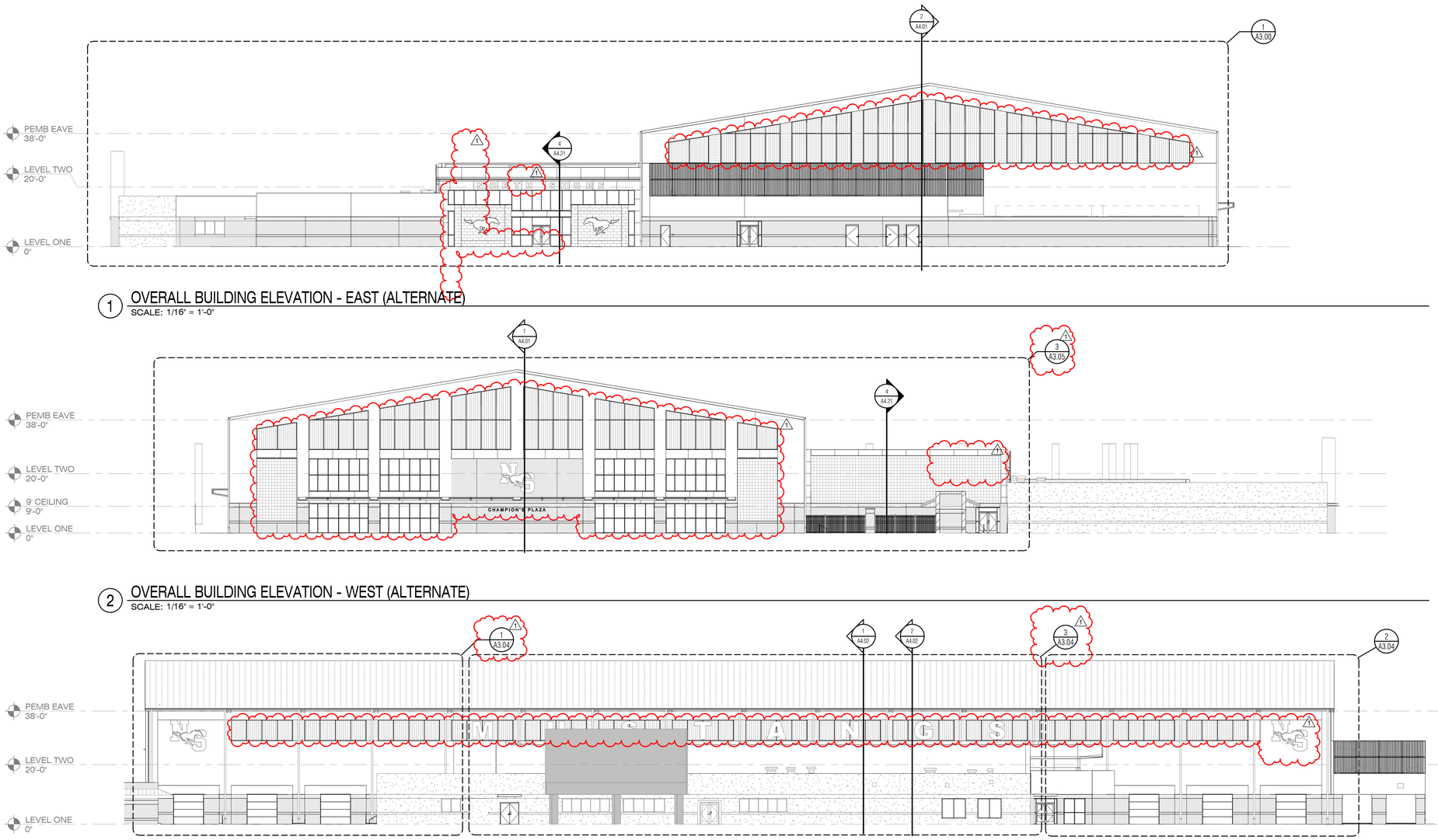
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

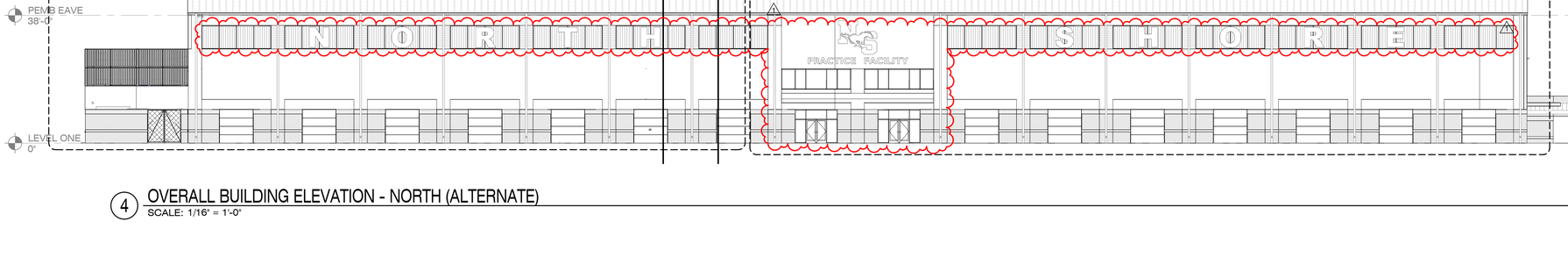
SHEET TITLE
OVERALL EXTERIOR ELEVATIONS

SHEET NO.
A3.00

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1 OVERALL BUILDING ELEVATION - EAST (ALTERNATE)
SCALE: 1/16" = 1'-0"



2 OVERALL BUILDING ELEVATION - WEST (ALTERNATE)
SCALE: 1/16" = 1'-0"

3 OVERALL BUILDING ELEVATION - SOUTH (ALTERNATE)
SCALE: 1/16" = 1'-0"

4 OVERALL BUILDING ELEVATION - NORTH (ALTERNATE)
SCALE: 1/16" = 1'-0"

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT
MONIKA C. CASTILLO
28556
STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
OVERALL EXTERIOR ELEVATIONS - (ALTERNATE)

SHEET NO.
A3.00.1

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KEY NOTE SCHEDULE

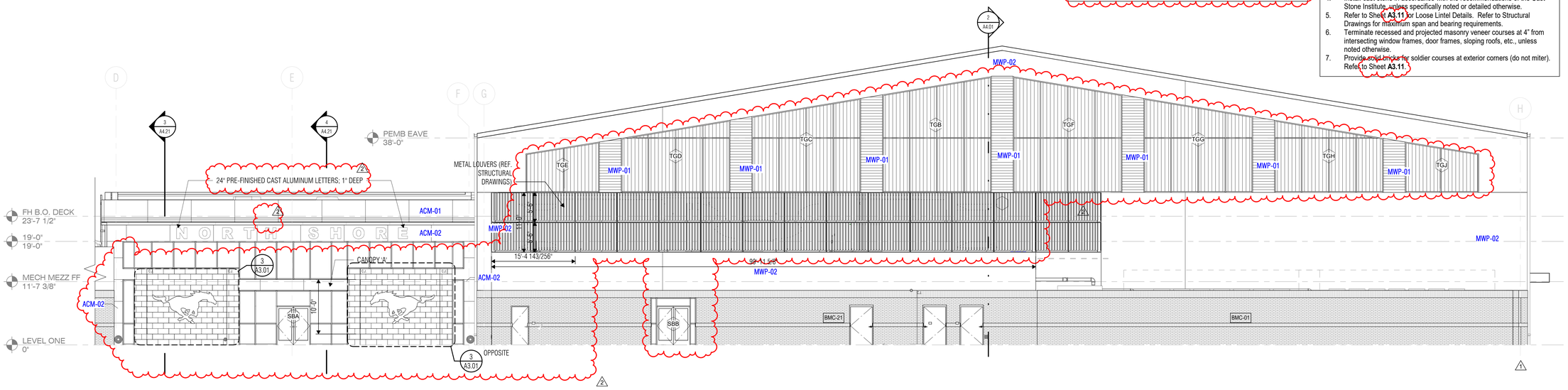
NUMBER	NOTE TEXT
MC01	PROVIDE METAL CAP

EXTERIOR ELEVATION LEGEND

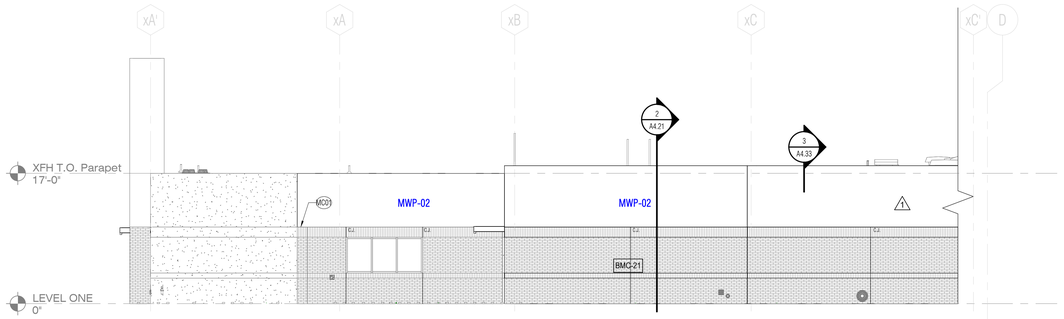
DS	DOWNSPOUT	
CJ	CONTROL JOINT, REF.	**1/A3.11, 3/A3.11, 4/A3.11**
EJ	EXPANSION JOINT, REF.	**3/A4.33**
SXX	ALUMINUM STOREFRONT, REF. SHEET **A7.21**	
TGX	TRANSLUCENT WALL PANEL SYSTEM, REF. SHEET **A7.22**	

EXTERIOR ELEVATION NOTES

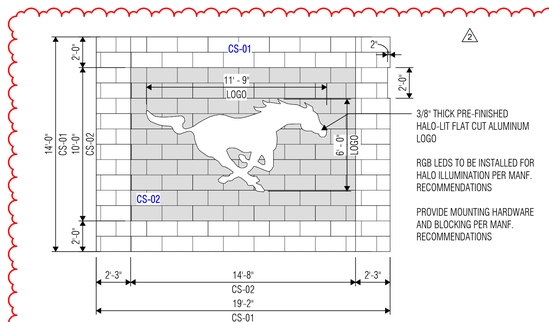
1. Refer to Sheet **A3.11, A4.31, A4.33** for Typical Control Joint and Building Expansion Joint Details.
2. Based on the applicable design criteria, submit the proposed pattern of control joints in masonry veneer, CMU and stucco/cement plaster to the Architect for review and approval prior to construction.
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5. Refer to Sheet **A3.11** for Loose Lintel Details. Refer to Structural Drawings for maximum span and bearing requirements.
6. Terminate recessed and projected masonry veneer courses at 4" from intersecting window frames, door frames, sloping roofs, etc., unless noted otherwise.
7. Provide solid bricks for soldier courses at exterior corners (do not miter). Refer to Sheet **A3.11**.



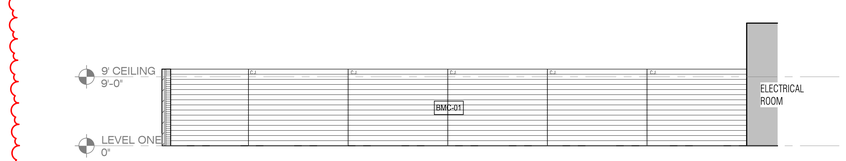
1 EXTERIOR ELEVATION - UNIT B & D - EAST
SCALE: 1/8" = 1'-0"



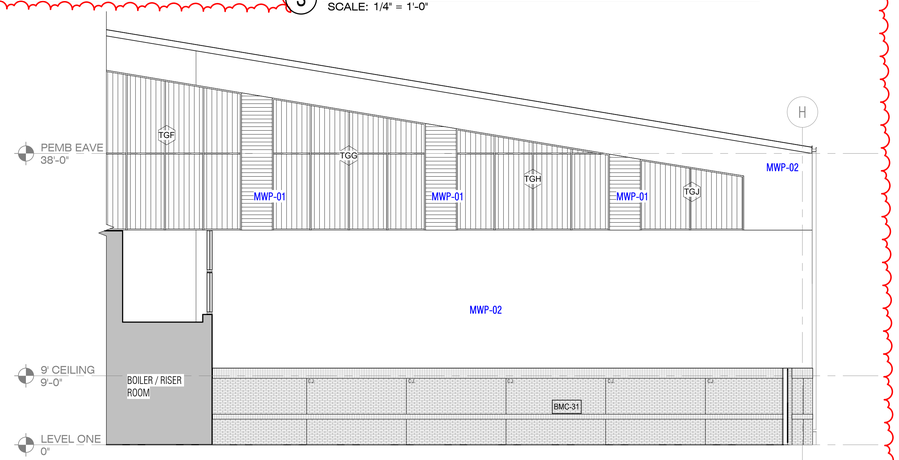
2 EXTERIOR ELEVATION - UNIT A - EAST
SCALE: 1/8" = 1'-0"



3 EXTERIOR ELEVATION - UNIT B - MUSTANG SIGNAGE
SCALE: 1/4" = 1'-0"



4 EXTERIOR ELEVATION - MECHANICAL YARD - WEST
SCALE: 1/8" = 1'-0"



5 EXTERIOR ELEVATION - MECHANICAL YARD - EAST
SCALE: 1/8" = 1'-0"

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT — MONIKA C. CASTILLO — 26556 — STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

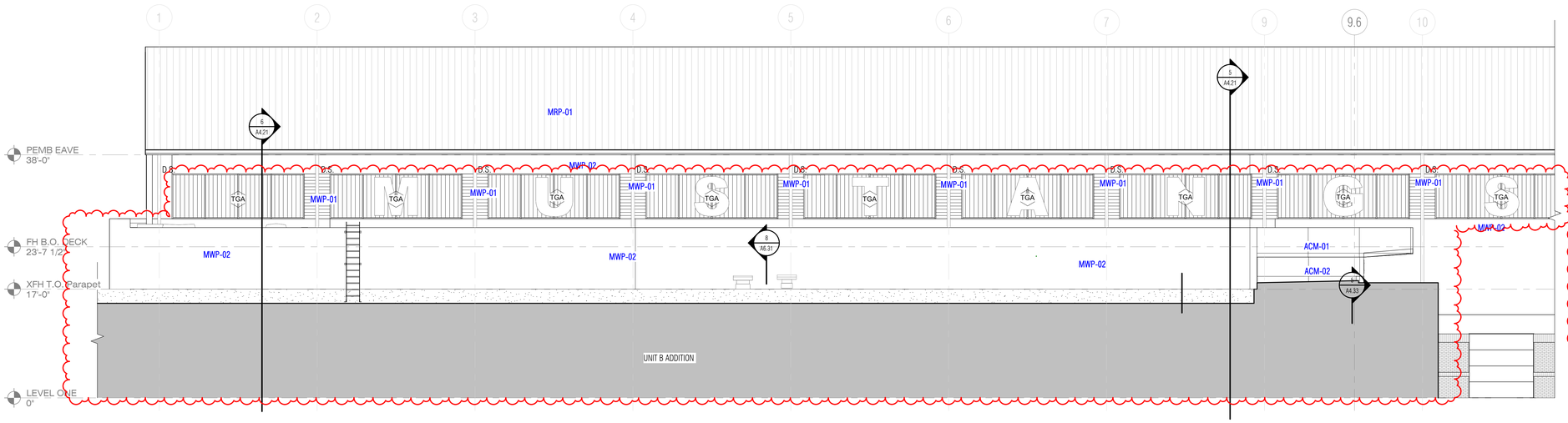
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
EXTERIOR ELEVATIONS

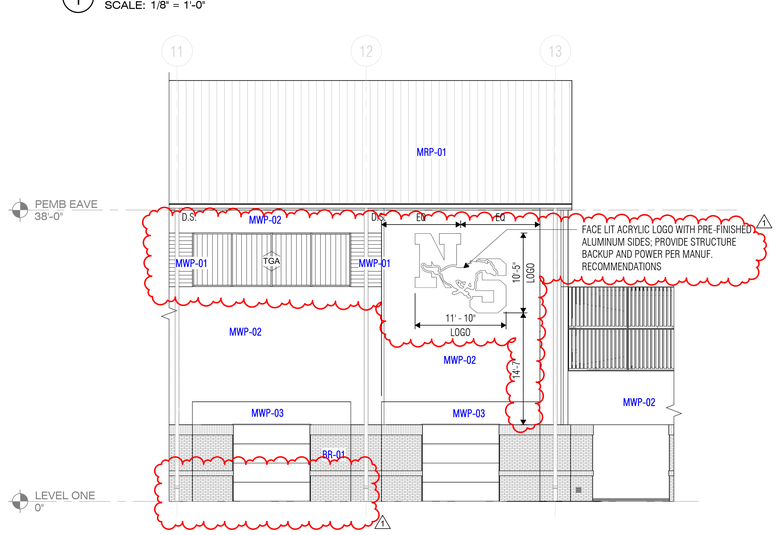
SHEET NO.
A3.01

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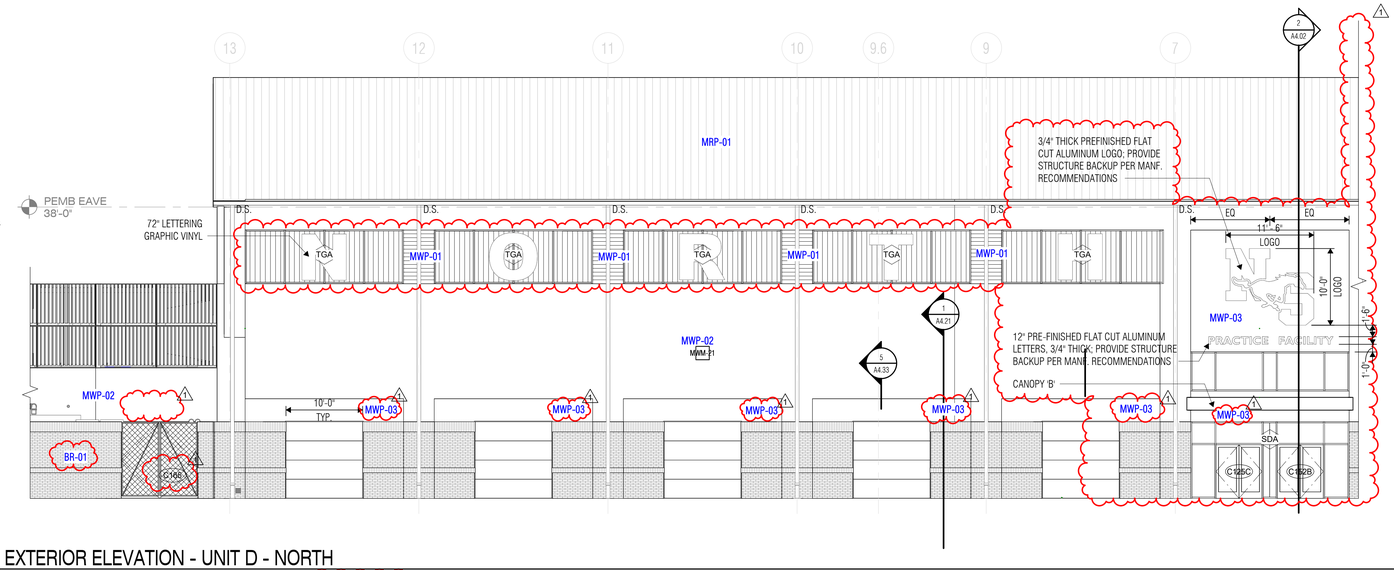
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SCALE: 1/8" = 1'-0"



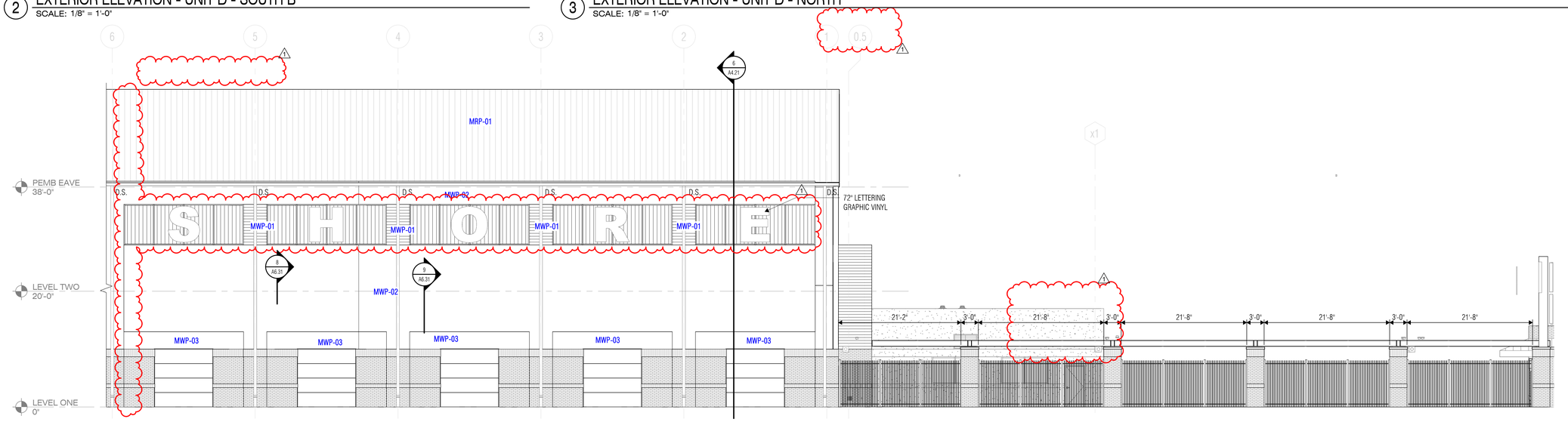
2 EXTERIOR ELEVATION - UNIT D - SOUTH B

SCALE: 1/8" = 1'-0"



3 EXTERIOR ELEVATION - UNIT D - NORTH

SCALE: 1/8" = 1'-0"



4 EXTERIOR ELEVATION - UNIT C & D - NORTH

SCALE: 1/8" = 1'-0"

EXTERIOR ELEVATION NOTES

1. Refer to Sheet **A3.11**, **A4.31**, **A4.33** for Typical Control Joint and Building Expansion Joint Details.
2. Based on the applicable design criteria, submit the proposed pattern of control joints in masonry veneer, CMU and stucco/cement plaster to the Architect for review and approval prior to construction.
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6. Terminate recessed and projected masonry veneer courses at 4" from intersecting window frames, door frames, sloping roofs, etc., unless noted otherwise.
7. Provide soldier bricks for soldier courses at exterior corners (do not miter). Refer to Sheet **A3.11**.

EXTERIOR ELEVATION LEGEND

DS	DOWNSPOUT	
CJ	CONTROL JOINT, REF.	**1/A3.11, 3/A3.11, 4/A3.11**
EJ	EXPANSION JOINT, REF.	**3/A4.33**
SXX	ALUMINUM STOREFRONT, REF. SHEET **A7.21**	
TGA	TRANSLUCENT WALL PANEL SYSTEM, REF. SHEET **A7.22**	

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GALENA PARK ISD
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North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT — MONIKA C. CASTILLO — 28555 — STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

25-0056.00

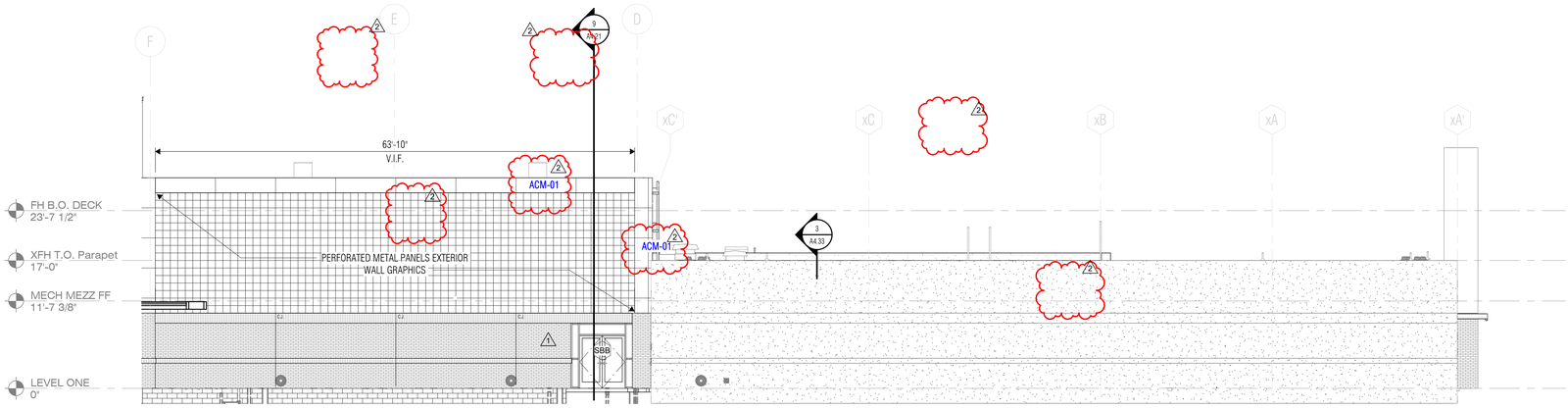
SHEET TITLE

EXTERIOR ELEVATIONS

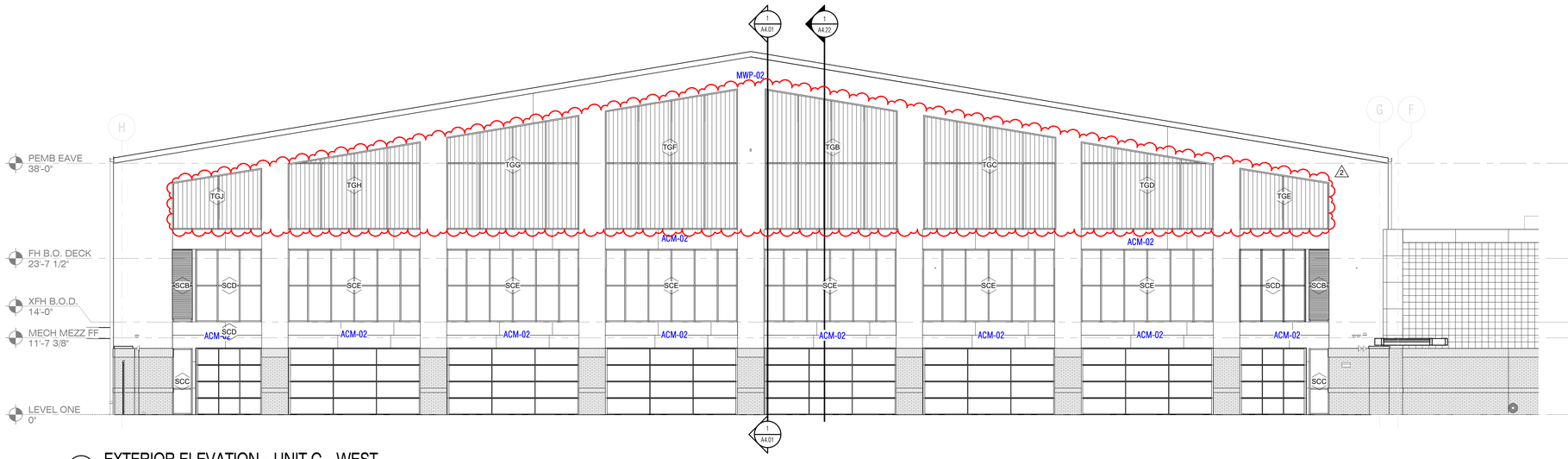
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A3.02

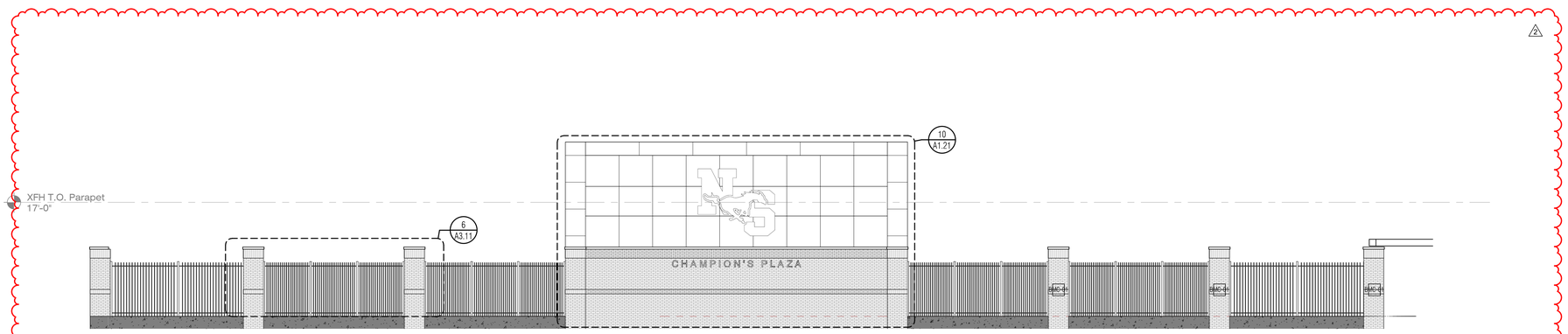
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1 EXTERIOR ELEVATION - UNIT B & A - WEST
SCALE: 1/8" = 1'-0"



2 EXTERIOR ELEVATION - UNIT C - WEST
SCALE: 1/8" = 1'-0"



3 EXTERIOR ELEVATION - CHAMPIONS PLAZA
SCALE: 1/8" = 1'-0"

EXTERIOR ELEVATION NOTES

1. Refer to Sheet **A3.11, A4.31, A4.33** for Typical Control Joint and Building Expansion Joint Details.
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EXTERIOR ELEVATION LEGEND

DS	DOWNSPOUT	
CJ	CONTROL JOINT, REF.	**1/A3.11, 3/A3.11, 4/A3.11**
EJ	EXPANSION JOINT, REF.	**3/A4.33**
SXX	ALUMINUM STOREFRONT, REF. SHEET **A7.21**	
TGX	TRANSLUCENT WALL PANEL SYSTEM, REF. SHEET **A7.22**	

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HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

MONIKA C. CASTILLO 26556 REGISTERED ARCHITECT STATE OF TEXAS
10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

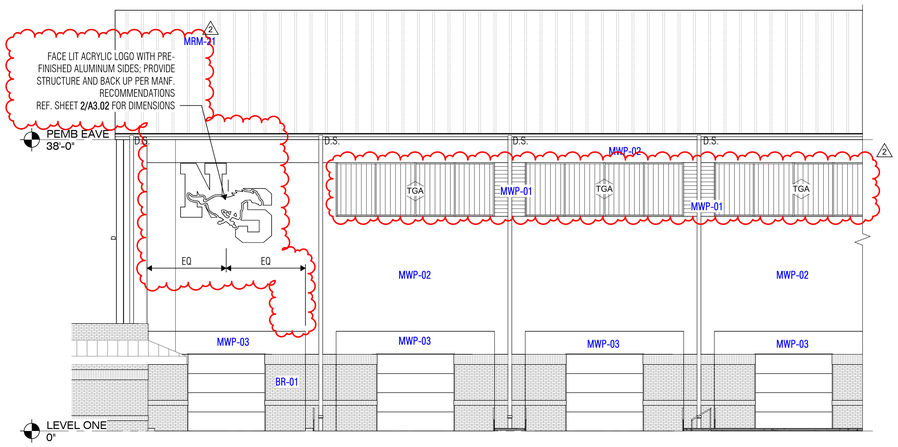
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

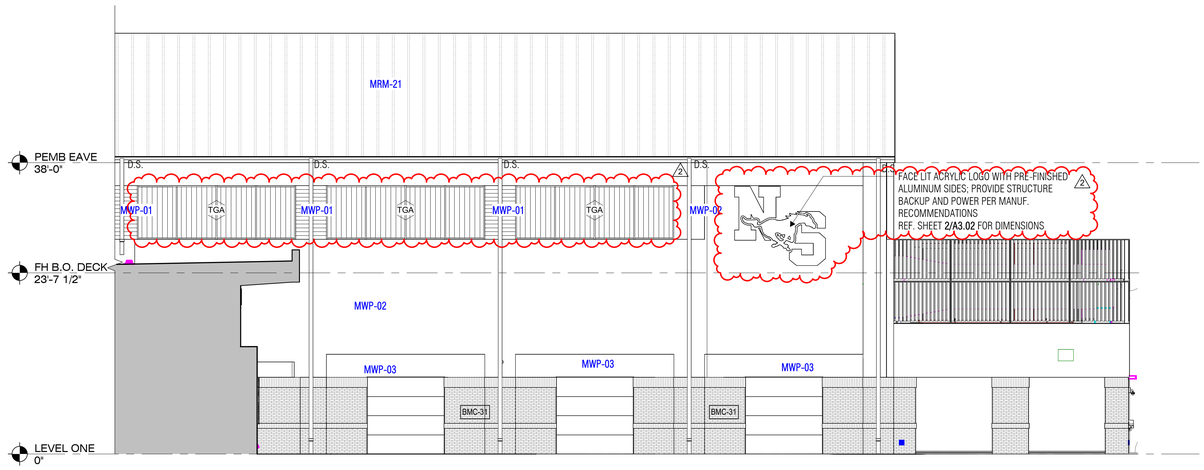
SHEET TITLE
EXTERIOR ELEVATIONS

SHEET NO.
A3.03

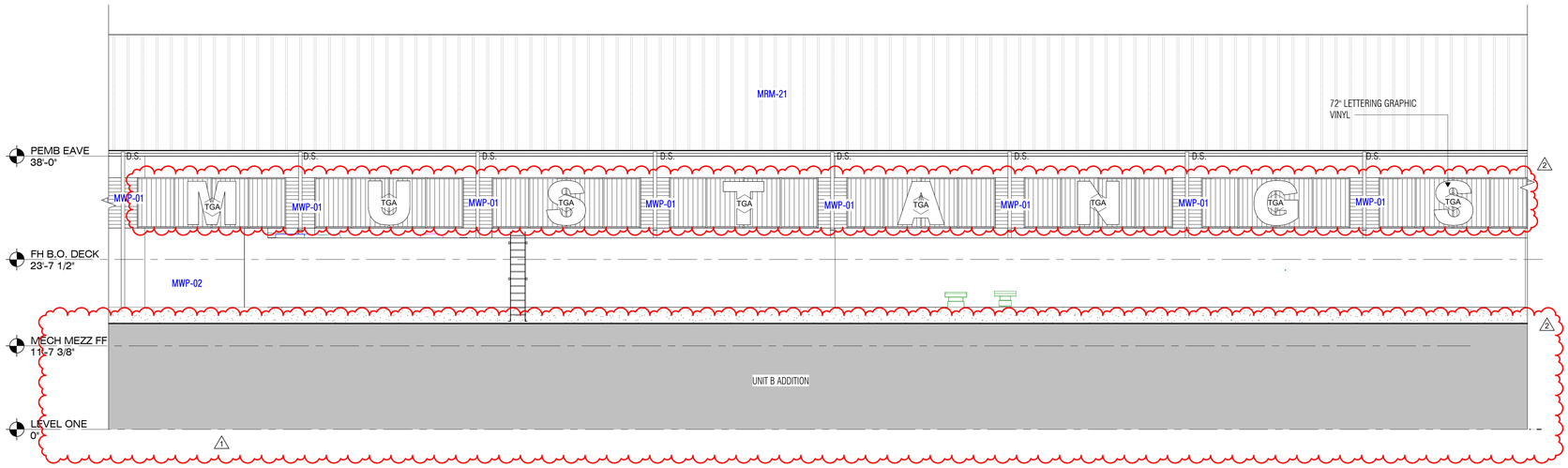
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1 EXTERIOR ELEVATION - UNIT D - SOUTH A (ALTERNATE)
SCALE: 1/8" = 1'-0"



2 EXTERIOR ELEVATION - UNIT D - SOUTH C (ALTERNATE)
SCALE: 1/8" = 1'-0"



3 EXTERIOR ELEVATION - UNIT D - SOUTH B (ALTERNATE)
SCALE: 1/8" = 1'-0"

EXTERIOR ELEVATION NOTES

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EXTERIOR ELEVATION LEGEND

DS	DOWNSPOUT	
CJ	CONTROL JOINT, REF.	**1/A3.11, 3/A3.11, 4/A3.11**
EJ	EXPANSION JOINT, REF.	**3/A4.33**
SXX	ALUMINUM STOREFRONT, REF. SHEET **A7.21**	
TGX	TRANSLUCENT WALL PANEL SYSTEM, REF. SHEET **A7.22**	

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MONIKA C. CASTILLO
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STATE OF TEXAS
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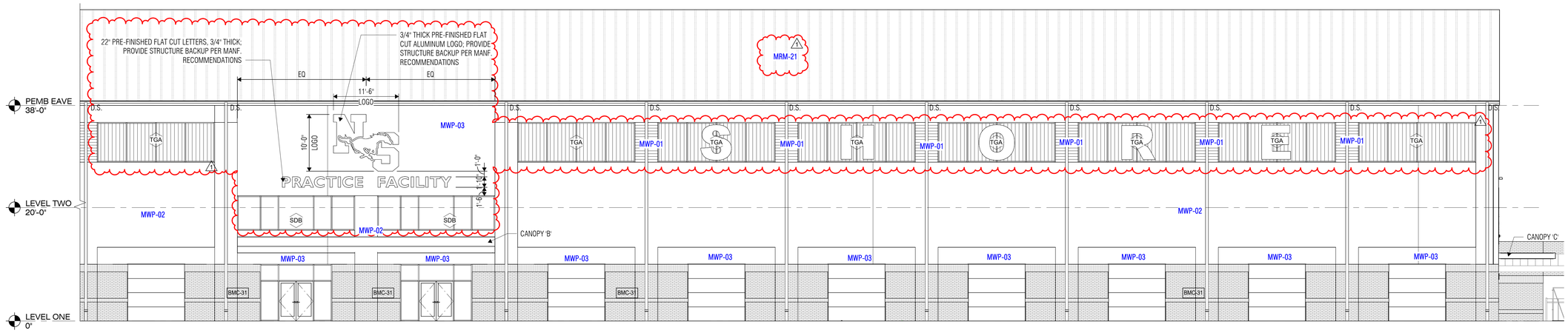
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

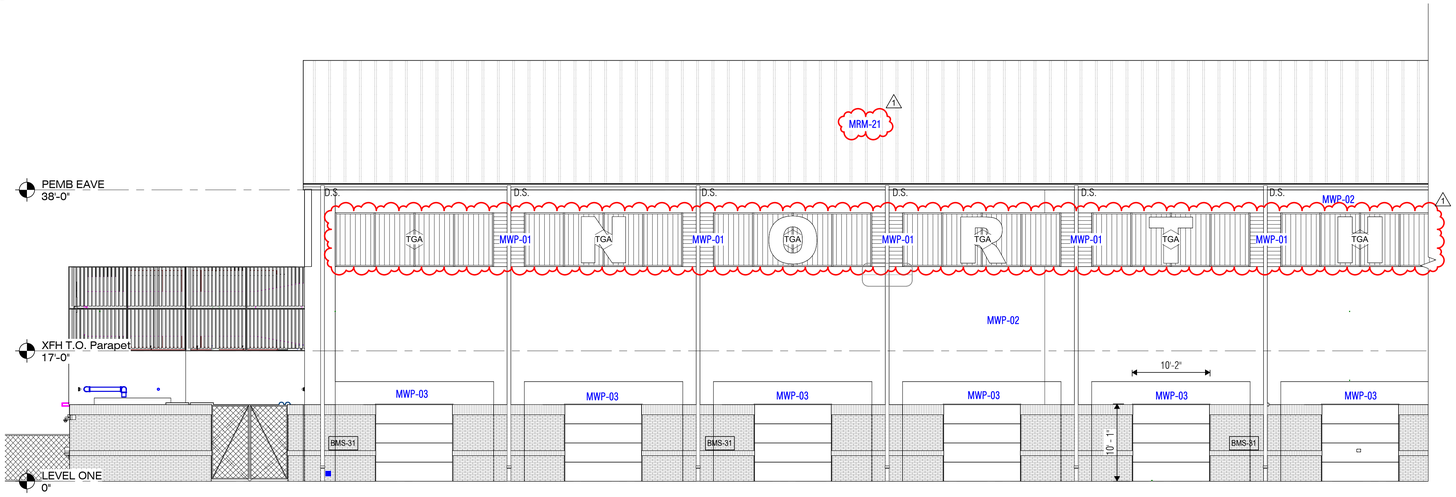
SHEET TITLE
EXTERIOR ELEVATIONS - (ALTERNATE)

SHEET NO.
A3.04

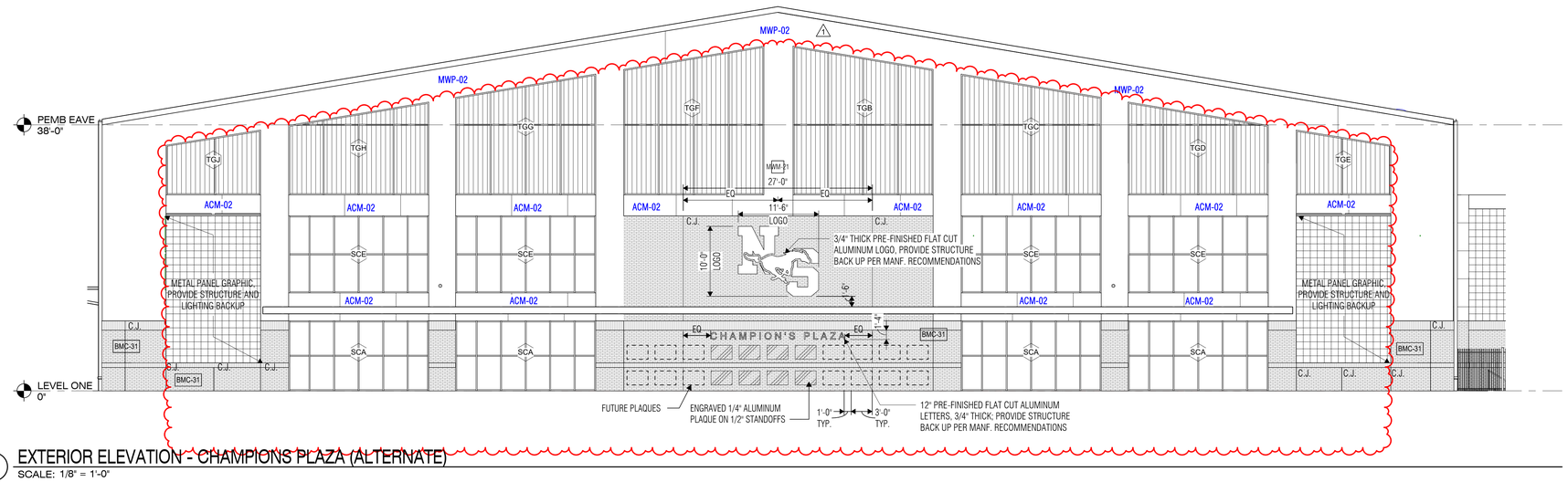
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1 EXTERIOR ELEVATION - UNIT C & D - NORTH A (ALTERNATE)
SCALE: 1/8" = 1'-0"



2 EXTERIOR ELEVATION - UNIT D - NORTH B (ALTERNATE)
SCALE: 1/8" = 1'-0"



3 EXTERIOR ELEVATION - CHAMPIONS PLAZA (ALTERNATE)
SCALE: 1/8" = 1'-0"

ARCHITECT

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26555
STATE OF TEXAS

10/17/2025

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REVISIONS

Revision No.		Revision Date
1	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
EXTERIOR ELEVATIONS - (ALTERNATE)

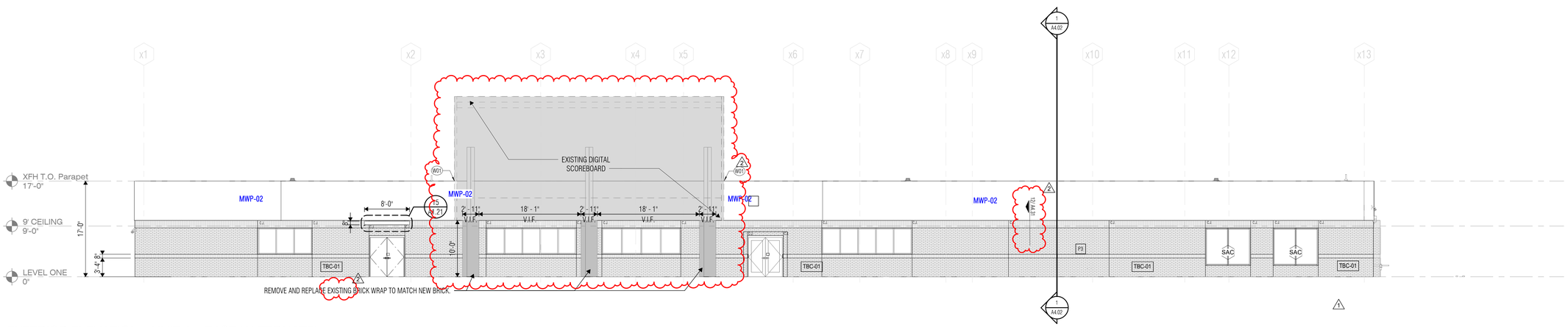
SHEET NO.
A3.05

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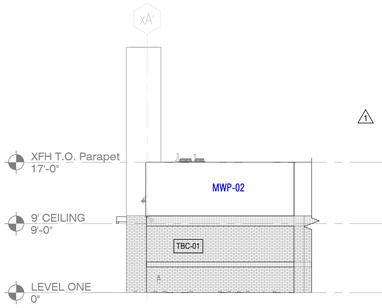
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KEY NOTE SCHEDULE

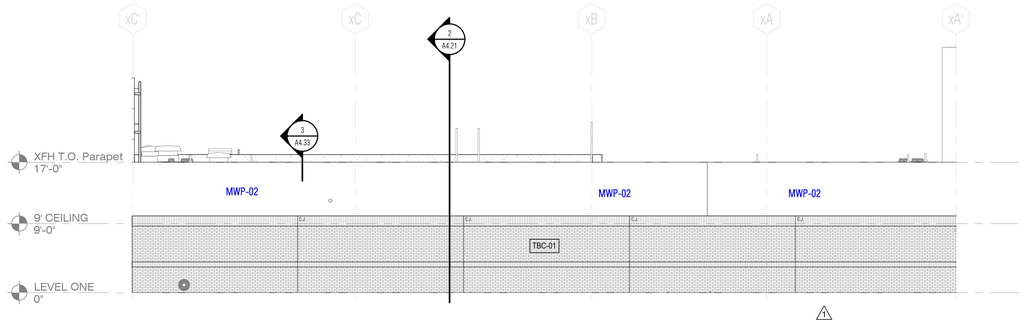
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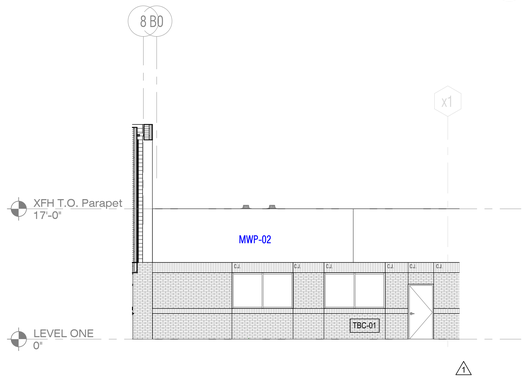
1 EXTERIOR ELEVATION - UNIT A - EAST (ALTERNATE)
SCALE: 1/8" = 1'-0"



2 EXTERIOR ELEVATION - UNIT A - SOUTH (ALTERNATE)
SCALE: 1/8" = 1'-0"



3 EXTERIOR ELEVATION - UNIT A - NORTH (ALTERNATE)
SCALE: 1/8" = 1'-0"



4 EXTERIOR ELEVATION - UNIT A - WEST (ALTERNATE)
SCALE: 1/8" = 1'-0"

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STATE OF TEXAS
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Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

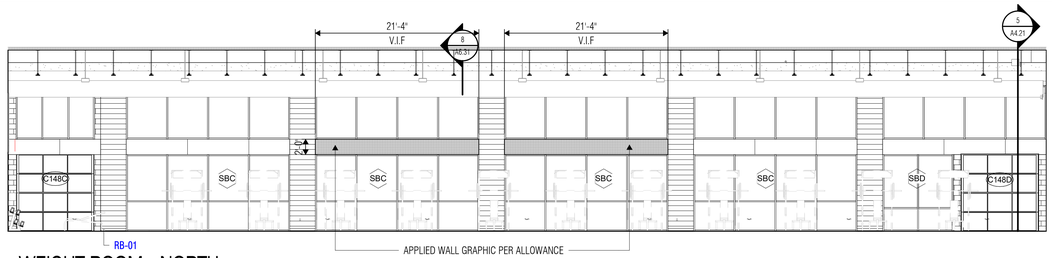
PROJECT NO.
25-0056.00

SHEET TITLE
EXTERIOR ELEVATIONS - (RECLAD ALTERNATE)

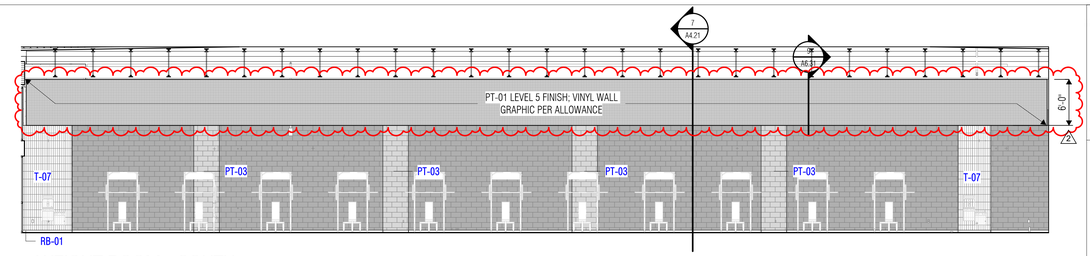
SHEET NO.
A3.06

North Shore Multi-Use Indoor Facility

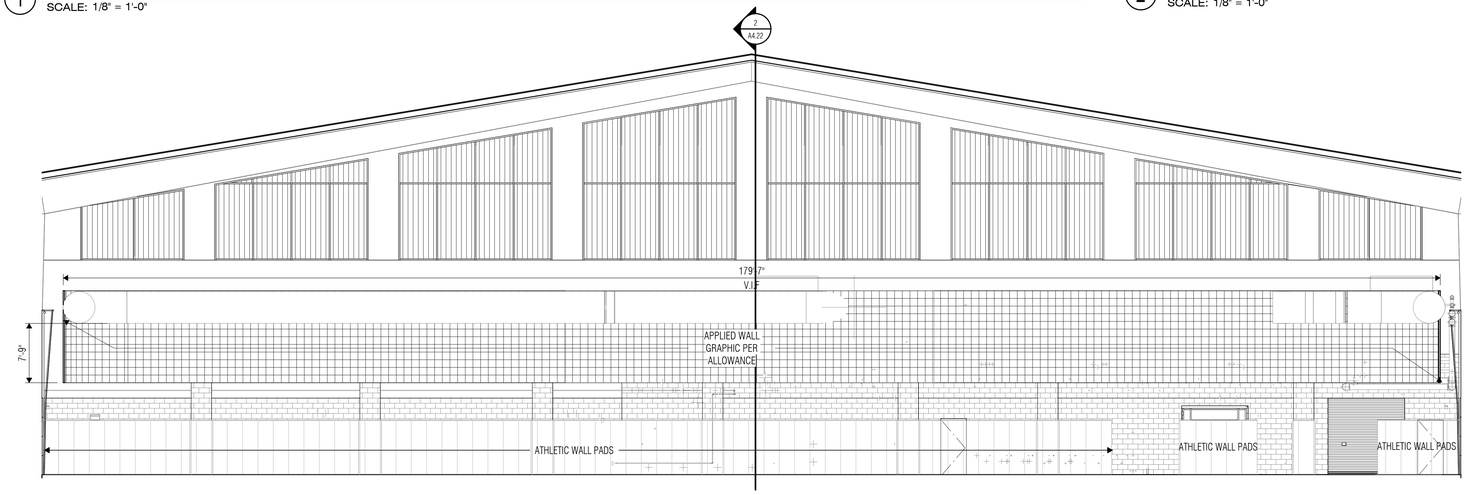
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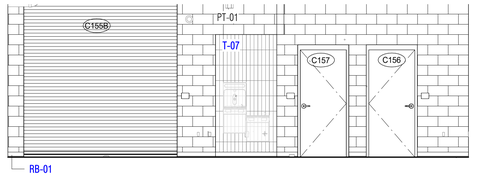
1 WEIGHT ROOM - NORTH
SCALE: 1/8" = 1'-0"



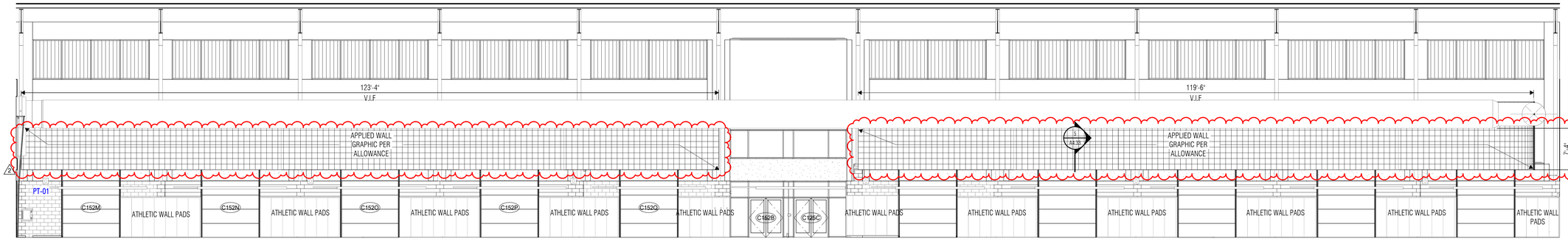
2 WEIGHT ROOM - SOUTH
SCALE: 1/8" = 1'-0"



3 PRACTICE FIELD - EAST
SCALE: 1/8" = 1'-0"



6 PRACTICE FIELD - ENTRY
SCALE: 1/4" = 1'-0"



4 PRACTICE FIELD - NORTH
SCALE: 1/8" = 1'-0"



5 PRACTICE FIELD - SOUTH
SCALE: 1/8" = 1'-0"

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT
MONIKA C. CASTILLO
28556
STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

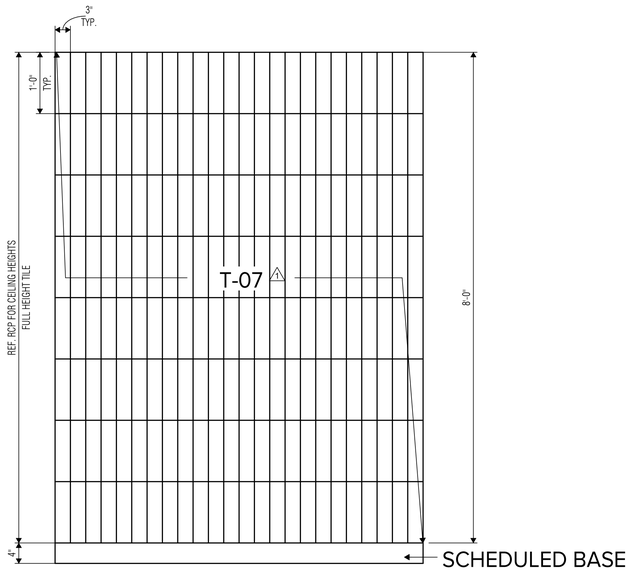
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

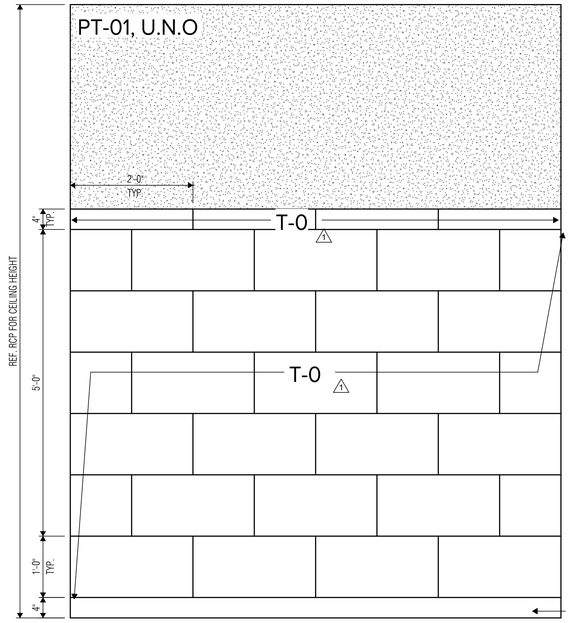
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INTERIOR ELEVATIONS

SHEET NO.
A3.23

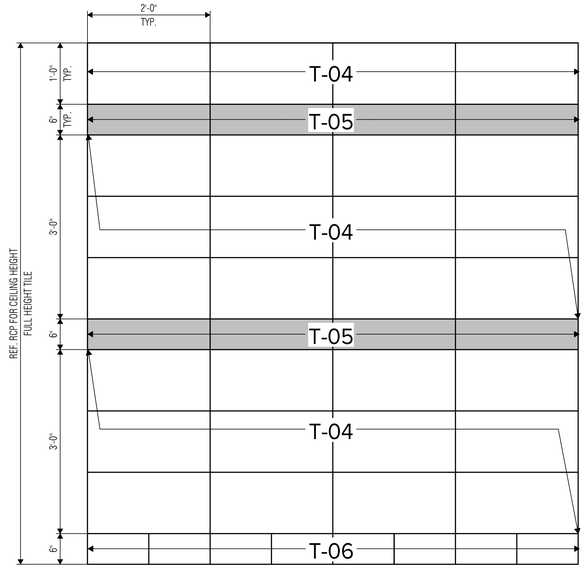
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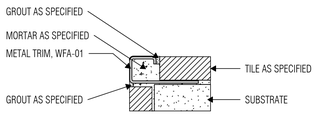
1 DRINKING FOUNTAIN TILE PATTERN
SCALE: 1" = 1'-0"



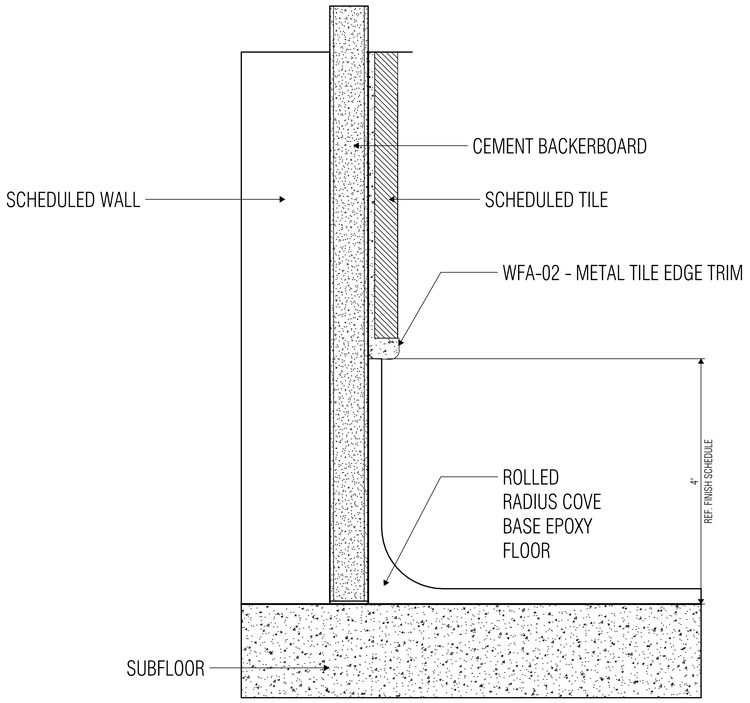
2 WAINSCOT TILE PATTERN (WTP-01)
SCALE: 1" = 1'-0"



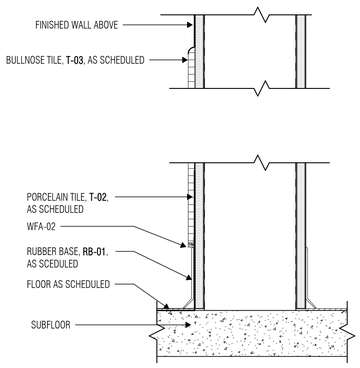
3 RESTROOM TILE PATTERN (WTP-02) 2
SCALE: 1" = 1'-0"



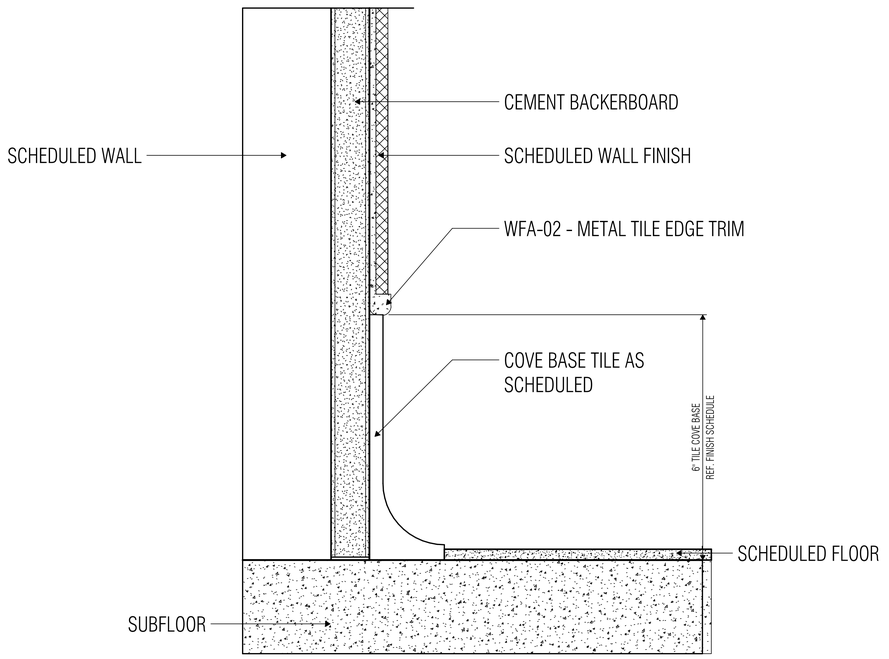
4 TILE EDGE CORNER TRIM DETAIL
SCALE: 12" = 1'-0"



5 EPOXY COVE BASE DETAIL
SCALE: 12" = 1'-0"



6 WALL TILE TO RUBBER BASE DETAIL
SCALE: 3" = 1'-0"



7 TILE BASE DETAIL
SCALE: 12" = 1'-0"

1

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MONIKA C. CASTILLO
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STATE OF TEXAS

10/17/2025

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1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

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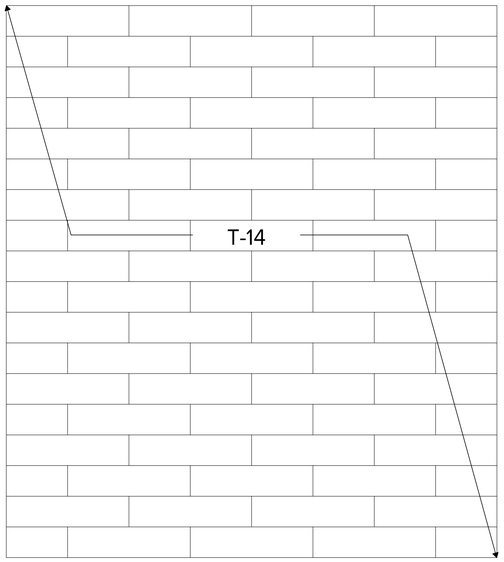
SHEET TITLE

INTERIOR ELEVATION DETAILS

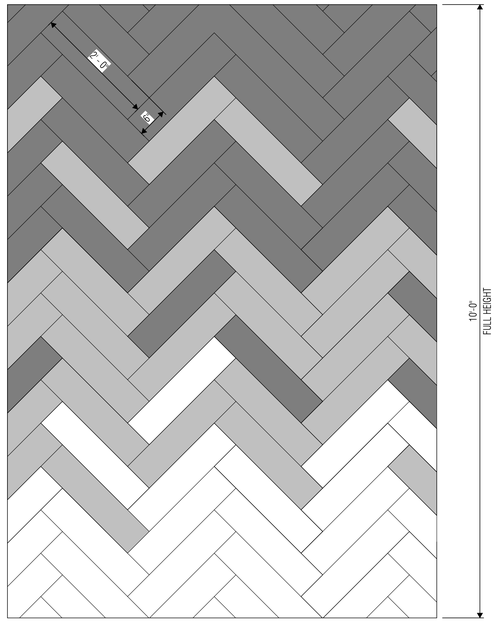
SHEET NO.

A3.31

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1 RESTROOM WALL TILE PATTERN FIELD
SCALE: 1" = 1'-0"



2 RESTROOM WALL TILE PATTERN ACCENT (WTP-03)
SCALE: 1" = 1'-0"

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Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

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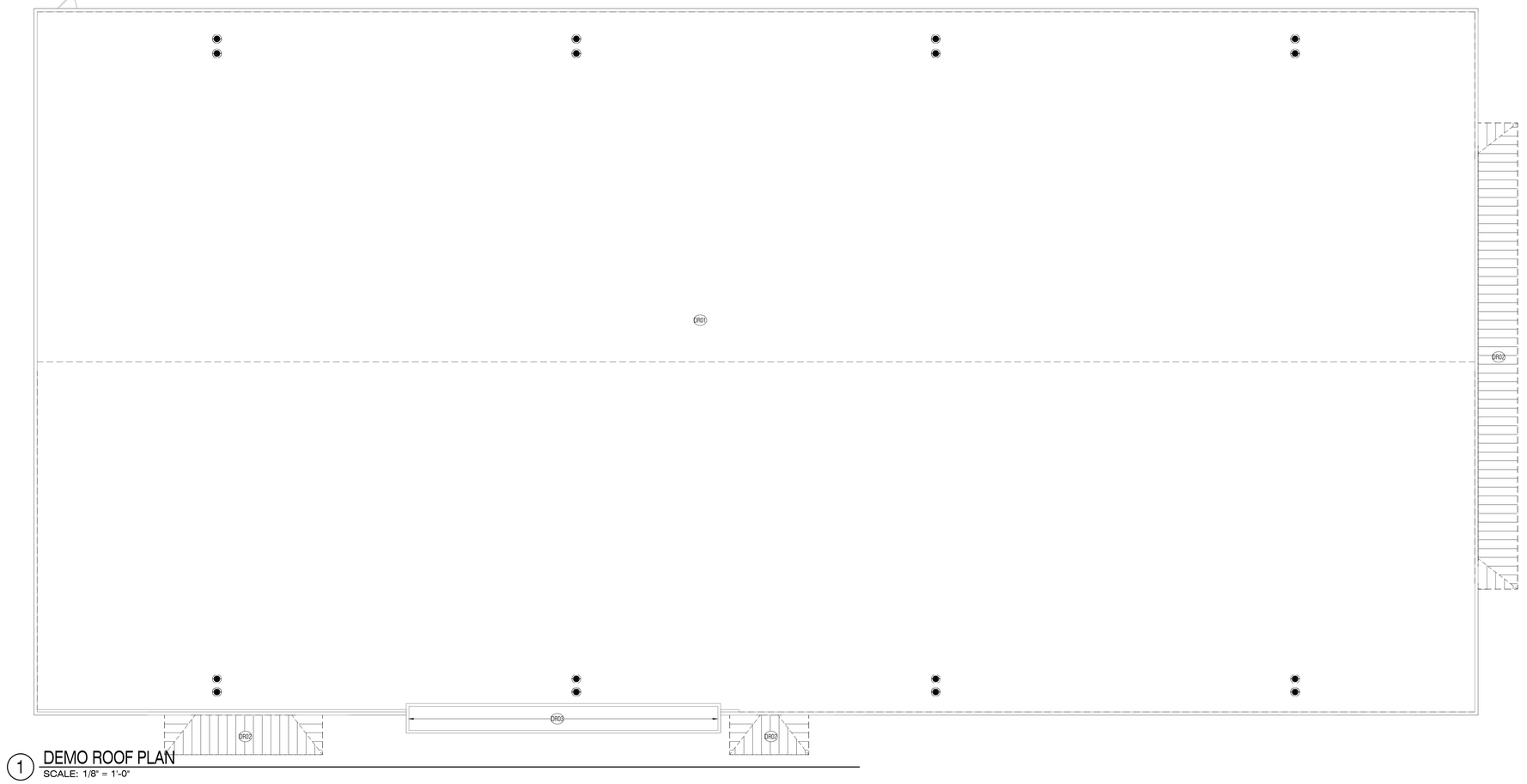
SHEET TITLE
INTERIOR ELEVATION DETAILS

SHEET NO.
A3.32

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KEY NOTE SCHEDULE

NUMBER	NOTE TEXT
DR01	REMOVE EXISTING ROOF DOWN TO DECK. REMOVE ROOF DRAIN STRAINERS, FLASHING, METAL COPING, AND ASSOCCIATED ITEMS. ROOF DRAIN BODIES TO REMAIN.
DR02	REMOVE EXISTING CANOPY AND RELATED STRUCTURE. PATCH AND REPAIR WALL FOR NEW CONSTRUCTION.
DR03	EXISTING SCOREBOARD TO REMAIN. PROTECT THROUGHOUT CONSTRUCTION.



1 DEMO ROOF PLAN
SCALE: 1/8" = 1'-0"

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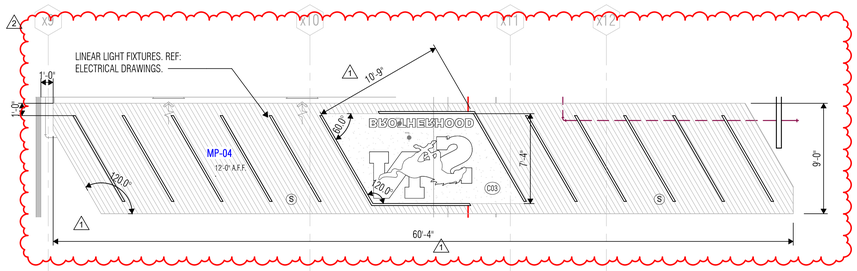
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DEMO ROOF PLAN

SHEET NO.

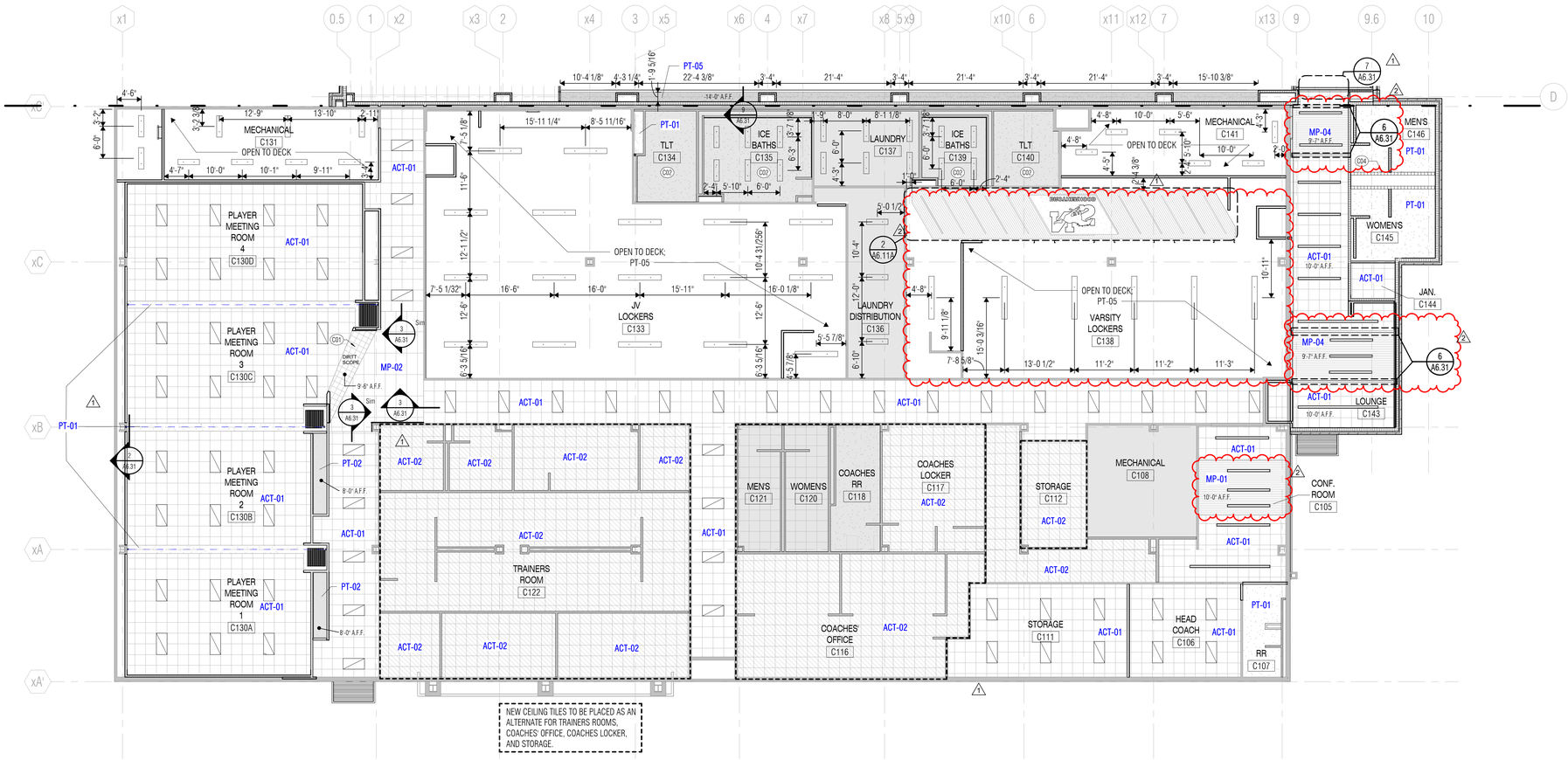
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2 ENLARGED CEILING PLAN

SCALE: 1 : 60



1 REFLECTED CEILING PLAN - LEVEL ONE - UNIT A

SCALE: 1" = 10'-0"

KEY NOTE SCHEDULE

NUMBER	NOTE TEXT
C01	EXTEND CEILING GRID IN THIS AREA WITHOUT CEILING TILES.
C02	PAINT EXISTING GYPSUM BOARD CEILING PT-01
C03	FACE LIT ACRYLIC SIGN. PROVIDE POWER PER MANUFACTURERS RECOMENDATIONS. SECURE TO STRUCTURE ABOVE WITH THREADED RODS. COORDINATE WITH ELECTRICAL DRAWINGS.
C04	18" X 18" ACCESS PANEL ON WALL.

REFLECTED CEILING PLAN NOTES

1. All ceiling heights shall be [10'-00"] A.F.F. unless noted otherwise.
2. Refer to Detail 1 / A6.31 for Typical Gypsum Board Ceiling Control Joint Detail.
3. Refer to Detail - / --- for Typical Plaster Ceiling Control Joint Detail.
4. Provide vented reveals at perimeter of all non-insulated exterior plaster soffits. Provide venting strips or perforated panels at perimeter of all non-insulated metal panel soffits (refer to Detail - / ---). Venting at non-insulated soffits shall be provided whether specifically indicated on the drawings or not.
5. Provide partition to deck (PTD) at walls surrounding spaces with exposed structure. Refer to Reflected Ceiling Plan Legend for PTD requirements.
6. Provide hold-down clips for all acoustic lay-in ceiling panels at vestibules, at sloped ceilings, at fire-rated ceilings, and within 6 feet of exterior doors without vestibules.
7. At ceiling furring details, the suspended assemblies, bracing, blocking, etc. shown on the details are for schematic representation only. Provide stable, secure and permanent assemblies at these locations in accordance with recommended light-gage steel framing installation practices.
8. At partitions that do not extend to deck above, extend partition 4" minimum above highest adjacent ceiling and brace per Floor Plan Legend and Floor Plan Notes.

REFLECTED CEILING PLAN LEGEND

EXISTING TO REMAIN WITH LIMITED OR NO ARCHITECTURAL WORK REQUIRED IN THIS AREA. REFER TO CIVIL, MEPT AND STRUCTURAL DRAWINGS FOR ANY ADDITIONAL WORK IN AREA.

CEILINGS:

- ACT-01 — ACOUSTIC LAY-IN CEILING TILE 24" X 24"
- ACT-02 — EXISTING GRID TO REMAIN, NEW ACOUSTIC LAY-IN CEILING TILE 24" X 24"
- EXISTING ACOUSTIC LAY-IN CEILING TILE TO REMAIN
- MP-01 — METAL PANEL
- MP-02 — PERFORATED METAL CEILING WITH BACK LIGHTING. BASIS OF DESIGN: ARKTURA VAPOR FREQUENCY. 48" X 24"
- MP-03 — PERFORATED METAL CEILING WITH BACK LIGHTING. BASIS OF DESIGN: ARKTURA VAPOR TRAIL WITH CUSTOM DESIGN. 48" X 24"
- MP-04 — LINEAR METAL - WOOD LOOK
- EXISTING GYPSUM BOARD CEILING TO REMAIN
- PT-01 — 5/8" GYPSUM BOARD CEILING PAINTED PT-01, U.N.O.
- HVAC SUPPLY AND RETURN GRILLES Shown for location purposes only. Refer to Mechanical Drawings.
- 1 Hour Fire Barrier Partition
- 2 Hour Fire Barrier Partition
- Smoke Partition
- Sound Partition
- Non-rated Partition to Deck

1-HOUR FIRE BARRIER PARTITION. Extend partition to deck above and seal with firestopping as required for fire-resistance requirements. Paint stenciled label on partitions above ceiling at 15'-0" o.c. as follows: *'1-HOUR FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS'*. Brace partitions per Floor Plan General Notes.

2-HOUR FIRE BARRIER PARTITION. Extend partition to deck above and seal with firestopping as required for fire-resistance requirements. Paint stenciled label on partitions above ceiling at 15'-0" o.c. as follows: *'2-HOUR FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS'*. Brace partitions per Floor Plan General Notes.

SMOKE PARTITION. Extend partition to deck above and seal with sealant as required to resist the passage of smoke. Paint stenciled label on partitions above ceiling at 15'-0" o.c. as follows: 'SMOKE BARRIER - PROTECT ALL OPENINGS'. Seal all joints and penetrations. Brace partitions per Floor Plan General Notes.

ACOUSTICAL DRYWALL PARTITION / SOUND-CONDITIONED CMU PARTITION. Extend partition to deck above and seal with acoustical sealant. Seal all joints and penetrations with acoustical sealant. Brace partitions per Floor Plan General Notes.

NON-RATED PARTITION TO DECK. Extend partition to deck above. Brace partitions per Floor Plan General Notes.

CEILING SCHEDULE

TYPE MARK	TYPE
	Generic
ACT-01	2' x 2' ACT System
ACT-02	2' x 2' ACT (NEW TILES ONLY)
LMC-01	<varies>
PT-01	<varies>

KEY PLAN

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

10/17/2025

ISSUED: OCTOBER 1, 2025

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Revision No.	Revision Date
1 Addendum 1	10/08/2025
2 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

25-0056.00

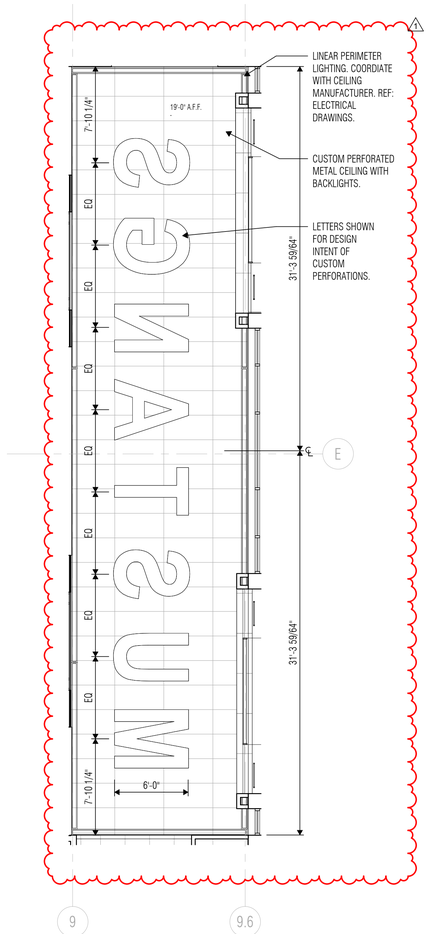
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REFLECTED CEILING PLAN - LEVEL ONE - UNIT A

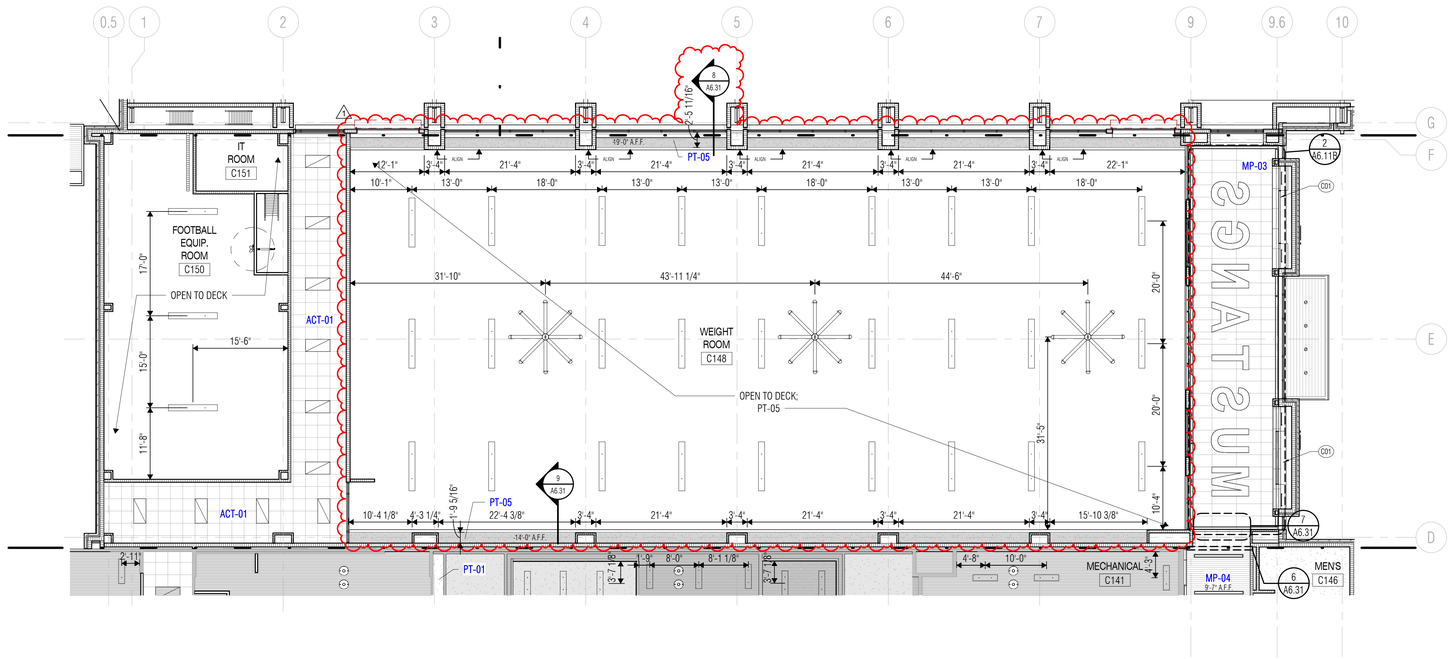
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A6.11A

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2 ENLARGED CEILING PLAN
SCALE: 1 : 60



1 REFLECTED CEILING PLAN - LEVEL ONE - UNIT B
SCALE: 1" = 10'-0"

KEY NOTE SCHEDULE

NUMBER	NOTE TEXT
C01	EXTEND CEILING GRID IN THIS AREA WITHOUT CEILING TILES.

REFLECTED CEILING PLAN NOTES

1. All ceiling heights shall be [10'-00"] A.F.F. unless noted otherwise.
2. Refer to Detail 1 / A6.31 for Typical Gypsum Board Ceiling Control Joint Detail.
3. Refer to Detail - / --- for Typical Plaster Ceiling Control Joint Detail.
4. Provide vented reveals at perimeter of all non-insulated exterior plaster soffits. Provide venting strips or perforated panels at perimeter of all non-insulated metal panel soffits (refer to Detail - / ---). Venting at non-insulated soffits shall be provided whether specifically indicated on the drawings or not.
5. Provide partition to deck (PTD) at walls surrounding spaces with exposed structure. Refer to Reflected Ceiling Plan Legend for PTD requirements.
6. Provide hold-down clips for all acoustic lay-in ceiling panels at vestibules, at sloped ceilings, at fire-rated ceilings, and within 6 feet of exterior doors without vestibules.
7. At ceiling furring details, the suspended assemblies, bracing, blocking, etc. shown on the details are for schematic representation only. Provide stable, secure and permanent assemblies at these locations in accordance with recommended light-gage steel framing installation practices.
8. At partitions that do not extend to deck above, extend partition 4" minimum above highest adjacent ceiling and brace per Floor Plan Legend and Floor Plan Notes.

REFLECTED CEILING PLAN LEGEND

EXISTING TO REMAIN WITH LIMITED OR NO ARCHITECTURAL WORK REQUIRED IN THIS AREA. REFER TO CIVIL, MEPT AND STRUCTURAL DRAWINGS FOR ANY ADDITIONAL WORK IN AREA.

CEILINGS:

- ACT-01 — ACOUSTIC LAY-IN CEILING TILE 24" X 24"
- ACT-02 — EXISTING GRID TO REMAIN, NEW ACOUSTIC LAY-IN CEILING TILE 24" X 24"
- EXISTING ACOUSTIC LAY-IN CEILING TILE TO REMAIN
- MP-01 — METAL PANEL
- MP-02 — PERFORATED METAL CEILING WITH BACK LIGHTING. BASIS OF DESIGN: ARKTURA VAPOR FREQUENCY. 48" X 24"
- MP-03 — PERFORATED METAL CEILING WITH BACK LIGHTING. BASIS OF DESIGN: ARKTURA VAPOR TRAIL WITH CUSTOM DESIGN. 48" X 24"
- MP-04 — LINEAR METAL - WOOD LOOK
- EXISTING GYPSUM BOARD CEILING TO REMAIN
- PT-01 — 5/8" GYPSUM BOARD CEILING PAINTED PT-01, U.N.O.
- HVAC SUPPLY AND RETURN GRILLES Shown for location purposes only. Refer to Mechanical Drawings.
- 1 Hour Fire Barrier Partition
- 2 Hour Fire Barrier Partition
- Smoke Partition
- Sound Partition
- Non-rated Partition to Deck

1-HOUR FIRE BARRIER PARTITION. Extend partition to deck above and seal with firestopping as required for fire-resistance requirements. Paint stenciled label on partitions above ceiling at 15'-0" o.c. as follows: *'1-HOUR FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS'*. Brace partitions per Floor Plan General Notes.

2-HOUR FIRE BARRIER PARTITION. Extend partition to deck above and seal with firestopping as required for fire-resistance requirements. Paint stenciled label on partitions above ceiling at 15'-0" o.c. as follows: *'2-HOUR FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS'*. Brace partitions per Floor Plan General Notes.

SMOKE PARTITION. Extend partition to deck above and seal with sealant as required to resist the passage of smoke. Paint stenciled label on partitions above ceiling at 15'-0" o.c. as follows: 'SMOKE BARRIER - PROTECT ALL OPENINGS'. Seal all joints and penetrations. Brace partitions per Floor Plan General Notes.

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NON-RATED PARTITION TO DECK. Extend partition to deck above. Brace partitions per Floor Plan General Notes.

CEILING SCHEDULE

TYPE MARK	TYPE
	Generic
ACT-01	2' x 2' ACT System
ACT-02	2' x 2' ACT (NEW TILES ONLY)
LMC-01	<varies>
PT-01	<varies>

KEY PLAN

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MONIKA C. CASTILLO 26556 REGISTERED ARCHITECT STATE OF TEXAS
10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

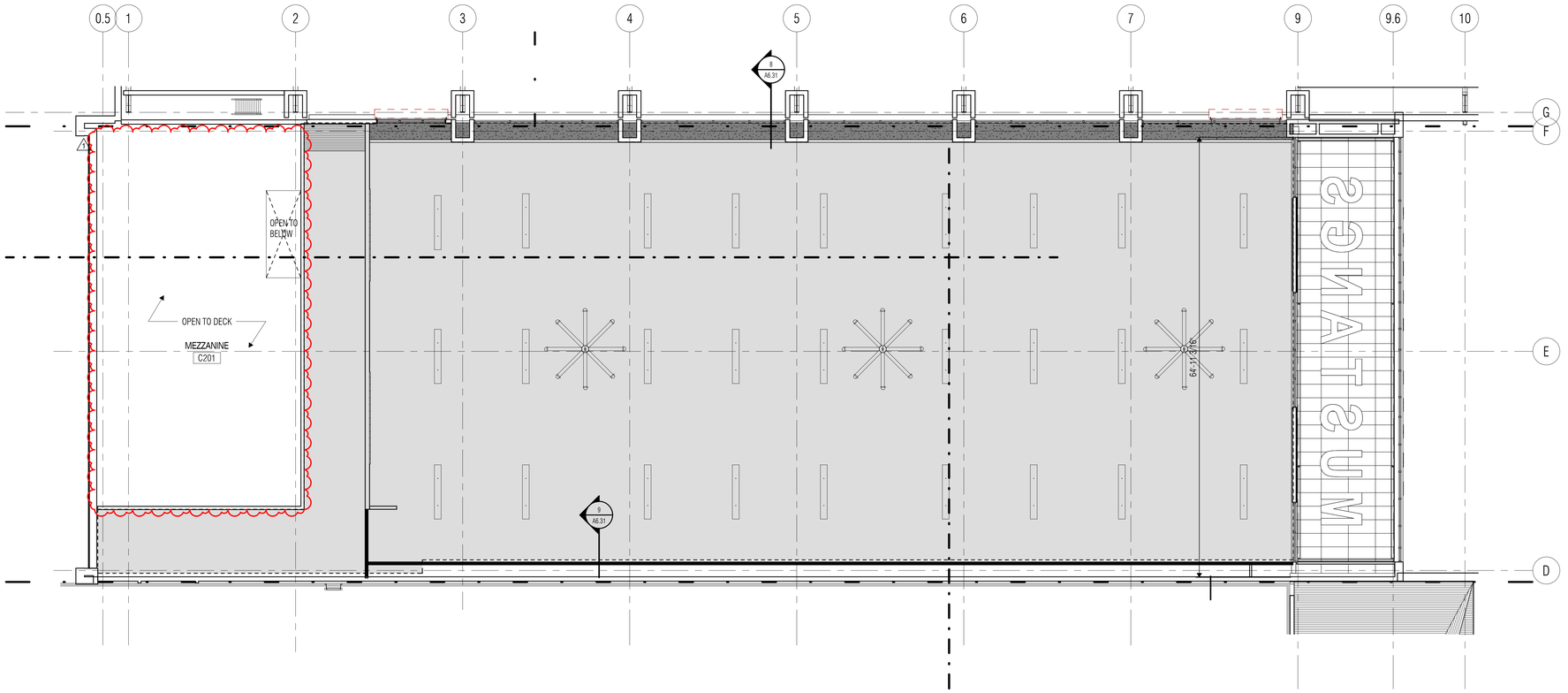
PROJECT NO.
25-0056.00

SHEET TITLE
REFLECTED CEILING PLAN - LEVEL ONE - UNIT B

SHEET NO.
A6.11B

North Shore Multi-Use Indoor Facility

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1 REFLECTED CIELING PLAN - LEVEL TWO- UNIT B
SCALE: 1/8" = 1'-0"

REFLECTED CEILING PLAN NOTES

1. All ceiling heights shall be [10'-00"] A.F.F. unless noted otherwise.
2. Refer to Detail 1 / A6.31 for Typical Gypsum Board Ceiling Control Joint Detail.
3. Refer to Detail - / --- for Typical Plaster Ceiling Control Joint Detail.
4. Provide vented reveals at perimeter of all non-insulated exterior plaster soffits. Provide venting strips or perforated panels at perimeter of all non-insulated metal panel soffits (refer to Detail - / ---). Venting at non-insulated soffits shall be provided whether specifically indicated on the drawings or not.
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REFLECTED CEILING PLAN LEGEND

EXISTING TO REMAIN WITH LIMITED OR NO ARCHITECTURAL WORK REQUIRED IN THIS AREA. REFER TO CIVIL, MEPT AND STRUCTURAL DRAWINGS FOR ANY ADDITIONAL WORK IN AREA.

CEILINGS:

ACT-01 ACOUSTIC LAY-IN CEILING TILE 24" X 24"

ACT-02 EXISTING GRID TO REMAIN, NEW ACOUSTIC LAY-IN CEILING TILE 24" X 24"

1 EXISTING ACOUSTIC LAY-IN CEILING TILE TO REMAIN

MP-01 METAL PANEL

MP-02 PERFORATED METAL CEILING WITH BACK LIGHTING. BASIS OF DESIGN: ARKTURA VAPOR FREQUENCY. 48" X 24"

MP-03 PERFORATED METAL CEILING WITH BACK LIGHTING. BASIS OF DESIGN: ARKTURA VAPOR TRAIL WITH CUSTOM DESIGN. 48" X 24"

MP-04 LINEAR METAL - WOOD LOOK

EXISTING GYPSUM BOARD CEILING TO REMAIN

PT-01 5/8" GYPSUM BOARD CEILING PAINTED PT-01, U.N.O.

HVAC SUPPLY AND RETURN GRILLES Shown for location purposes only. Refer to Mechanical Drawings.

1 Hour Fire Barrier Partition

2 Hour Fire Barrier Partition

Smoke Partition

Sound Partition

Non-rated Partition to Deck

1-HOUR FIRE BARRIER PARTITION. Extend partition to deck above and seal with firestopping as required for fire-resistance requirements. Paint stenciled label on partitions above ceiling at 15'-0" o.c. as follows: *'1-HOUR FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS'*. Brace partitions per Floor Plan General Notes.

2-HOUR FIRE BARRIER PARTITION. Extend partition to deck above and seal with firestopping as required for fire-resistance requirements. Paint stenciled label on partitions above ceiling at 15'-0" o.c. as follows: *'2-HOUR FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS'*. Brace partitions per Floor Plan General Notes.

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CEILING SCHEDULE

TYPE MARK	TYPE
	Generic
ACT-01	2' x 2' ACT System
ACT-02	2' x 2' ACT (NEW TILES ONLY)
LMC-01	<varies>
PT-01	<varies>

KEY PLAN
C D
B
A

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REGISTERED ARCHITECT MONIKA C. CASTILLO 26556 STATE OF TEXAS
10/17/2025

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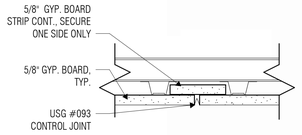
Director	Monika Castillo
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Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

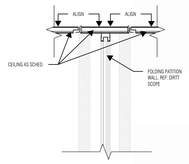
SHEET TITLE
REFLECTED CEILING PLAN - LEVEL TWO - UNIT B

SHEET NO.
A6.12B

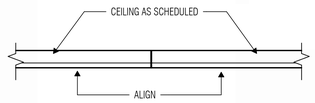
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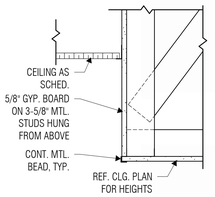
1 TYP. GYP. BD CONTROL JOINT DETAIL
SCALE: NTS



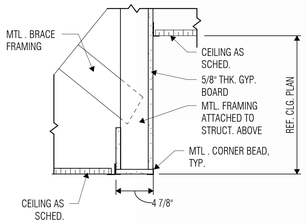
2 CEILING SECTION DETAIL
SCALE: NTS



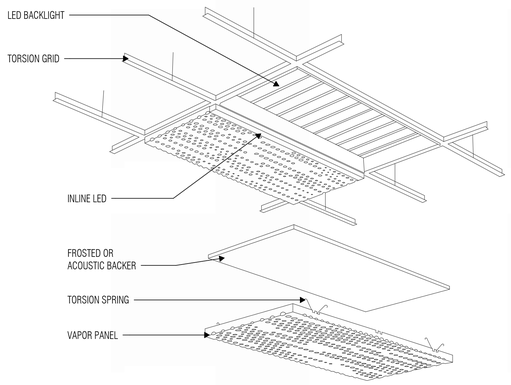
3 CEILING SECTION DETAIL
SCALE: NTS



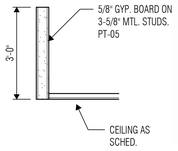
6 C508 - DETAIL AT FURR DOWN
SCALE: 1 1/2" = 1'-0"



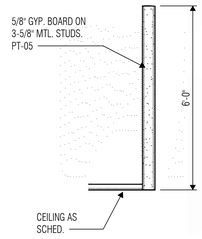
7 C512 - DETAIL AT FURR DOWN (NO REVEAL)
SCALE: 1 1/2" = 1'-0"



5 VAPOR METAL PANEL DETAIL
SCALE: NTS



8 CEILING SECTION DETAIL
SCALE: 1/2" = 1'-0"



9 CEILING SECTION DETAIL
SCALE: 1/2" = 1'-0"

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT
MONIKA A. C. CASTILLO
26555
STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

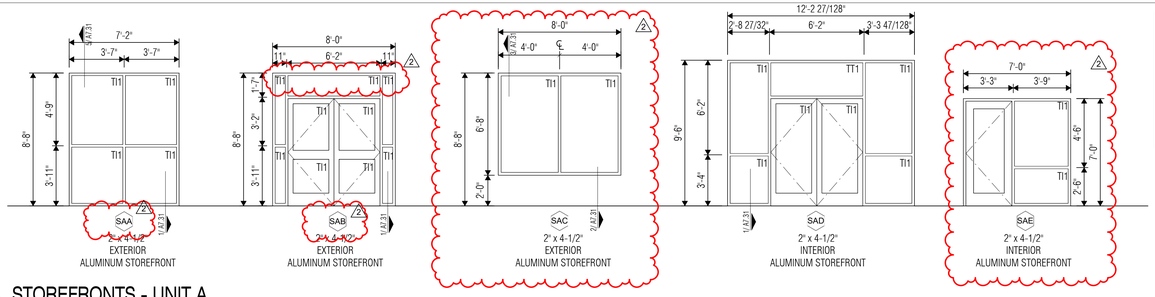
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
CEILING DETAILS

SHEET NO.
A6.31

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GLAZING SYSTEM LEGEND

STOREFRONT FRAMING WITH 3/16" THICK 'HEAVY WALL' MATERIAL. TYPICAL AT ALL DOOR FRAME MEMBERS IN STOREFRONT GLAZING SYSTEMS.

CURTAIN WALL FRAMING WITH STEEL REINFORCING PROVIDED BY MANUFACTURER.

GLAZING SYSTEM NOTES

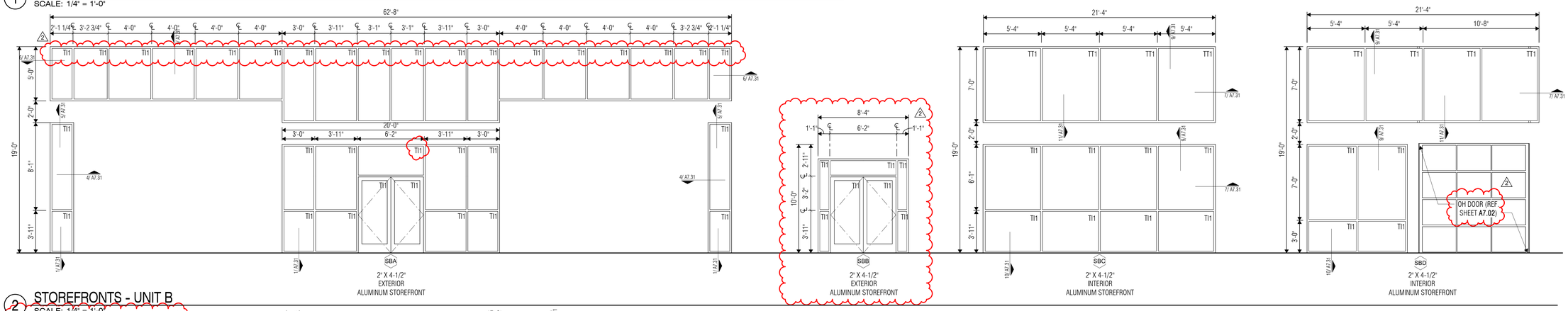
1. Overall dimensions of glazing system elevations reflect rough opening dimensions, inclusive of perimeter joints.
2. Provide 3/16" thick heavy wall framing members at all door frames in exterior and interior aluminum Storefront systems.
3. Provide 3/16" thick heavy wall door adapters at all door frame members in exterior and interior aluminum Curtain Wall systems.
4. Door opening dimensions in Curtain Wall systems reflect 1" door adapters at jamb conditions, and 1-3/4" door adapters at head conditions. Adjust dimensions between mullions at door openings in curtain wall systems as required for actual size of door adapters provided. Door sizes as identified in Door Schedule shall be maintained.
5. Refer to **5 / A7.02** for Typical Push/Pull Mounting Heights Detail for aluminum glass doors.

GLAZING TYPE LEGEND

Material: Description	Material: Name
CT4	Glazing - Clear
TT1	Glazing - Insulated, Tinted
TI1	Glazing - Insulated, Tinted, Impact Resistant
MP	Metal - Perforated
EXTERIOR FINISH	Metal - Wall Panel-02
Stainless Steel 18/8, polished finish	Shiny Red
TWP	Translucent Wall Panel

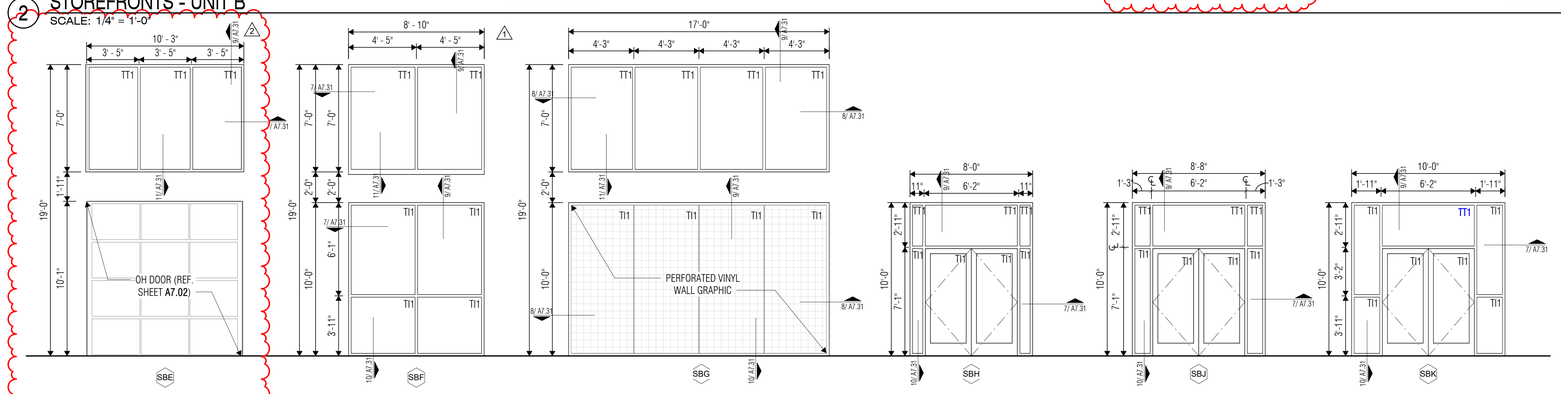
1 STOREFRONTS - UNIT A

SCALE: 1/4" = 1'-0"



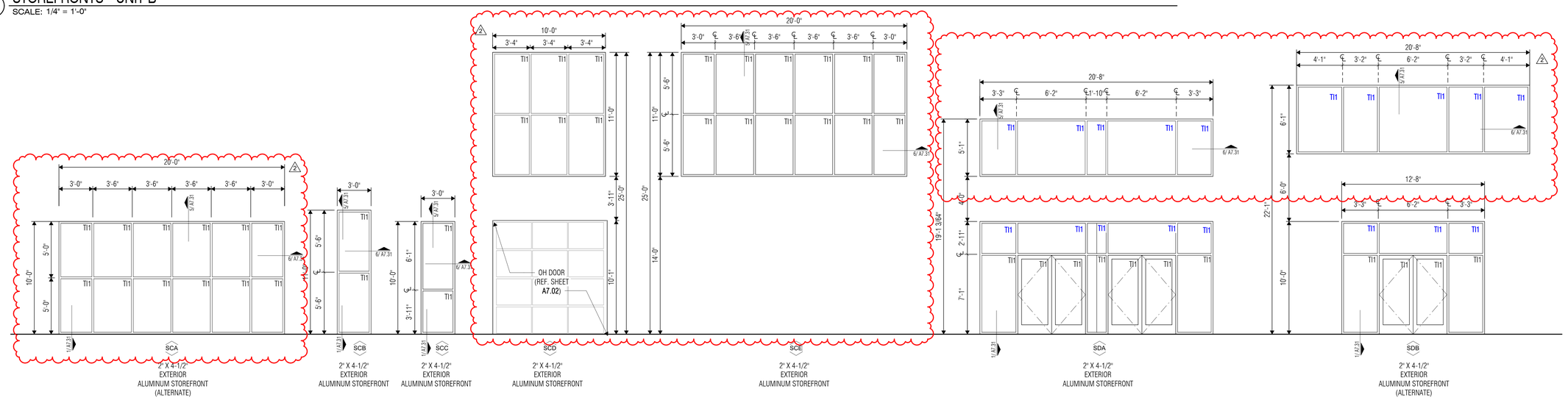
2 STOREFRONTS - UNIT B

SCALE: 1/4" = 1'-0"



3 STOREFRONTS - UNIT B

SCALE: 1/4" = 1'-0"



4 STOREFRONTS - UNITS C & D

SCALE: 1/4" = 1'-0"

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10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 1	10/08/2025
2 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

25-0056.00

SHEET TITLE

GLAZING ASSEMBLY ELEVATIONS

SHEET NO.

A7.21

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GLAZING SYSTEM LEGEND

STOREFRONT FRAMING WITH 3/16" THICK 'HEAVY WALL' MATERIAL. TYPICAL AT ALL DOOR FRAME MEMBERS IN STOREFRONT GLAZING SYSTEMS.

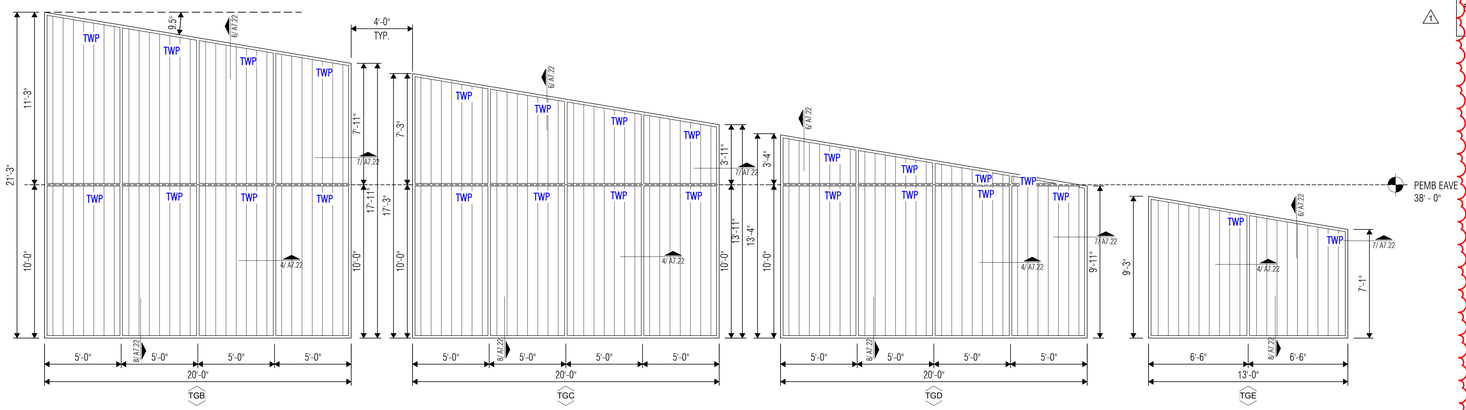
CURTAIN WALL FRAMING WITH STEEL REINFORCING PROVIDED BY MANUFACTURER.

GLAZING SYSTEM NOTES

1. Overall dimensions of glazing system elevations reflect rough opening dimensions, inclusive of perimeter joints.
2. Provide 3/16" thick heavy wall framing members at all door frames in exterior and interior aluminum Storefront systems.
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MP	Metal - Perforated
EXTERIOR FINISH	Metal - Wall Panel-02
Stainless Steel 18/8, polished finish	Shiny Red
TWP	Translucent Wall Panel



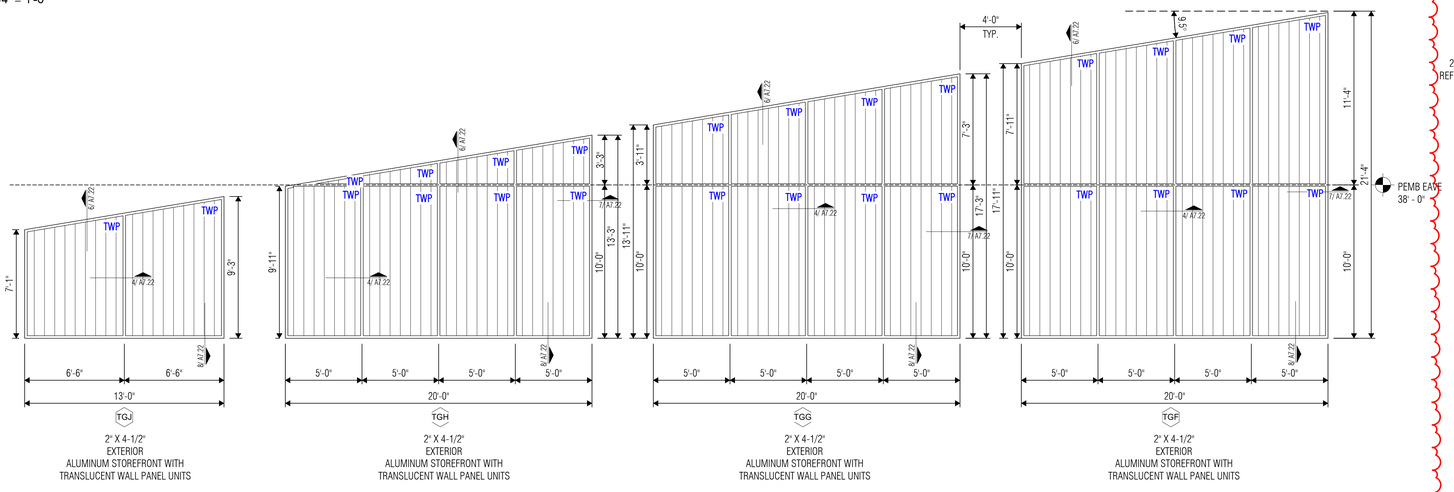
2" X 4-1/2" EXTERIOR ALUMINUM STOREFRONT WITH TRANSLUCENT WALL PANEL UNITS

2" X 4-1/2" EXTERIOR ALUMINUM STOREFRONT WITH TRANSLUCENT WALL PANEL UNITS

2" X 4-1/2" EXTERIOR ALUMINUM STOREFRONT WITH TRANSLUCENT WALL PANEL UNITS

2" X 4-1/2" EXTERIOR ALUMINUM STOREFRONT WITH TRANSLUCENT WALL PANEL UNITS

1 TRANSLUSCENT WALL PANEL ELEVATIONS
SCALE: 1/4" = 1'-0"



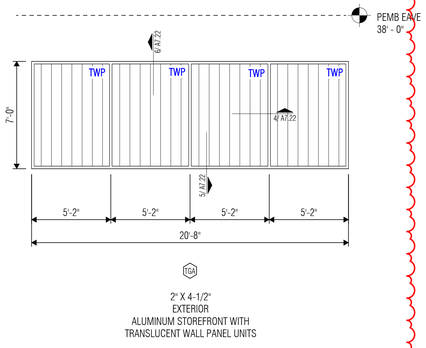
2" X 4-1/2" EXTERIOR ALUMINUM STOREFRONT WITH TRANSLUCENT WALL PANEL UNITS

2" X 4-1/2" EXTERIOR ALUMINUM STOREFRONT WITH TRANSLUCENT WALL PANEL UNITS

2" X 4-1/2" EXTERIOR ALUMINUM STOREFRONT WITH TRANSLUCENT WALL PANEL UNITS

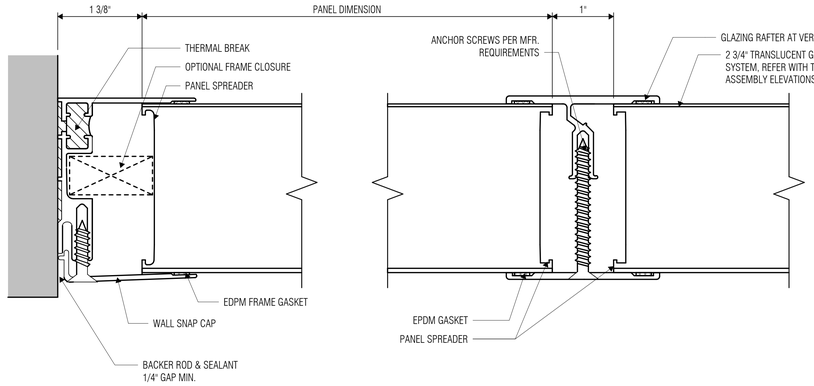
2" X 4-1/2" EXTERIOR ALUMINUM STOREFRONT WITH TRANSLUCENT WALL PANEL UNITS

2 TRANSLUSCENT WALL PANEL ELEVATIONS
SCALE: 1/4" = 1'-0"

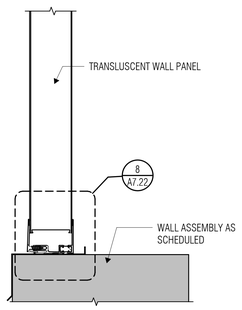


2" X 4-1/2" EXTERIOR ALUMINUM STOREFRONT WITH TRANSLUCENT WALL PANEL UNITS

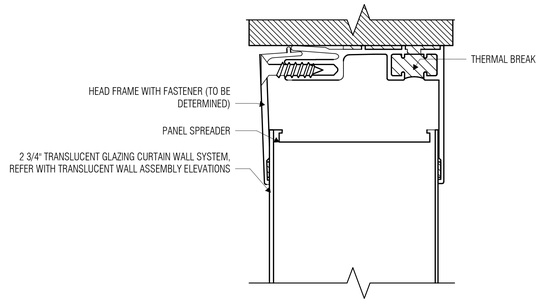
3 TRANSLUSCENT WALL PANEL ELEVATIONS
SCALE: 1/4" = 1'-0"



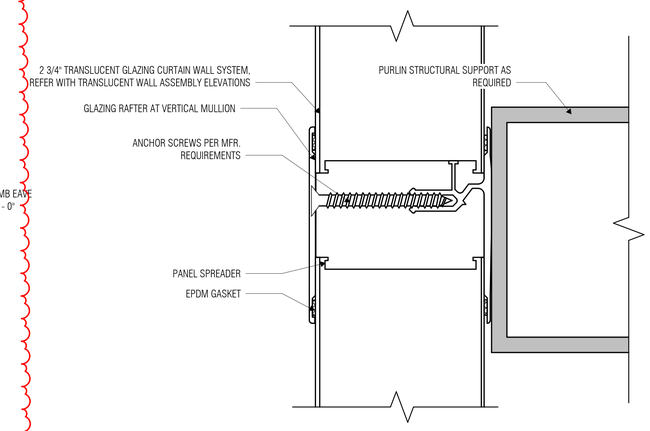
4 TWP CURTAIN WALL - PLAN VIEW
SCALE: 12" = 1'-0"



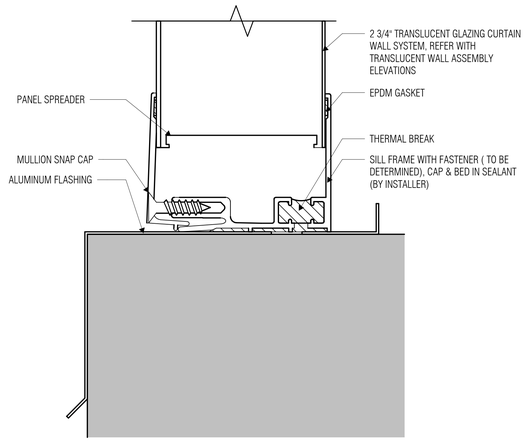
5 TWP CURTAIN WALL - SILL
SCALE: 3" = 1'-0"



6 TWP CURTAIN WALL - HEAD
SCALE: 12" = 1'-0"



7 TWP CURTAIN WALL - GIRT
SCALE: 12" = 1'-0"



8 TWP CURTAIN WALL - SILL DETAIL
SCALE: 12" = 1'-0"

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT MONIKA C. CASTILLO 26556 STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

25-0056.00

SHEET TITLE

TRANSLUCENT PANEL ASSEMBLY ELEVATIONS

SHEET NO.

A7.22

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FINISH ACCESSORY, FURNITURE AND EQUIPMENT SCHEDULE

NOTE: ALL MATERIALS, PRODUCTS, SIZES, COLORS AND PATTERNS ARE THE BASIS OF DESIGN. REFERENCE PROJECT MANUAL FOR ADDITIONAL APPROVED MANUFACTURERS MEETING THE DESIGN INTENT. SUBSTITUTIONS WILL BE CONSIDERED WHEN SUBMITTED IN COMPLIANCE WITH SECTION 01 62 00 – PRODUCT OPTIONS.

MARK	DESCRIPTION	SPEC SECTION	MANUFACTURER INFO			SIZE	COMMENTS
			MANUFACTURER	SERIES/STYLE	COLOR/FINISH		
FLOOR FINISH ACCESSORY							
FFA-01	Floor Transition	09 68 00	Schluter	Reno-TK	Anodized Aluminum	--	Tile to Carpet, Carpet to Terrazzo, Tile to Resilient
G-01	Grout - Color A	09 30 13	Mapei	--	5010 Black	--	To be used with T-08
G-02	Grout - Color B	09 30 13	Mapei	--	5103 Cobblestone	--	To be used with T-09
MILLWORK FINISH ACCESSORY							
MFA-01	Millwork Reveal	06 40 00	TBD	--	TBD	1" WIDE	
SPECIALTY EQUIPMENT							
ATH	Athletic Equipment - Wall Pads	11 66 00	TBD	--	Red	4'-0" x 8'-0"	
DC	Display Case (Manufactured/Millwork)	10 12 00 or 06 40 00	TBD	--	TBD		
FEC	Fire Extinquisher Cabinet	10 44 13	--	--	--	-	
HB	Horizontal Blinds	12 21 13	SWF Contract	S4000 Micro	TBD	1" WIDE	
ID	Identifying Devices	10 14 00	Wilsonart	TBD	TBD	Ref. ADA Signgage Details	
LK-01	Lockers - Metal	10 51 13	TBD	--	Red	Ref. Locker Elevations	
MB	Markerboard - Premanufactured	10 11 16	Claridge	--	White		
PC-01	Privacy Curtain - Showers	10 21 23	TBD	--	TBD		
RS	Roller Shades	12 24 13	MechoShades		TBD	AS SPECIFIED	
TC	Toilet Compartment	10 21 13	TBD	Solid Black-Core Phenolic	TBD	-	
WALL FINISH ACCESSORY							
CG-01	Corner Guard	10 26 13	Construction Specialties	TBD	TBD	Full Height	To be used at all exposed gyp. corners
G-03	Grout	09 30 00	Mapei	--	5010 Black	-	To be used with T-01, T-02, T-03 (WTP-01)
G-04	Grout	09 30 00	Mapei	--	5103 Cobblestone	-	To be used with T-04, T-05, T-06 (WTP-02)
G-05	Grout	09 30 00	Mapei	--	5093 Warm Gray	-	To be used with T-07
WFA-01	Tile Edge/Corner Trim - Metal	09 30 00	Schluter	Quadec	Anodized Aluminum	-	Exposed Side Edges
WFA-02	Tile Edge/Corner Trim - Metal	09 30 00	Schluter	Jolly	Anodized Aluminum	-	Exposed Bottom Edges

MATERIAL FINISH SCHEDULE

NOTE: ALL MATERIALS, PRODUCTS, SIZES, COLORS AND PATTERNS ARE THE BASIS OF DESIGN. REFERENCE PROJECT MANUAL FOR ADDITIONAL APPROVED MANUFACTURERS MEETING THE DESIGN INTENT. SUBSTITUTIONS WILL BE CONSIDERED WHEN SUBMITTED IN COMPLIANCE WITH SECTION 01 62 00 – PRODUCT OPTIONS.

MATERIAL: MARK	DESCRIPTION	SPEC SECTION	MANUFACTURER INFO				COMMENTS
			MANUFACTURER	SERIES/STYLE	COLOR/FINISH	SIZE	
CEILING FINISH							
ACT-01	Acoustic Ceiling Tile (24X24)	09 51 00	Armstrong	Optima Lay-In	White	24" x 24"	
ACT-02	Acoustic Ceiling Tile (24X24)(NEW TILES ONLY)	09 51 00	Armstrong	Optima Lay-In	White	24" x 24"	
MP-01	Linear Wood Ceiling	09 54 26	Armstrong	Metalworks Linear - Classic; Micropreforated; 5492	Effects Walnut Espresso	96" x 4" x 5/8"	
MP-02	Ceiling-Decorative Metal A	09 54 23	Arktura	Vapor Frequency	Jet Black	2' x 4'	
MP-03	Ceiling-Decorative Metal A.3	09 54 23	Arktura	Vapor Trail; CUSTOM	Jet Black	2' x 4'	
MP-04	Linear Ceiling - Black	09 54 26	Armstrong	Metalworks Linear - Classic; Micropreforated; 5492	Custom Black	96" x 4" x 5/8"	1
PT-04	Paint - Ceiling - White	09 91 00	Sherwin Williams	--	SW 7757 High Reflective White		
PT-05	Paint - Ceiling - Black	09 91 00	Sherwin Williams	--	SW 6258 Tricorn Black		
EXTERIOR FINISH							
ACM-01	Metal - Aluminum Composite Wall Panel-01	07 46 50	ALUCOBOND	--	Platinum Mica		
ACM-02	Metal - Aluminum Composite Wall Panel-02	07 46 50	ALUCOBOND	--	Greyhound		
BR-01	Masonry - Modular Brick Veneer-01	04 20 00	ACME BRICK	--	Crimson /Velour	Modular	Running Bond 2
BR-02	Masonry - Modular Brick Veneer-02	04 20 00	ACME BRICK	--	Crimson /Velour	Modular	Soldier Coursing
BRT-01	Masonry - Modular Thin Brick Veneer-01	04 21 00	ACME BRICK	--	Crimson /Velour	Modular-Thin	Running Bond
BRT-02	Masonry - Modular Thin Brick Veneer-02	04 21 00	ACME BRICK	--	Crimson /Velour	Modular-Thin	Soldier Coursing
CS-01	Masonry - CAST STONE-01	04 72 00	Echelon	Cordova Stone	Graphite - Ground	12" x 24"	Running Bond Pattern - Matching Mortar
CS-02	Masonry - CAST STONE-02	04 72 00	Echelon	Cordova Stone	Midnight - Ground	12" x 24"	Running Bond Pattern - Matching Mortar
CS-03	Masonry - CAST STONE-03	04 72 00	Siteworks	--	Natural /Smooth		
MRP-01	Metal - Roof Panel-01	07 41 20	MBCI	SUPERLOK	Tundra	16" Wide Panel	
MSP-01	Metal - Soffit Panel-01	07 42 13	MBCI	FW-120-1	Tundra		Metal Soffit Panel with 1 Bead
MSP-02	Metal - Soffit Panel-02	07 42 13	MBCI	FW-120-1	Storm Gray		Metal Soffit Panel with 1 Bead
MSP-03	Metal - Soffit Panel-03	07 42 13	MBCI	FW-120-1	Brite Red		Metal Soffit Panel with 1 Bead
MWP-01	Metal - Wall Panel-01	07 42 13	MBCI	FW-120-1	Tundra		Metal Panel with 1 Bead/Vertical Orientation
MWP-02	Metal - Wall Panel-02	07 42 13	MBCI	FW-120-1	Storm Gray		Metal Panel with 1 Bead/Vertical Orientation
MWP-03	Metal - Wall Panel-03	07 42 13	MBCI	FW-120-1	Brite Red		Metal Panel with 1 Bead/Vertical Orientation
TF-03	Turf - Artificial-03	32 18 13	TBD	TBD	TBD		
FLOOR FINISH							
CO-01	Concrete - Sealed	03 30 00	As Specified	--	--	--	
CPT-01	Carpet - Field	09 68 16	Tarkett	Custom	115965046-10	Powerbond	
CPT-02	Carpet - Walk-Off	09 68 16	Tarkett	Assertive Action 04837	Blacksmith 26203	Powerbond	
PF-01	Poured Floor - Epoxy		Sherwin Williams	Resufloor Deco Flake II	Custom; CS-141305-2CUS; Resutile AT Gloss Finish	1/	2
RF-01	Rubber - Sports Floor - Field	09 65 00	Tarkett Sports	Dropzone Power	Red	--	
RF-02	Rubber - Sports Floor - Accent	09 65 00	Tarkett Sports	Droptile	Grey	25.4 mm	
RF-03	Rubber - Sports Floor - Dropzone Accent	09 65 00	Tarkett Sports	Droptile	TBD	25.4 mm	
RF-04	Rubber - Sports Floor - Dropzone Black	09 65 00	Tarkett Sports	Droptile	Black	25.4 mm	1
RF-05	Resilient Floor - Field	09 65 19	Tarkett	IQ Optima	729 Light Black B	Roll	
RF-06	Resilient Floor - Accent	09 65 19	Tarkett	IQ Optima	877 Red	Roll	1
T-08	Tile - Restrooms	09 30 00	Crossville	Nest	Meditative Oak AV357	8" x 36"	
T-09	Tile - Showers	09 30 00	Crossville	Shades 2.0	Mist SHD44; Unpolished	2" x 2" Mosaics	
T-11	Tile - Restrooms 02	09 30 00	Crossville	Access Point Concrete	Concrete Ash WRC06	12" x 24"	2
TF-01	Turf - Artificial-01	32 18 13	Tarkett Sports	TBD	TBD	--	
TF-02	Turf - Artificial-02	32 18 13	Tarkett Sports	TBD	TBD	--	
TZ-01	Terrazzo - Field	09 66 23	Terrazzo & Marble	Terroxy	25GG-841	--	
TZ-02	Terrazzo - Accent Red	09 66 23	Terrazzo & Marble	Terroxy	25GG-844	--	
MILLWORK & ARCHITECTURAL FINISH							
PL-01	Plastic Laminate - Cabinets	12 32 00	Wilsonart	Virtual Design Library	Straight Cut Oak Charcoal YS009K-05	--	Run Wood Grain Vertical
PL-02	Plastic Laminate - Countertop	12 32 00	Wilsonart	Matte Finish	Panna Tessere 5049-60	--	
PL-03	Plastic Laminate - Existing Doors	12 32 16	Wilsonart	38 Fine Velvet Texture	Mission Maple 7990	--	Run Wood Grain Vertical
PT-06	Paint - H.M Doors & Frames	09 91 00	Sherwin Williams	--	SW 7068 Grizzle Gray	--	
SS-01	Solid Surface - Countertops	12 32 00	Wilsonart	--	Carbone Marmo 9914SS	--	
WALL FINISH							
PT-01	Paint - Field	09 91 00	Sherwin Williams	--	SW 7631 City Lofft	--	**REF. INT Elev, INT Finish Plans & RCPs
PT-02	Paint - Accent Dark Gray	09 91 00	Sherwin Williams	--	SW 7674 Peppercorn	--	**REF. INT Elev, INT Finish Plans & RCPs
PT-03	Paint - Accent Red	09 91 00	Sherwin Williams	--	SW 6871 Positive Red	--	**REF. INT Elev, INT Finish Plans & RCPs 1
RB-01	Rubber Base	09 65 00	Johnsonite	Traditional Vinyl	63 Burnt Umber	4"	
T-01	Tile - Large Format Panels	09 30 00	Crossville	Ossido	Nero L7032	40" x 118" Panels	**REF. 1/A3.21
T-02	Tile - Wainscot Field	09 30 00	Crossville	Shades 2.0	Ink SHD49; Semi-Polished	12" x 24:	**REF. 2/A3.31
T-03	Tile - Wainscot Bullnose	09 30 00	Crossville	Shades 2.0	Ink SHD49; Semi-Polished	4" x 24"	**REF. 2/A3.31
T-04	Tile - Restroom Field	09 30 00	Crossville	Shades 2.0	Mist SHD44; Unpolished	12" x 24"	**REF. 3/A3.31
T-05	Tile - Restroom Accent	09 30 00	Crossville	Shades 2.0	Mist SHD44; Unpolished 1	6" x 24"	**REF. 3/A3.31
T-06	Tile - Restroom Cove Base	09 30 00	Crossville	Shades 2.0	Mist SHD44; Unpolished	6" x 12" Cove Base	**REF. 3/A3.31
T-07	Tile - Backsplash	09 30 00	Crossville	Snippet	Lipstick SNP23; Gloss	3" x 12"	**REF. 1/A3.31
T-10	Tile - Base	09 30 00	Crossville	Shades 2.0	Ink SHD49; Semi-Polished	6" x 12" Cove Base	**REF. 14/A3.21
T-12	Restroom Tile - Accent 01	09 30 00	Crossville	Beach Time	Wisdom Grey	6" x 24"	**REF. INT Finish Plans & A3.32 INT Details
T-13	Restroom Tile - Accent 02	09 30 00	Crossville	Beach Time	Balance	6" x 24"	**REF. INT Finish Plans & A3.32 INT Details 2
T-14	Restroom Tile - Accent 03 - Field	09 30 00	Crossville	Beach Time	Pure	6" x 24"	**REF. INT Finish Plans & A3.32 INT Details
VWC-01	Vinyl Wallcovering - Accent	09 72 16	Koroseal	Arid	Red Rock DA21-07	--	**REF. INT Finish Plans 1

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT MONIKA C. CASTILLO 26558 STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

25-0056.00

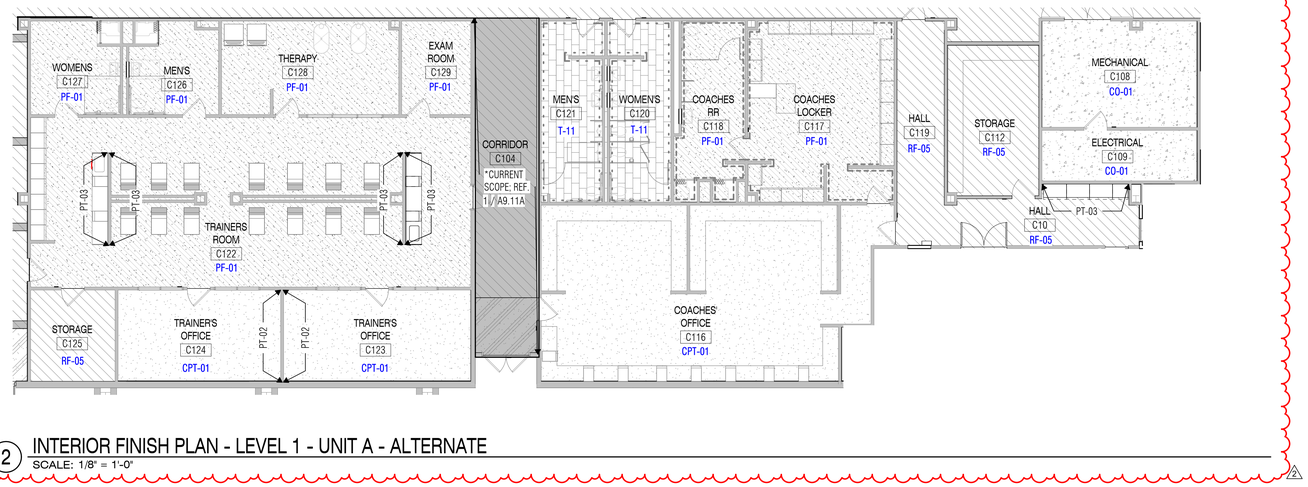
SHEET TITLE

MATERIAL FINISH SCHEDULES

SHEET NO.

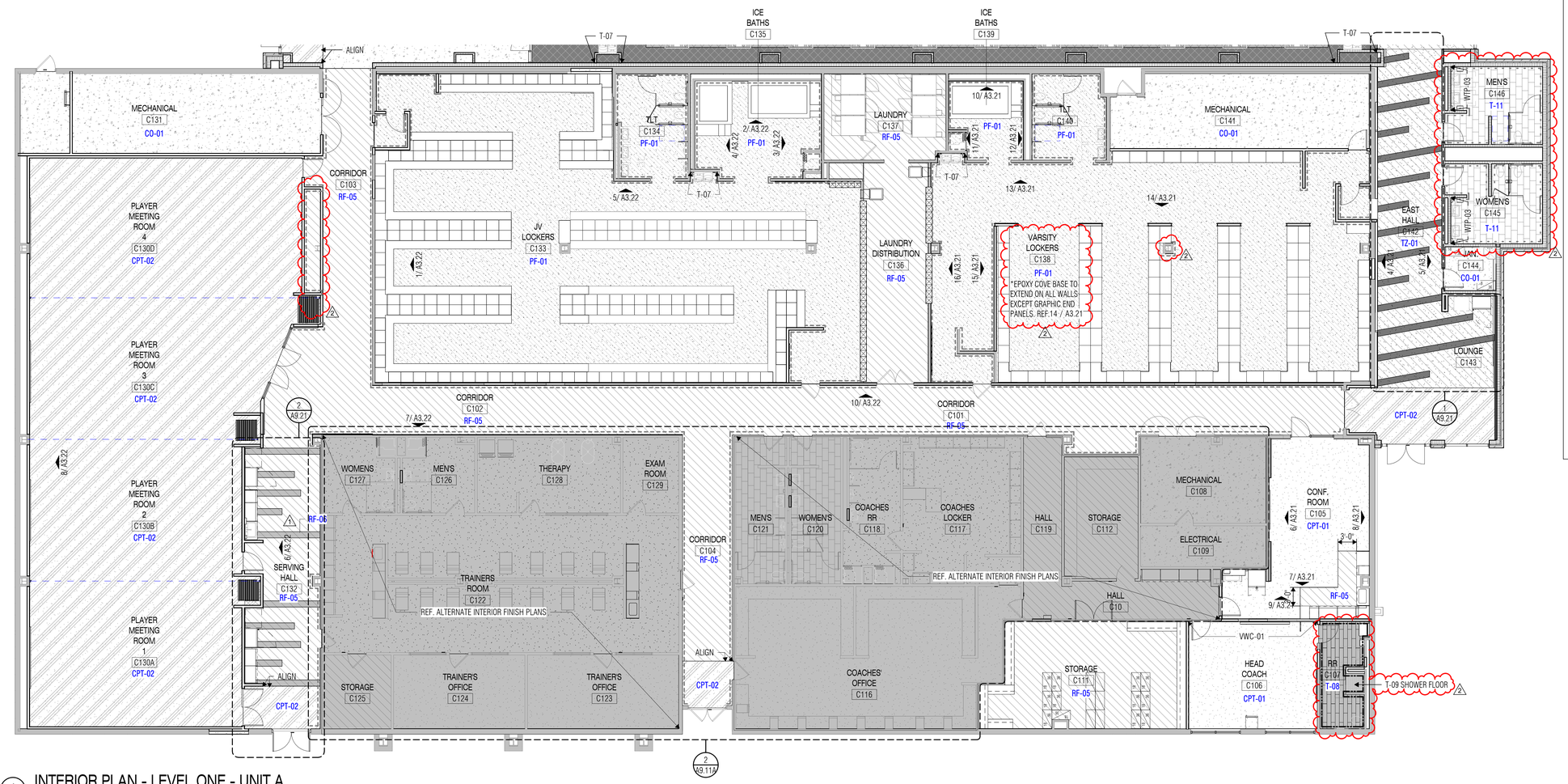
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2 INTERIOR FINISH PLAN - LEVEL 1 - UNIT A - ALTERNATE

SCALE: 1/8" = 1'-0"



1 INTERIOR PLAN - LEVEL ONE - UNIT A

SCALE: 1/8" = 1'-0"

INTERIOR FLOOR FINISH LEGEND

TYPE MARK	TYPE
	PLACEHOLDER - FLOORING
CO-01	Finish Floor - Concrete Sealed/Topping/Polished
CPT-01	Finish Floor - Carpet Field
CPT-02	Finish Floor - Carpet Walk Off
CSG-01	CSG-01_Concrete Slab on Grade
CSS-01	<varies>
RF-01	Finish Floor - Rubber - Sports Floor - Field
RF-02	Finish Floor - Rubber - Sports Floor - Accent
RF-03	Finish Floor - Rubber - Sports Floor - Dropzone Accent
RF-04	Finish Floor - Rubber - Sports Floor - Dropzone Black
RF-05	Finish Floor - Resilient Floor - Field
RF-06	Finish Floor - Resilient Floor - Accent Red
SF	Finish Floor - Turf - White
SW-1	Site - Sidewalk - 5"
T-08	Finish Floor - Porcelain Tile Field
T-09	Finish Floor - Porcelain Tile - Showers
T-11	Finish Floor - Porcelain Tile - Restrooms 02
TF-01	Finish Floor - Indoor Turf - Red
TF-03	Finish Floor - Turf - Green - Practice
TZ-01	Finish - Terrazzo - Field
TZ-02	Finish Floor - Terrazzo - Accent Red

WALL FINISH LEGEND

WTP-01	WALL TILE PATTERN - WAINSCOT 12" x 24"
WTP-02	WALL TILE PATTERN - HEAD COACH RR
WTP-03	WALL TILE PATTERN - VISITOR RR'S
CG	CORNER GUARD
PT	PAINT

INTERIOR FINISH SCHEDULE NOTES

1. **General Finish Notes**
   - A. Any finish conflict between finish schedules and finish floor plans to be brought to the Architect's attention for resolution.
2. **Floor Finishes**
   - A. Refer to Interior Finish Plans for floor finish patterns.
   - B. Refer to Interior Finish Plans for tile origin in each room. If origin point is not indicated, center in middle of the room or corridor.
   - C. All changes in floor material between rooms shall occur at centerline of doorway, U.N.O.
   - D. Level and float flooring at public corridor walls.
   - E. All toilets and other areas capable of water incursion shall have a 2" x ½" wide marble threshold with ¼" beveled edges centered under each door.
   - F. Epoxy cove base to extend on all walls in locker rooms & restrooms, U.N.O. Ref. Interior Elevations & Details.
   - G. Sealant color shall match adjacent material. 1
   - H. Typical flooring application at brick walls:
     1. Resilient Tile/ Sheet Flooring: Rake brick joint at floor level and install sealant between LVT and brick.
     2. Carpet: Rake brick joint at floor level and tuck carpet tight into raked brick joint.
3. **Wall Finishes**
   - A. Finishes shall continue to inside corner, U.N.O.
   - B. Provide Corner Guard CG-01 (to ceiling) at all vinyl wall covering outside corners at public areas, whether indicated on finish plans or not.
   - C. **Vinyl Wallcovering Information**:
     1. No vinyl wallcovering should be terminated at an outside corner. All vinyl wallcovering to wrap to inside corner.U.N.O.
     2. Provide Corner Guard at any vinyl wall covering outside corner when the color changes at the corner.
     3. Provide Corner Guard CG-01 (to ceiling) at all vinyl wall covering outside corners at public areas, whether indicated on finish plans or not.
   - D. **Paint Information:**
     1. **Walls:**
        - a. All exterior walls with gypsum board interior shall be painted PT-01, U.N.O.
        - b. All interior sealants shall be painted to match adjacent wall.
     2. **Hollow Metal Doors and Windows:**
        - a. Hollow metal doors shall be painted PT-06, U.N.O.
        - b. Hollow metal door frames and vision panel frames shall be painted PT-06, U.N.O.
        - c. At door frames with 2 different colors, transition color at inside corner of door stop, on the door side of the stop.
        - d. Hollow metal glazed opening frames shall be painted PT-06, U.NO.
     3. At painted CMU base, color shall match the wall above.
4. **Ceiling Finishes**
   - A. Refer to Reflected Ceiling Plans for scheduled finish.
   - B. At ceilings with exposed structure, all exposed elements shall be painted the scheduled color, including mechanical ductwork, electrical, piping, conduit, j-boxes, etc.
   - C. All interior gypsum board ceilings to be painted PT-01, U.N.O.
   - D. All interior gypsum board furr-downs to be painted PT-01, U.N.O.
5. **Tiling**
   - A. Refer to Detail 2/A3.31 for typical tile wainscot wall pattern.
   - B. Refer to Detail 3/A3.31 for typical toilet room wall pattern.
   - C. Refer to Detail 1/A3.31 for typical drinking fountain wall pattern.
   - D. At outside corners and exposed edges of ceramic or porcelain tile, provide anodized aluminum trim, unless otherwise detailed.
   - E. Provide Metal Trim WFA-01 at all outside and/or exposed tile locations (top, bottom, and corners) in corridors, whether indicated on finish plans or not.
6. **Casework/ Architectural Woodwork**
   1. Typical Casework/Millwork cabinet body, doors, and drawer fronts shall be PL-01, U.N.O.
   2. Countertops shall be PL-02, or SS-01 U.N.O
   3. Interior Plastic Laminate clad wood doors to be PL-01.
   4. Window Sills shall be PL-02, U.N.O.
   5. Consultant to match specified finishes. 1

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT MONIKA C. CASTILLO 26559 STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 1	10/08/2025
2 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

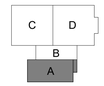
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SHEET TITLE

INTERIOR FINISH PLAN - LEVEL ONE - UNIT A

SHEET NO.

A9.11A



KEY PLAN

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WALL FINISH LEGEND

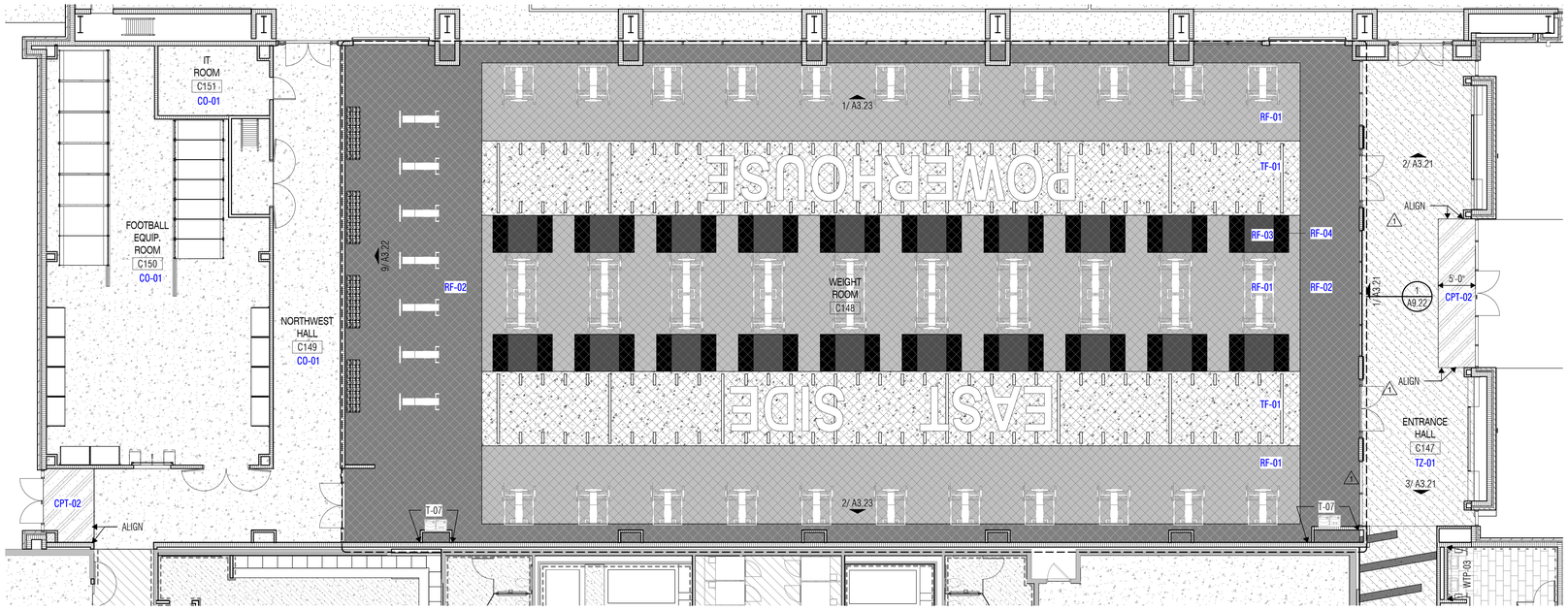
WTP-01	WALL TILE PATTERN - WAINSCOT 12" x 24"
WTP-02	WALL TILE PATTERN - HEAD COACH RR
WTP-03	WALL TILE PATTERN - VISITOR RR'S
CG	CORNER GUARD
PT	PAINT

INTERIOR FLOOR FINISH LEGEND

TYPE MARK	TYPE
	PLACEHOLDER - FLOORING
CO-01	Finish Floor - Concrete Sealed/Topping/Polished
CPT-01	Finish Floor - Carpet Field
CPT-02	Finish Floor - Carpet Walk Off
CSG-01	CSG-01_Concrete Slab on Grade
CSS-01	<varies>
RF-01	Finish Floor - Rubber - Sports Floor - Field
RF-02	Finish Floor - Rubber - Sports Floor - Accent
RF-03	Finish Floor - Rubber - Sports Floor - Dropzone Accent
RF-04	Finish Floor - Rubber - Sports Floor - Dropzone Black
RF-05	Finish Floor - Resilient Floor - Field
RF-06	Finish Floor - Resilient Floor - Accent Red
SF	Finish Floor - Turf - White
SW-1	Site - Sidewalk - 5"
T-08	Finish Floor - Porcelain Tile Field
T-09	Finish Floor - Porcelain Tile - Showers
T-11	Finish Floor - Porcelain Tile - Restrooms 02
TF-01	Finish Floor - Indoor Turf - Red
TF-03	Finish Floor - Turf - Green - Practice
TZ-01	Finish - Terrazzo - Field
TZ-02	Finish Floor - Terrazzo - Accent Red

INTERIOR FINISH SCHEDULE NOTES

1. **General Finish Notes**
   - A. Any finish conflict between finish schedules and finish floor plans to be brought to the Architect's attention for resolution.
2. **Floor Finishes**
   - A. Refer to Interior Finish Plans for floor finish patterns.
   - B. Refer to Interior Finish Plans for tile origin in each room. If origin point is not indicated, center in middle of the room or corridor.
   - C. All changes in floor material between rooms shall occur at centerline of doorway, U.N.O.
   - D. Level and float flooring at public corridor walls.
   - E. All toilets and other areas capable of water incursion shall have a 2" x ½" wide marble threshold with ¼" beveled edges centered under each door.
   - F. Epoxy cove base to extend on all walls in locker rooms & restrooms, U.N.O. Ref. Interior Elevations & Details.
   - G. Sealant color shall match adjacent material. 2
   - H. Typical flooring application at brick walls:
     1. Resilient Tile/ Sheet Flooring: Rake brick joint at floor level and install sealant between LVT and brick.
     2. Carpet: Rake brick joint at floor level and tuck carpet tight into raked brick joint.
3. **Wall Finishes**
   - A. Finishes shall continue to inside corner, U.N.O.
   - B. Provide Corner Guard CG-01 (to ceiling) at all vinyl wall covering outside corners at public areas, whether indicated on finish plans or not.
   - C. **Vinyl Wallcovering Information**:
     1. No vinyl wallcovering should be terminated at an outside corner. All vinyl wallcovering to wrap to inside corner,U.N.O.
     2. Provide Corner Guard at any vinyl wall covering outside corner when the color changes at the corner.
     3. Provide Corner Guard CG-01 (to ceiling) at all vinyl wall covering outside corners at public areas, whether indicated on finish plans or not.
   - D. **Paint Information:**
     1. **Walls:**
        - a. All exterior walls with gypsum board interior shall be painted PT-01, U.N.O.
        - b. All interior sealants shall be painted to match adjacent wall.
     2. **Hollow Metal Doors and Windows:**
        - a. Hollow metal doors shall be painted PT-06, U.N.O.
        - b. Hollow metal door frames and vision panel frames shall be painted PT-06, U.N.O.
        - c. At door frames with 2 different colors, transition color at inside corner of door stop, on the door side of the stop.
        - d. Hollow metal glazed opening frames shall be painted PT-06, U.NO.
     3. At painted CMU base, color shall match the wall above.
4. **Ceiling Finishes**
   - A. Refer to Reflected Ceiling Plans for scheduled finish.
   - B. At ceilings with exposed structure, all exposed elements shall be painted the scheduled color, including mechanical ductwork, electrical, piping, conduit, j-boxes, etc.
   - C. All interior gypsum board ceilings to be painted PT-01, U.N.O.
   - D. All interior gypsum board furr-downs to be painted PT-01, U.N.O.
5. **Tiling**
   - A. Refer to Detail 2/A3.31 for typical tile wainscot wall pattern.
   - B. Refer to Detail 3/A3.31 for typical toilet room wall pattern.
   - C. Refer to Detail 1/A3.31 for typical drinking fountain wall pattern.
   - D. At outside corners and exposed edges of ceramic or porcelain tile, provide anodized aluminum trim, unless otherwise detailed.
   - E. Provide Metal Trim WFA-01 at all outside and/or exposed tile locations (top, bottom, and corners) in corridors, whether indicated on finish plans or not.
6. **Casework/ Architectural Woodwork**
   1. Typical Casework/Millwork cabinet body, doors, and drawer fronts shall be PL-01, U.N.O.
   2. Countertops shall be PL-02, or SS-01 U.N.O
   3. Interior Plastic Laminate clad wood doors to be PL-01.
   4. Window Sills shall be PL-02, U.N.O.
   5. Consultant to match specified finishes. 1



1 INTERIOR PLAN - LEVEL ONE - UNIT B
SCALE: 1/8" = 1'-0"

2

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT — MONIKA C. CASTILLO — 26555 — STATE OF TEXAS

10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

25-0056.00

SHEET TITLE

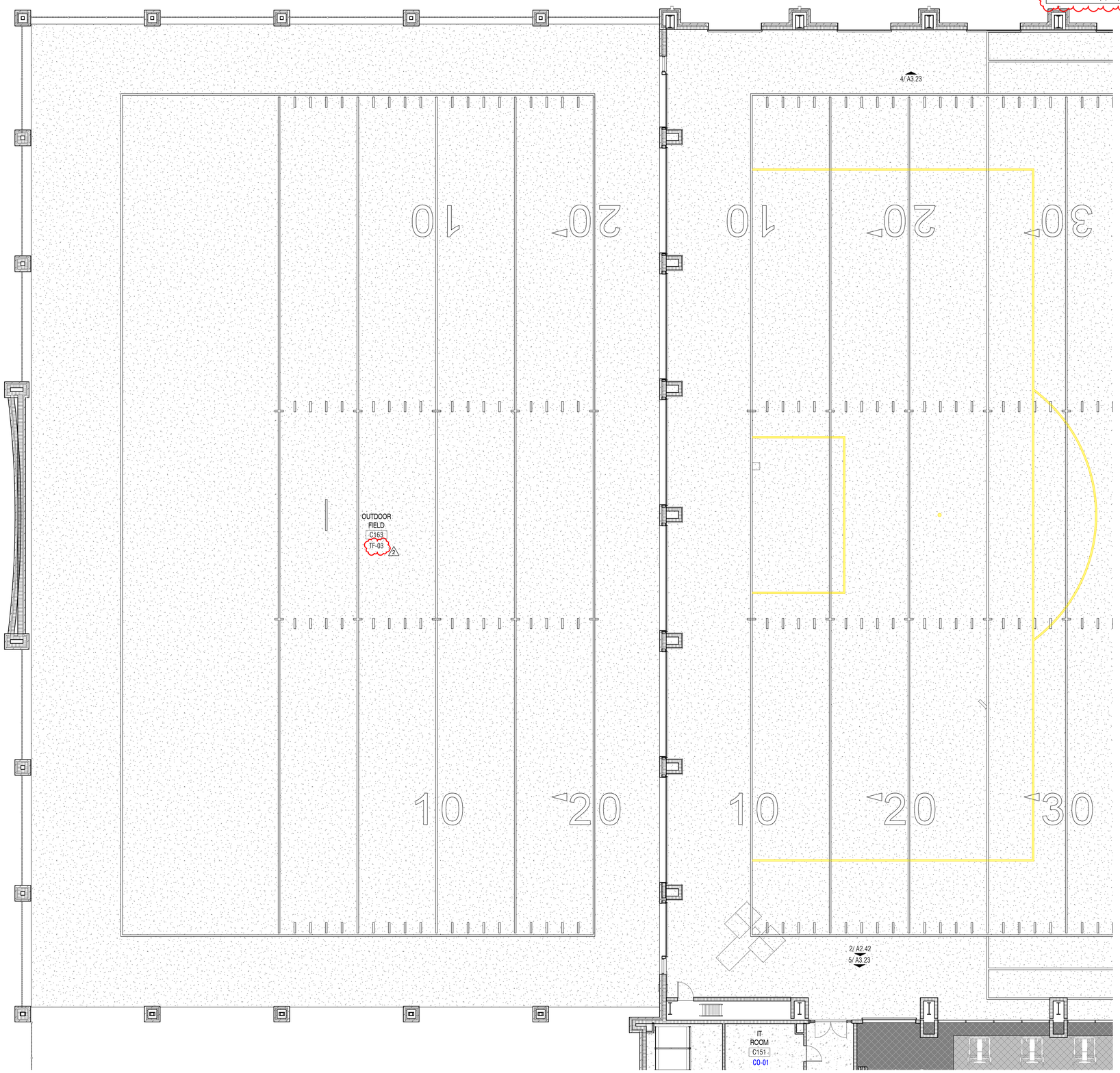
INTERIOR FINISH PLAN - LEVEL ONE - UNIT B

SHEET NO.

A9.11B

KEY PLAN

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1 INTERIOR PLAN - LEVEL ONE - UNIT C
SCALE: 1/8" = 1'-0"

WALL FINISH LEGEND

WTP-01	WALL TILE PATTERN - WAINSCOT 12" x 24"
WTP-02	WALL TILE PATTERN - HEAD COACH RR
WTP-03	WALL TILE PATTERN - VISITOR RR'S
CG	CORNER GUARD
PT	PAINT

INTERIOR FINISH SCHEDULE NOTES

1. **General Finish Notes**
   - A. Any finish conflict between finish schedules and finish floor plans to be brought to the Architect's attention for resolution.
2. **Floor Finishes**
   - A. Refer to Interior Finish Plans for floor finish patterns.
   - B. Refer to Interior Finish Plans for tile origin in each room. If origin point is not indicated, center in middle of the room or corridor.
   - C. All changes in floor material between rooms shall occur at centerline of doorway, U.N.O.
   - D. Level and float flooring at public corridor walls.
   - E. All toilets and other areas capable of water incursion shall have a 2" x ½" wide marble threshold with ¼" beveled edges centered under each door.
   - F. Epoxy cove base to extend on all walls in locker rooms & restrooms, U.N.O. Ref. Interior Elevations & Details.
   - G. Sealant color shall match adjacent material. 2
   - H. Typical flooring application at brick walls:
     1. Resilient Tile/ Sheet Flooring: Rake brick joint at floor level and install sealant between LVT and brick.
     2. Carpet: Rake brick joint at floor level and tuck carpet tight into raked brick joint.
3. **Wall Finishes**
   - A. Finishes shall continue to inside corner, U.N.O.
   - B. Provide Corner Guard CG-01 (to ceiling) at all vinyl wall covering outside corners at public areas, whether indicated on finish plans or not.
   - C. **Vinyl Wallcovering Information**:
     1. No vinyl wallcovering should be terminated at an outside corner. All vinyl wallcovering to wrap to inside corner,U.N.O.
     2. Provide Corner Guard at any vinyl wall covering outside corner when the color changes at the corner.
     3. Provide Corner Guard CG-01 (to ceiling) at all vinyl wall covering outside corners at public areas, whether indicated on finish plans or not.
   - D. **Paint Information:**
     1. **Walls:**
        - a. All exterior walls with gypsum board interior shall be painted PT-01, U.N.O.
        - b. All interior sealants shall be painted to match adjacent wall.
     2. **Hollow Metal Doors and Windows:**
        - a. Hollow metal doors shall be painted PT-06, U.N.O.
        - b. Hollow metal door frames and vision panel frames shall be painted PT-06, U.N.O.
        - c. At door frames with 2 different colors, transition color at inside corner of door stop, on the door side of the stop.
        - d. Hollow metal glazed opening frames shall be painted PT-06, U.NO.
     3. At painted CMU base, color shall match the wall above.
4. **Ceiling Finishes**
   - A. Refer to Reflected Ceiling Plans for scheduled finish.
   - B. At ceilings with exposed structure, all exposed elements shall be painted the scheduled color, including mechanical ductwork, electrical, piping, conduit, j-boxes, etc.
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   - C. Refer to Detail 1/A3.31 for typical drinking fountain wall pattern.
   - D. At outside corners and exposed edges of ceramic or porcelain tile, provide anodized aluminum trim, unless otherwise detailed.
   - E. Provide Metal Trim WFA-01 at all outside and/or exposed tile locations (top, bottom, and corners) in corridors, whether indicated on finish plans or not.
6. **Casework/ Architectural Woodwork**
   1. Typical Casework/Millwork cabinet body, doors, and drawer fronts shall be PL-01, U.N.O.
   2. Countertops shall be PL-02, or SS-01 U.N.O
   3. Interior Plastic Laminate clad wood doors to be PL-01.
   4. Window Sills shall be PL-02, U.N.O.
   5. Consultant to match specified finishes. 1

INTERIOR FLOOR FINISH LEGEND

TYPE MARK	TYPE
	PLACEHOLDER - FLOORING
CO-01	Finish Floor - Concrete Sealed/Topping/Polished
CPT-01	Finish Floor - Carpet Field
CPT-02	Finish Floor - Carpet Walk Off
CSG-01	CSG-01_Concrete Slab on Grade
CSS-01	<varies>
RF-01	Finish Floor - Rubber - Sports Floor - Field
RF-02	Finish Floor - Rubber - Sports Floor - Accent
RF-03	Finish Floor - Rubber - Sports Floor - Dropzone Accent
RF-04	Finish Floor - Rubber - Sports Floor - Dropzone Black
RF-05	Finish Floor - Resilient Floor - Field
RF-06	Finish Floor - Resilient Floor - Accent Red
SF	Finish Floor - Turf - White
SW-1	Site - Sidewalk - 5"
T-08	Finish Floor - Porcelain Tile Field
T-09	Finish Floor - Porcelain Tile - Showers
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TF-01	Finish Floor - Indoor Turf - Red
TF-03	Finish Floor - Turf - Green - Practice
TZ-01	Finish - Terrazzo - Field
TZ-02	Finish Floor - Terrazzo - Accent Red

2

KEY PLAN

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GALENA PARK ISD
HOUSTON, TEXAS

MONIKA C. CASTILLO
REGISTERED ARCHITECT
26556
STATE OF TEXAS
10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 1	10/08/2025
2 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

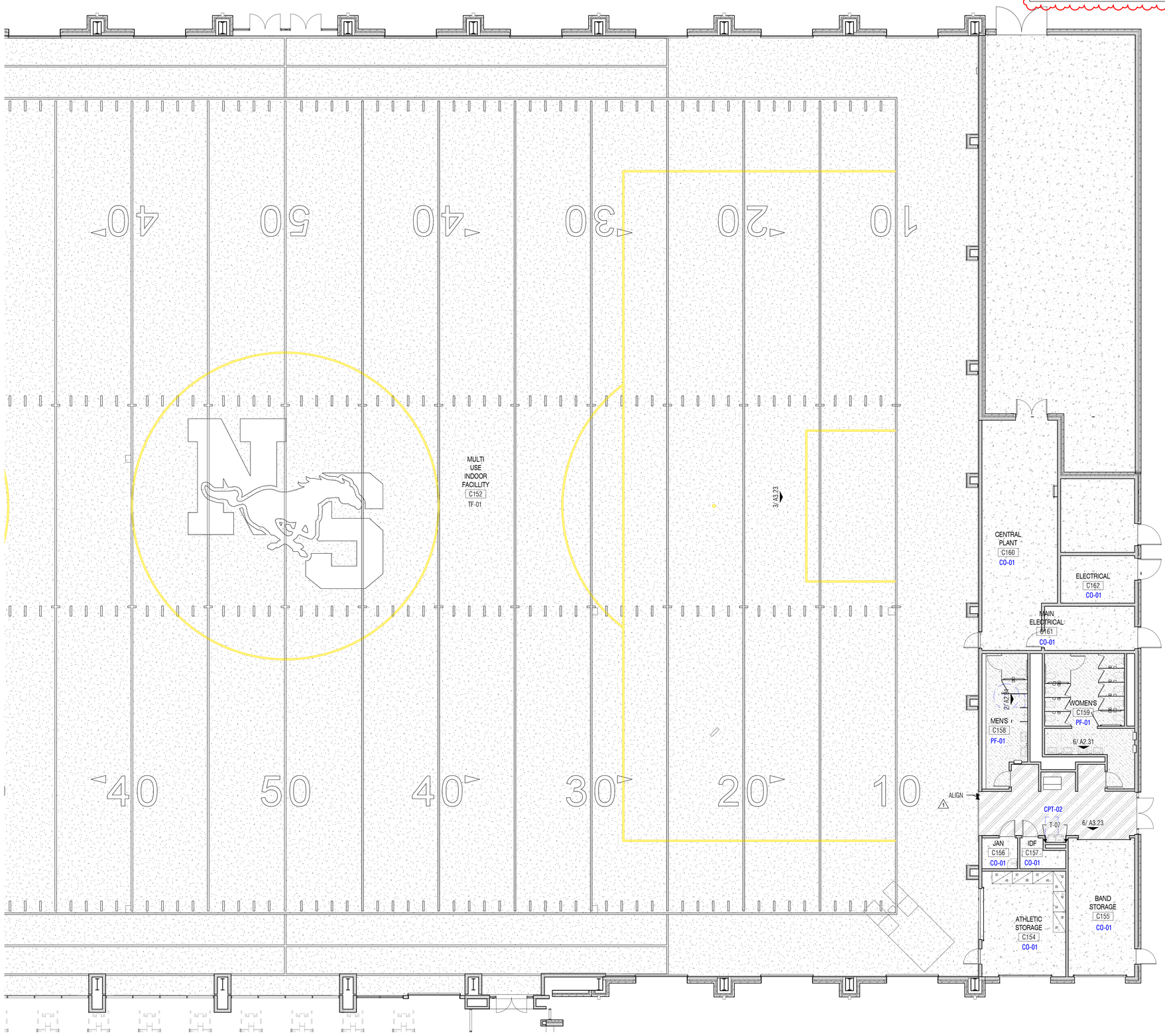
PROJECT NO.
25-0056.00

SHEET TITLE
INTERIOR FINISH PLAN - LEVEL ONE - UNIT C

SHEET NO.
A9.11C

North Shore Multi-Use Indoor Facility

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1 INTERIOR PLAN - LEVEL ONE - UNIT D
SCALE: 1/8" = 1'-0"

WALL FINISH LEGEND

WTP-01	WALL TILE PATTERN - WAINSCOT 12" x 24"
WTP-02	WALL TILE PATTERN - HEAD COACH RR
WTP-03	WALL TILE PATTERN - VISITOR RR'S
CG	CORNER GUARD
PT	PAINT

INTERIOR FINISH SCHEDULE NOTES

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   - B. Refer to Interior Finish Plans for tile origin in each room. If origin point is not indicated, center in middle of the room or corridor.
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   - E. All toilets and other areas capable of water incursion shall have a 2" x ½" wide marble threshold with ¼" beveled edges centered under each door.
   - F. Epoxy cove base to extend on all walls in locker rooms & restrooms, U.N.O. Ref. Interior Elevations & Details.
   - G. Sealant color shall match adjacent material. 2
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3. **Wall Finishes**
   - A. Finishes shall continue to inside corner, U.N.O.
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     2. **Hollow Metal Doors and Windows:**
        - a. Hollow metal doors shall be painted PT-06, U.N.O.
        - b. Hollow metal door frames and vision panel frames shall be painted PT-06, U.N.O.
        - c. At door frames with 2 different colors, transition color at inside corner of door stop, on the door side of the stop.
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4. **Ceiling Finishes**
   - A. Refer to Reflected Ceiling Plans for scheduled finish.
   - B. At ceilings with exposed structure, all exposed elements shall be painted the scheduled color, including mechanical ductwork, electrical, piping, conduit, j-boxes, etc.
   - C. All interior gypsum board ceilings to be painted PT-01, U.N.O.
   - D. All interior gypsum board furr-downs to be painted PT-01, U.N.O.
5. **Tiling**
   - A. Refer to Detail 2/A3.31 for typical tile wainscot wall pattern.
   - B. Refer to Detail 3/A3.31 for typical toilet room wall pattern.
   - C. Refer to Detail 1/A3.31 for typical drinking fountain wall pattern.
   - D. At outside corners and exposed edges of ceramic or porcelain tile, provide anodized aluminum trim, unless otherwise detailed.
   - E. Provide Metal Trim WFA-01 at all outside and/or exposed tile locations (top, bottom, and corners) in corridors, whether indicated on finish plans or not.
6. **Casework/ Architectural Woodwork**
   1. Typical Casework/Millwork cabinet body, doors, and drawer fronts shall be PL-01, U.N.O.
   2. Countertops shall be PL-02, or SS-01 U.N.O
   3. Interior Plastic Laminate clad wood doors to be PL-01.
   4. Window Sills shall be PL-02, U.N.O.
   5. Consultant to match specified finishes. 1

INTERIOR FLOOR FINISH LEGEND

TYPE MARK	TYPE
	PLACEHOLDER - FLOORING
CO-01	Finish Floor - Concrete Sealed/Topping/Polished
CPT-01	Finish Floor - Carpet Field
CPT-02	Finish Floor - Carpet Walk Off
CSG-01	CSG-01_Concrete Slab on Grade
CSS-01	<varies>
RF-01	Finish Floor - Rubber - Sports Floor - Field
RF-02	Finish Floor - Rubber - Sports Floor - Accent
RF-03	Finish Floor - Rubber - Sports Floor - Dropzone Accent
RF-04	Finish Floor - Rubber - Sports Floor - Dropzone Black
RF-05	Finish Floor - Resilient Floor - Field
RF-06	Finish Floor - Resilient Floor - Accent Red
SF	Finish Floor - Turf - White
SW-1	Site - Sidewalk - 5"
T-08	Finish Floor - Porcelain Tile Field
T-09	Finish Floor - Porcelain Tile - Showers
T-11	Finish Floor - Porcelain Tile - Restrooms 02
TF-01	Finish Floor - Indoor Turf - Red
TF-03	Finish Floor - Turf - Green - Practice
TZ-01	Finish - Terrazzo - Field
TZ-02	Finish Floor - Terrazzo - Accent Red

2

C D
B
A
KEY PLAN

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

REGISTERED ARCHITECT MONIKA C. CASTILLO 28555 STATE OF TEXAS
10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 1	10/08/2025
2 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

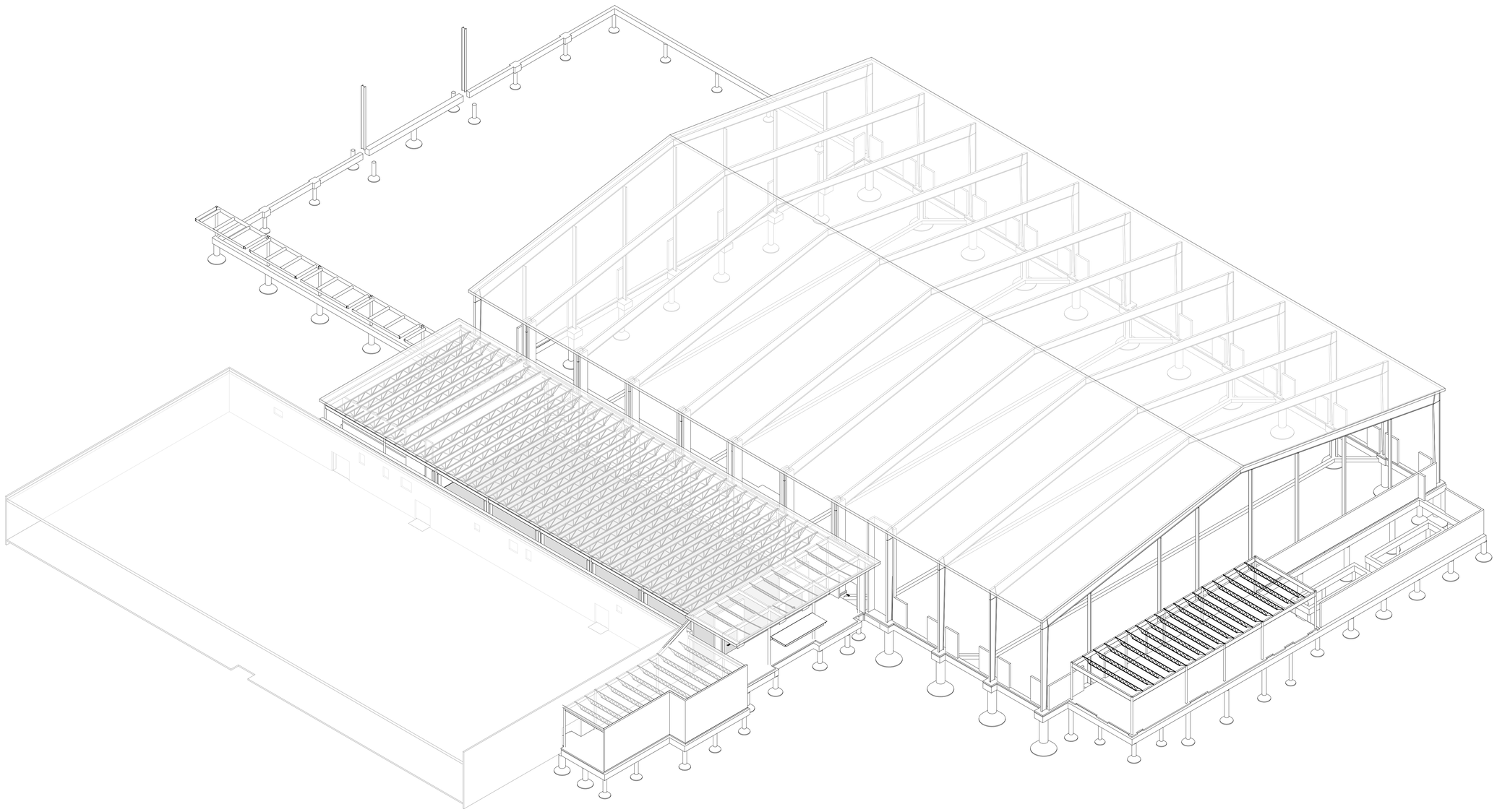
SHEET TITLE
INTERIOR FINISH PLAN - LEVEL ONE - UNIT D

SHEET NO.
A9.11D

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3

NOTE:
THIS 3D DIMENSIONAL VIEW IS PROVIDED AS A CONCEPTUAL SCHEMATIC ONLY. ACCORDINGLY, VARIOUS ITEMS, INCLUDING, BUT NOT LIMITED TO, MISC. STEEL, ROOF DECK, FLOOR DECKS, CONNECTION PLATES, AND REINFORCING MAY NOT BE SHOWN. REFER TO PLANS AND DETAILS FOR ALL MEMBER SIZES, LOCATIONS, DIMENSIONS, AND ADDN'L INFO.



1 3D 80 yard
SCALE:

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10/17/2025

ISSUED: OCTOBER 1, 2025

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3	Addendum 3	10-17-2025

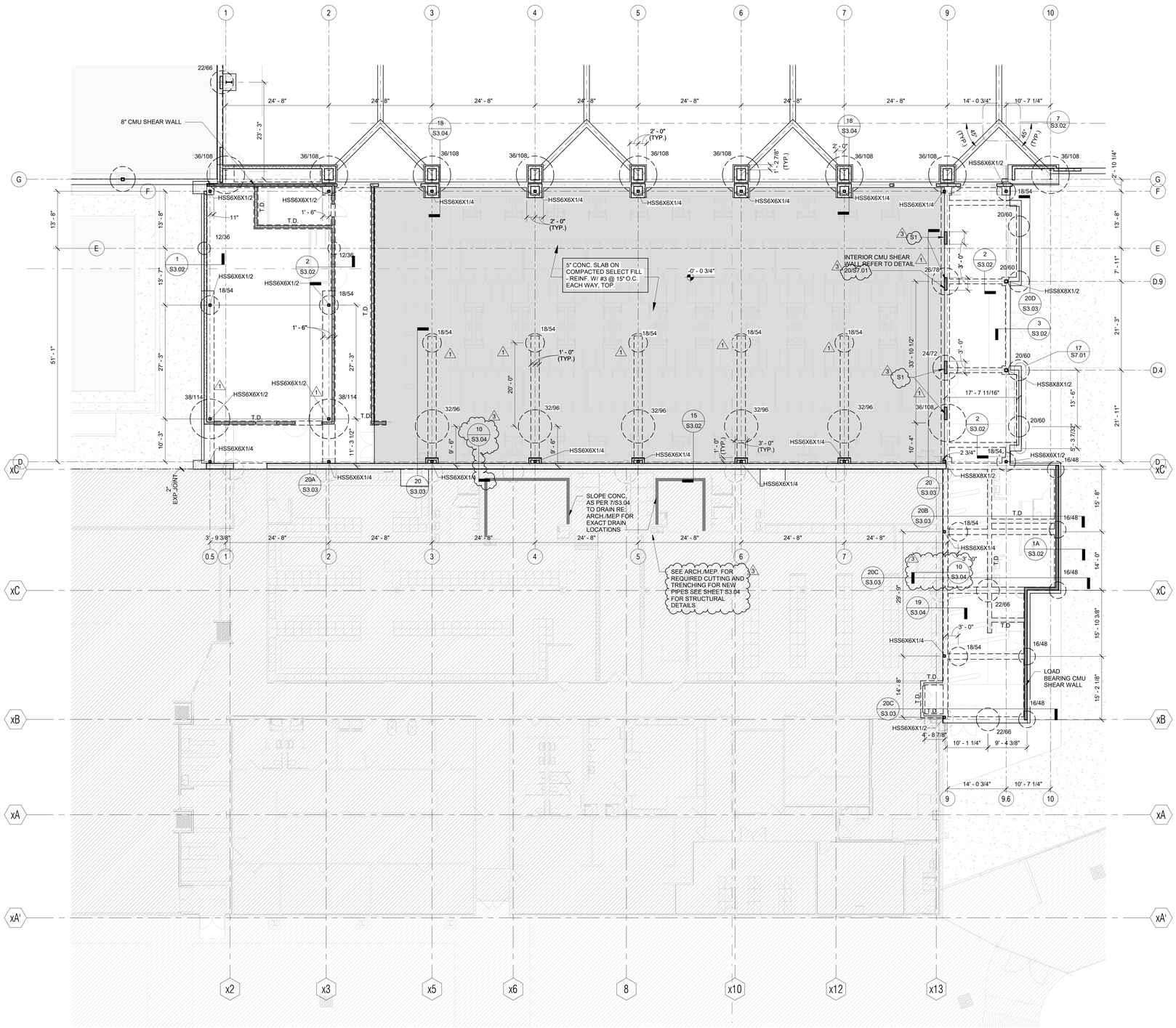
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	HR
Drawn By	RJC

PROJECT NO.
25-0056.00

SHEET TITLE
3D VIEW

SHEET NO.
S1.03

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1 FOUNDATION PLAN - UNIT B
SCALE: 3/32" = 1'-0"

PEMB FOUNDATION PLAN NOTES:

1. ALL PIERS ARE CENTERED UNDER COLUMN CENTERLINES, U.N.O.
2. PIERS UNDER GRADE BEAM (WITHOUT COLUMNS) SHALL BE CENTERED UNDER GRADE BEAMS, U.N.O.
3. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL FLOOR SLOPES, DEPRESSIONS, ETC.
4. COORDINATE ALL BRICK LEDGES AND DEPTH WITH ARCHITECTURAL DRAWINGS.
5. LOCATIONS NOTED THUS: 0' - 0" INDICATES TOP OF SLAB ELEVATION.
6. SEE PEMB FOR BASE PLATE INFORMATION.
7. REFER TO PEMB FOR SIZE, LOCATION AND ORIENTATION OF ALL COLUMNS, ANCHOR BOLTS. NOTIFY ARCH. OF ANY DISCREPANCIES BETWEEN PLANS FOR RESOLUTION PRIOR TO FABRICATION AND INSTALLATION.
8. SEE 5/S3.01, 7/S3.01 & 10/S3.01 FOR ADDITIONAL REBAR AT OPENINGS, DISCONTINUOUS JOINTS, AND RE-ENTRANT CORNERS IN SLAB-ON-GRADE.
9. PROVIDE CONTRACTION JOINTS AND DISCONTINUOUS SLAB REINFORCING AS SHOWN IN DETAIL 6/S3.01.
10. REFER TO MEP FOR SLOPE - INVERT ELEVATION (I.E.) AT DRAINS.
11. TYPICAL SLOPE AT FLOOR IS 1/8" PER FOOT, U.N.O. ON ARCH.
12. PROVIDE (2)#4X4'-0" TOP & BOT. AT ALL RE-ENTRANT CORNERS AT SLAB ON GRADE. TOP REINFORCING SHALL BE PLACED AT 1 1/4" CLEAR FROM THE TOP OF THE SLAB.
13. ——► WHERE SHOWN ON PLAN INDICATES SLOPE DIRECTION. SEE ARCH. FOR INFORMATION.
14. ALL COLUMN LOCATIONS SHOWN AND ASSOCIATED FOUNDATIONS ARE PLACEHOLDERS IN THE ABSENCE OF A COMPLETE METAL BUILDING DESIGN SUBMITTAL. SEE GENERAL NOTES FOR SUBMITTAL REQUIREMENTS.
15. 1" EXPNSION JOINT SHALL BE PROVIDED BETWEEN PEMB BUILDING AND THE ADJACENT STEEL BUILDING (UNIT B)
16. PEMB ENGINEER TO BRACE THE TOP OF CMU WALLS FOR ANY LATERAL LOAD

FOUNDATION PLAN NOTES:

1. ALL PIERS ARE CENTERED UNDER COLUMN CENTERLINES, U.N.O.
2. PIERS UNDER GRADE BEAMS (WITHOUT COLUMNS) SHALL BE CENTERED UNDER GRADE BEAMS, U.N.O.
3. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL FLOOR SLOPES, DEPRESSIONS, ETC.
4. COORDINATE ALL BRICK LEDGES AND DEPTH WITH ARCHITECTURAL DRAWINGS.
5. LOCATIONS NOTED THUS: 0' - 0" INDICATES TOP OF SLAB ELEVATION.
6. REF. ELEVATION = 0' - 0" CORRESPONDS TO CIVIL ELEVATION 33.50'. VERIFY WITH CIVIL.
7. SEE DETAIL 13/S3.03 FOR BASE PLATES.
8. SEE 5/S3.01, 7/S3.01 & 10/S3.01 FOR ADDITIONAL REBAR AT OPENINGS, DISCONTINUOUS JOINTS, AND RE-ENTRANT CORNERS IN SLAB-ON-GRADE.
9. PROVIDE CONTRACTION JOINTS AND DISCONTINUOUS SLAB REINFORCING AS SHOWN IN DETAIL 6/S3.01.
10. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION / CONSTRUCTION.

KEY PLAN

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ISSUED: OCTOBER 1, 2025

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Revision No.		Revision Date
1	Addendum 1	10-08-2025
3	Addendum 3	10-17-2025

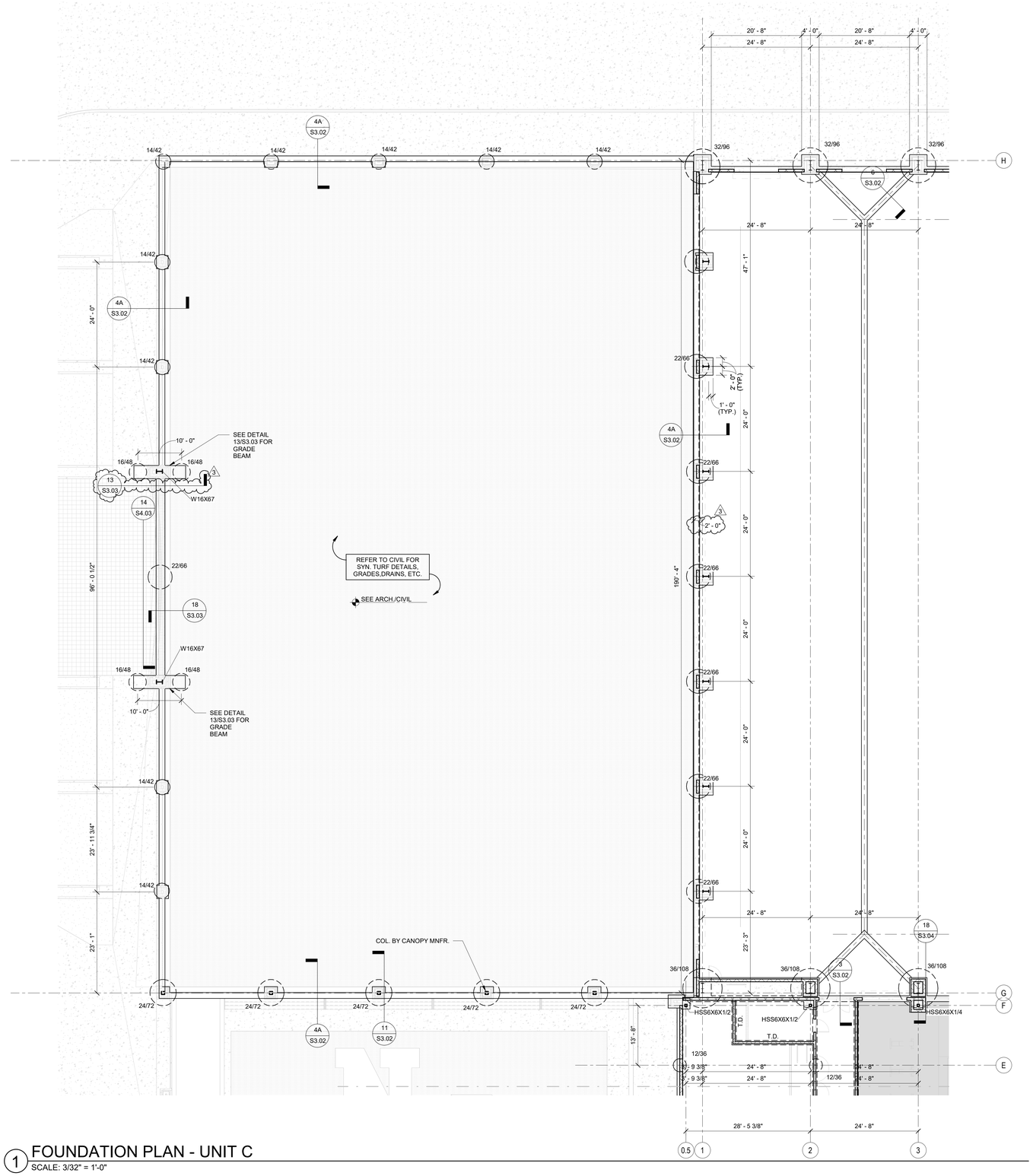
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	HR
Drawn By	RJC

PROJECT NO.
25-0056.00

SHEET TITLE
FOUNDATION PLAN - UNIT B

SHEET NO.
S2.01B

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1 FOUNDATION PLAN - UNIT C
SCALE: 3/32" = 1'-0"

PEMB FOUNDATION PLAN NOTES:

1. ALL PIERS ARE CENTERED UNDER COLUMN CENTERLINES, U.N.O.
2. PIERS UNDER GRADE BEAM (WITHOUT COLUMNS) SHALL BE CENTERED UNDER GRADE BEAMS, U.N.O.
3. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL FLOOR SLOPES, DEPRESSIONS, ETC.
4. COORDINATE ALL BRICK LEDGES AND DEPTH WITH ARCHITECTURAL DRAWINGS.
5. LOCATIONS NOTED THUS: 0' - 0" INDICATES TOP OF SLAB ELEVATION.
6. SEE PEMB FOR BASE PLATE INFORMATION.
7. REFER TO PEMB FOR SIZE, LOCATION AND ORIENTATION OF ALL COLUMNS, ANCHOR BOLTS. NOTIFY ARCH. OF ANY DISCREPANCIES BETWEEN PLANS FOR RESOLUTION PRIOR TO FABRICATION AND INSTALLATION.
8. SEE 5/S3.01, 7/S3.01 & 10/S3.01 FOR ADDITIONAL REBAR AT OPENINGS, DISCONTINUOUS JOINTS, AND RE-ENTRANT CORNERS IN SLAB-ON-GRADE.
9. PROVIDE CONTRACTION JOINTS AND DISCONTINUOUS SLAB REINFORCING AS SHOWN IN DETAIL 6/S3.01.
10. REFER TO MEP FOR SLOPE - INVERT ELEVATION (I.E.) AT DRAINS.
11. TYPICAL SLOPE AT FLOOR IS 1/8" PER FOOT, U.N.O. ON ARCH.
12. PROVIDE (2)#4X4'-0" TOP & BOT. AT ALL RE-ENTRANT CORNERS AT SLAB ON GRADE. TOP REINFORCING SHALL BE PLACED AT 1 1/4" CLEAR FROM THE TOP OF THE SLAB.
13. ——► WHERE SHOWN ON PLAN INDICATES SLOPE DIRECTION. SEE ARCH. FOR INFORMATION.
14. ALL COLUMN LOCATIONS SHOWN AND ASSOCIATED FOUNDATIONS ARE PLACEHOLDERS IN THE ABSENCE OF A COMPLETE METAL BUILDING DESIGN SUBMITTAL. SEE GENERAL NOTES FOR SUBMITTAL REQUIREMENTS.
15. 1" EXPNSION JOINT SHALL BE PROVIDED BETWEEN PEMB BUILDING AND THE ADJACENT STEEL BUILDING (UNIT B)
16. PEMB ENGINEER TO BRACE THE TOP OF CMU WALLS FOR ANY LATERAL LOAD

FOUNDATION PLAN NOTES:

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5. LOCATIONS NOTED THUS: 0' - 0" INDICATES TOP OF SLAB ELEVATION.
6. REF. ELEVATION = 0' - 0" CORRESPONDS TO CIVIL ELEVATION 33.50'. VERIFY WITH CIVIL.
7. SEE DETAIL 13/S3.03 FOR BASE PLATES.
8. SEE 5/S3.01, 7/S3.01 & 10/S3.01 FOR ADDITIONAL REBAR AT OPENINGS, DISCONTINUOUS JOINTS, AND RE-ENTRANT CORNERS IN SLAB-ON-GRADE.
9. PROVIDE CONTRACTION JOINTS AND DISCONTINUOUS SLAB REINFORCING AS SHOWN IN DETAIL 6/S3.01.
10. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION / CONSTRUCTION.

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3	Addendum 3	10-17-2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	HR
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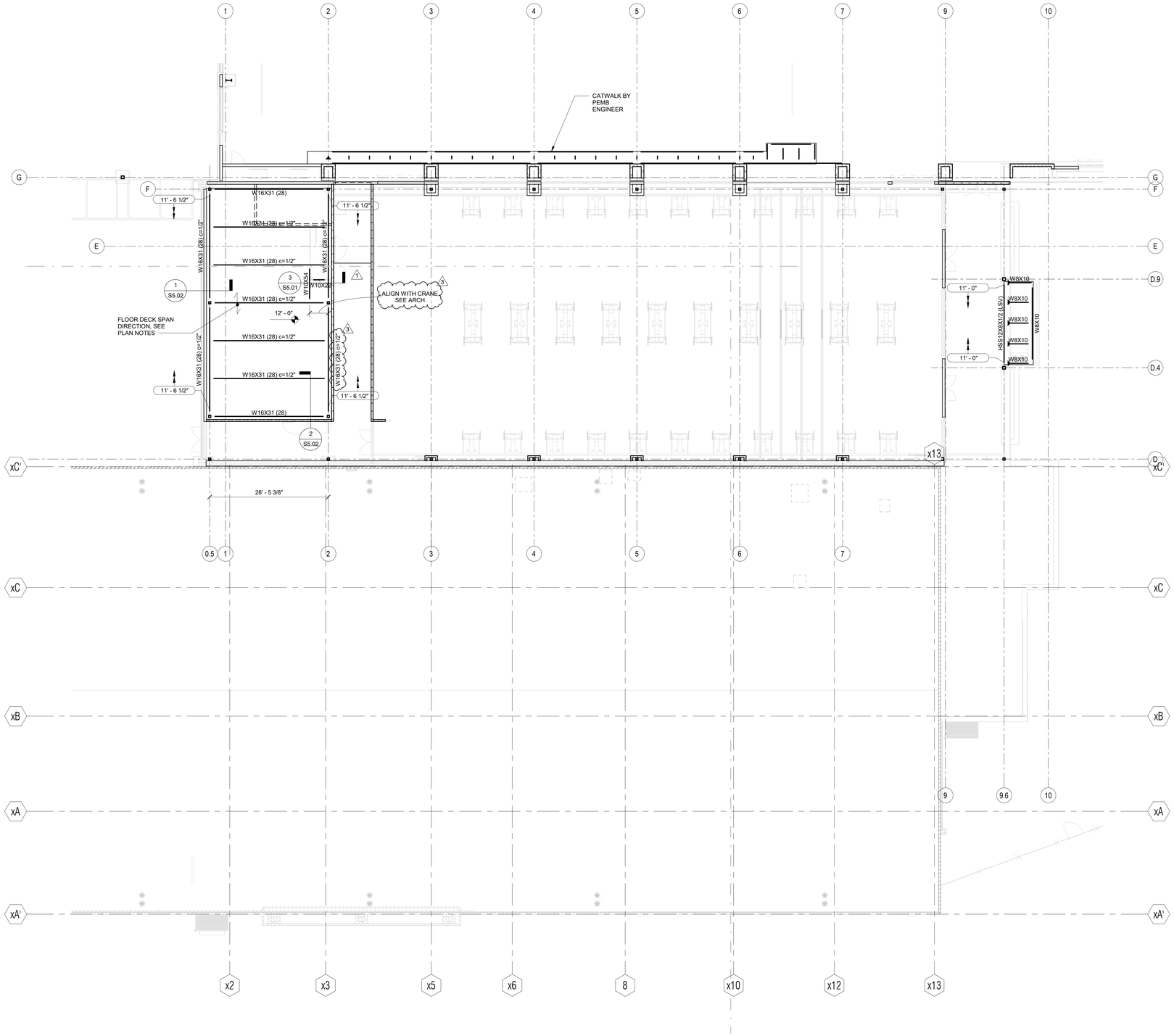
PROJECT NO.
25-0056.00

SHEET TITLE
FOUNDATION PLAN - UNIT C

SHEET NO.
S2.02C

KEY PLAN
C D B A

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1 MEZZANINE FRAMING PLAN - UNIT B

SCALE: 3/32" = 1'-0"

MEZZANINE FRAMING PLAN NOTES:

1. TOP OF CONCRETE ELEVATION = SEE PLAN
2. LOCATIONS SHOWN THUS: (12) C=3/4" INDICATES NUMBER OF SHEAR CONNECTORS AS 12 AND UPWARD CAMBER AT MID SPAN OF BEAM AS 3/4".
3. SPACE JOISTS EQUALLY U.N.O.
4. PROVIDE END PLATES AT ALL TUBE BEAMS.
5. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION / CONSTRUCTION.
6. HSS 6X6X5/8 FOR ALL COLUMN SIZES NOT SHOWN.
7. ⟝ = MOMENT CONNECTION
8. ALL LOWER TUBE BEAM ELEVATIONS TO BE VERIFIED WITH ARCHITECT DRAWINGS.
9. FLOOR SHALL BE 3 1/2" NORMAL WEIGHT CONCRETE OVER THE FLUTES OF 2" x 18 GA TYPE VLI STEEL DECK AS MANUFACTURED BY VULCRAFT OR APPROVED EQUIVALENT TO TOTAL THICKNESS = 5 1/2". REINFORCE CONCRETE WITH #3 AT 18" O.C. EACH WAY. PLACE REBAR PERPENDICULAR TO BEAMS (PARALLEL TO DECK) IN THE OUTSIDE LAYER. WELD DECK USING 5/8"Ø NET EFFECTIVE PUDDLE WELDS:
   a. PERPENDICULAR BEARING : 36/4 PATTERN.
   b. PARALLEL BEARING AND EDGE : AT 12" O.C.
   c. SIDE SEAMS : SEAM WELDS AT 12" O.C.
10. SEE 19/S5.01 FOR ADDITIONAL SLAB REINFORCING AT ALL BEAMS & GIRDERS.
11. SEE 13/S5.01 & 20/S5.01 FOR ADDITIONAL SLAB REINFORCING AT OPENINGS AND EDGES.
12. SEE 11/S5.01 & 15/S5.01 FOR ADDITIONAL STEEL ANGLES AND REINFORCING AT STEEL COLUMNS.
13. AT SLOPED FLOOR LOCATIONS ON ELEVATED FLOORS WHERE OVERALL SLAB THICKNESS IS LESS THAN 5 1/2", SPRAY FIREPROOFING SHALL BE APPLIED TO THE UNDERSIDE OF THE DECK IN SLOPED AREA TO MEET REQUIRED FIRE RATING. REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE RATING.

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3	Addendum 3	10-17-2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	HR
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PROJECT NO.

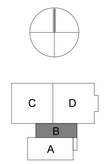
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SHEET TITLE

MEZZANINE FRAMING PLAN - UNIT B

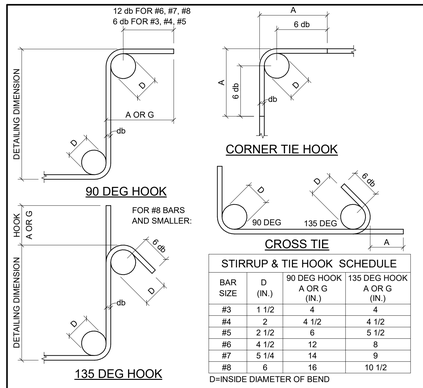
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S2.11B



KEY PLAN

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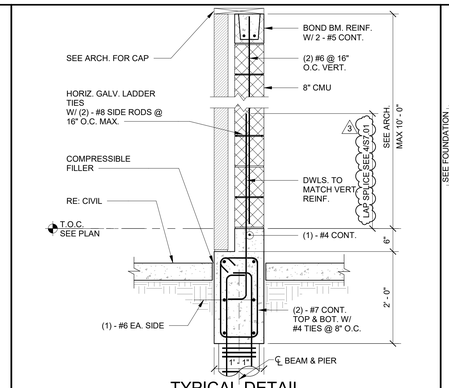


STIRRUP & TIE HOOK SCHEDULE			
BAR SIZE	D (IN.)	90 DEG HOOK A OR G (IN.)	135 DEG HOOK A OR G (IN.)
#3	1 1/2	4	4
#4	2	4 1/2	4 1/2
#5	2 1/2	6	5 1/2
#6	4 1/2	12	8
#7	5 1/4	14	9
#8	6	16	10 1/2

D=INSIDE DIAMETER OF BEND

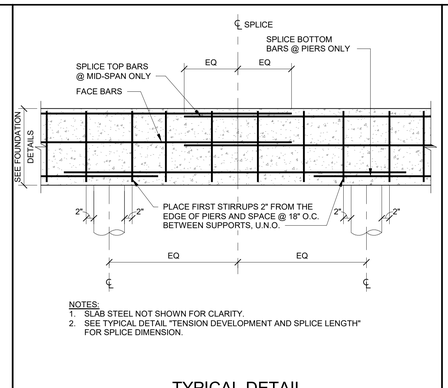
20 STIRRUP AND TIE HOOK TYPES

SCALE: N.T.S.



16 TYPICAL DETAIL
GRADE BEAM AT FREESTANDING WALL

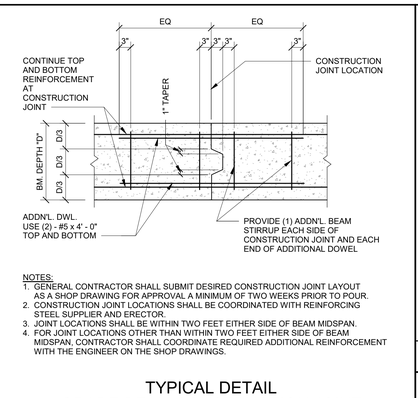
SCALE: 3/4" = 1'-0"



NOTES:
1. SLAB STEEL NOT SHOWN FOR CLARITY.
2. SEE TYPICAL DETAIL "TENSION DEVELOPMENT AND SPLICE LENGTH" FOR SPLICE DIMENSION.

12 TYPICAL DETAIL
BEAM REINFORCING SPLICE DETAIL

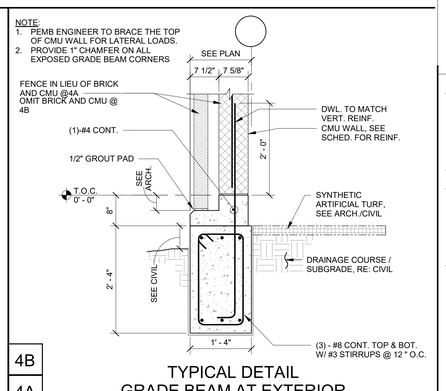
SCALE:N.T.S.



NOTES:
1. GENERAL CONTRACTOR SHALL SUBMIT DESIRED CONSTRUCTION JOINT LAYOUT AS A SHOP DRAWING FOR APPROVAL A MINIMUM OF TWO WEEKS PRIOR TO POUR.
2. CONSTRUCTION JOINT LOCATIONS SHALL BE COORDINATED WITH REINFORCING STEEL SUPPLIER AND ERECTOR.
3. JOINT LOCATIONS SHALL BE WITHIN TWO FEET EITHER SIDE OF BEAM MIDSPAN.
4. FOR JOINT LOCATIONS OTHER THAN WITHIN TWO FEET EITHER SIDE OF BEAM MIDSPAN, CONTRACTOR SHALL COORDINATE REQUIRED ADDITIONAL REINFORCEMENT WITH THE ENGINEER ON THE SHOP DRAWINGS.

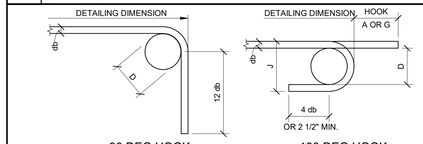
8 TYPICAL DETAIL
GRADE BEAM CONSTRUCTION JOINT

SCALE: N.T.S.



4B
4A
4 TYPICAL DETAIL
GRADE BEAM AT EXTERIOR
PRE-ENGINEERED METAL BUILDING

SCALE: 3/4" = 1'-0"

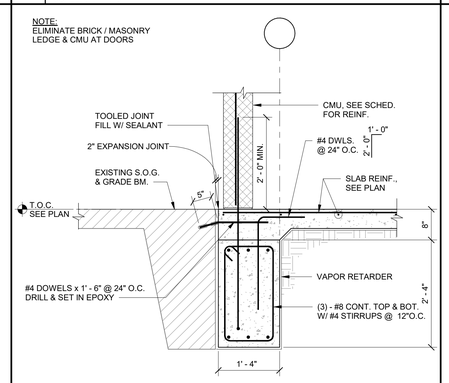


RECOMMENDED END HOOKS, ALL GRADES				
BAR SIZE	FINISHED BEND DIAMETER D, (IN.)	180 DEG HOOKS		90 DEG HOOKS
		A OR G, (IN.)	J, (IN.)	A OR G, (IN.)
#3	2 1/4	5	3	6
#4	3	6	4	8
#5	3 3/4	7	5	10
#6	4 1/2	8	6	12
#7	5 1/4	10	7	14
#8	6	11	8	16
#9	9 1/2	15	11 3/4	19
#10	10 3/4	17	13 1/4	22
#11	12	19	14 3/4	24
#14	18 1/4	27	21 3/4	31
#18	24	36	28 1/2	41

D = INSIDE DIAMETER OF BEND

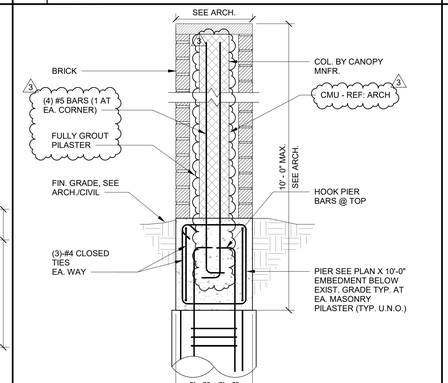
19 END HOOK TYPES

SCALE: N.T.S.



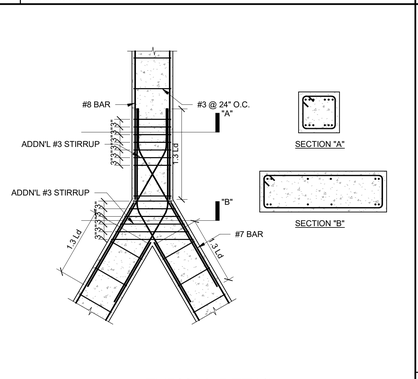
15 TYPICAL DETAIL GRADE BEAM AT EXISTING

SCALE: 3/4" = 1'-0"



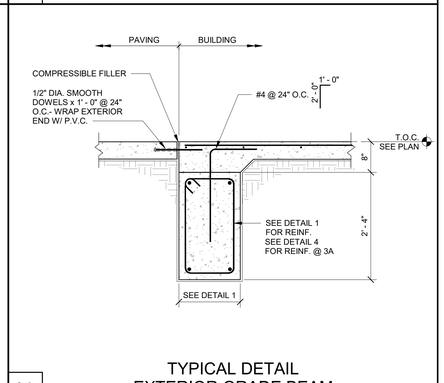
11 DETAIL AT BRICK PILASTER

SCALE: 3/4" = 1'-0"



7 TYPICAL DETAIL
REINFORCING AT TIE BEAMS

SCALE: N.T.S.



3A TYPICAL DETAIL
EXTERIOR GRADE BEAM
AT DOORS/FLATWORK

3 SCALE: 3/4" = 1'-0"

DEVELOPMENT LENGTHS OF STANDARD HOOKS IN TENSION
GRADE 60 (UNCOATED) REINFORCEMENT
(NORMAL WEIGHT CONCRETE)

BAR SIZE	F'c = 3000		F'c = 4000		F'c = 5000		F'c = 6000		F'c = 7000		F'c = 8000		F'c = 9000		F'c = 10000	
	Lhb	0.7Lhb	Lhb	0.7Lhb	Lhb	0.7Lhb	Lhb	0.7Lhb	Lhb	0.7Lhb	Lhb	0.7Lhb	Lhb	0.7Lhb	Lhb	0.7Lhb
#3	9	6	8	6	7	6	6	6	6	6	6	6	6	6	6	6
#4	11	8	10	7	9	6	8	6	8	6	7	6	7	6	6	6
#5	14	10	12	9	11	8	10	7	9	7	9	6	8	6	8	6
#6	17	12	15	10	13	9	12	9	11	8	11	8	10	7	9	7
#7	20	14	17	12	15	11	14	10	13	9	12	9	12	8	11	8
#8	22	16	19	14	17	12	16	11	15	11	14	10	13	9	12	9
#9	25	18	22	15	20	14	18	13	17	12	16	11	15	10	14	10
#10	28	20	25	17	22	16	20	14	19	13	18	12	17	12	16	11
#11	31	22	27	19	24	17	22	16	21	15	19	14	18	13	17	12

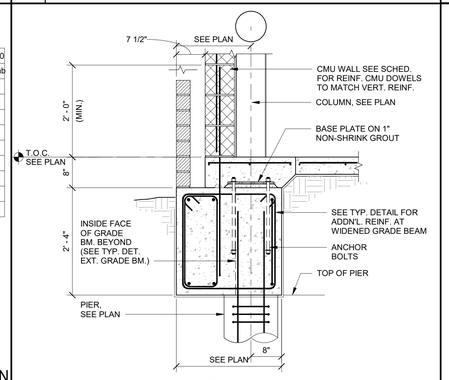
90° HOOKS 180° HOOKS

Ldh Ldh

NOTES:
1. ALL LENGTHS SHOWN IN THE TABLE ARE IN INCHES.
2. Lhb = TENSION DEVELOPMENT LENGTH.
3. Ldh = Lhb, UNLESS CONDITIONS OF ITEM 4 ARE SATISFIED.
4. Ldh = 0.7 Lhb, WHEN SIDE COVER NORMAL TO PLANE OF HOOK IS NOT LESS THAN 2 1/2 INCHES AND FOR 90° HOOK, COVER ON BAR EXTENSION BEYOND HOOK SHALL NOT BE LESS THAN 2 INCHES.
5. HOOKS SHALL NOT BE CONSIDERED EFFECTIVE IN DEVELOPING BARS IN COMPRESSION.

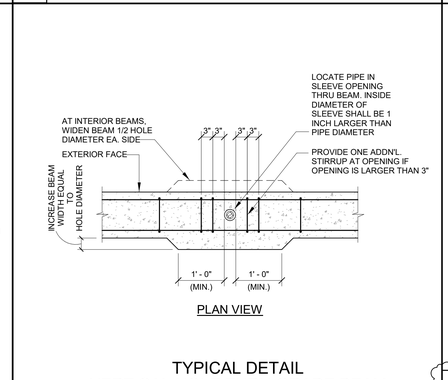
18 TYPICAL DETAIL
DEVELOPMENT LENGTH OF STANDARD HOOKS IN TENSION
(NORMAL WEIGHT CONCRETE)

SCALE: N.T.S.



14 TYPICAL DETAIL
PERIMETER GRADE BEAM AT COLUMN

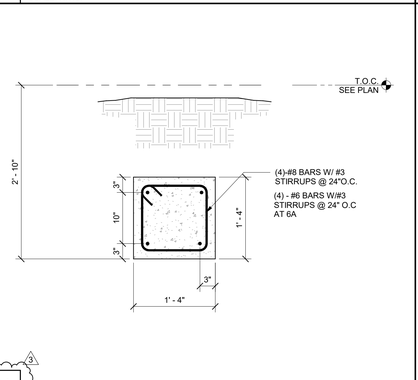
SCALE: 3/4" = 1'-0"



PLAN VIEW

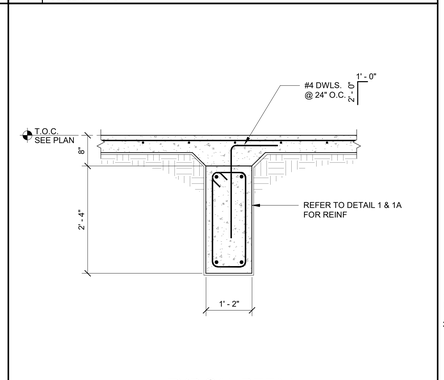
10 TYPICAL DETAIL
VERTICAL HOLE THRU GRADE BEAM
LARGER THAN 3" DIAMETER

SCALE: N.T.S.



6A 3 6 TIE BEAM AT PEMB BUILDING

SCALE: 1" = 1'-0"



2 TYPICAL DETAIL
INTERIOR GRADE BEAM

SCALE: 3/4" = 1'-0"

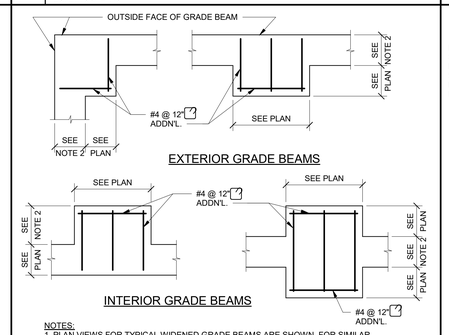
TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS
GRADE 60 (UNCOATED) REINFORCEMENT
(NORMAL WEIGHT CONCRETE)

BAR SIZE	F'c = 3000		F'c = 4000		F'c = 5000		F'c = 6000		F'c = 7000		F'c = 8000		F'c = 9000		F'c = 10000	
	CLASS A 1.0Ld	CLASS B 1.3Ld	CLASS A 1.0Ld	CLASS B 1.3Ld	CLASS A 1.0Ld	CLASS B 1.3Ld	CLASS A 1.0Ld	CLASS B 1.3Ld	CLASS A 1.0Ld	CLASS B 1.3Ld	CLASS A 1.0Ld	CLASS B 1.3Ld	CLASS A 1.0Ld	CLASS B 1.3Ld	CLASS A 1.0Ld	CLASS B 1.3Ld
#3	17	22	15	19	13	17	12	16	12	16	12	16	12	16	12	16
#4	22	29	19	25	17	23	16	21	15	19	14	18	13	17	12	16
#5	28	36	24	31	22	28	20	26	18	24	17	22	16	21	15	20
#6	33	43	29	37	26	34	24	31	22	28	21	27	19	25	18	24
#7	48	63	42	54	38	49	34	45	32	41	30	39	28	36	27	35
#8	55	72	48	62	43	56	39	51	36	47	34	44	32	42	30	39
#9	62	81	54	70	48	63	44	57	41	53	38	50	36	47	34	44
#10	70	91	61	79	54	71	50	64	46	60	43	56	41	53	39	50
#11	78	101	67	87	60	78	55	71	51	66	48	62	45	58	43	55

NOTES:
1. ALL LENGTHS SHOWN IN THE TABLE ARE IN INCHES.
2. Ld = TENSION DEVELOPMENT LENGTH.
3. THE ABOVE TABLE IS VALID FOR
   a. BEAMS AND COLUMNS WHERE CONCRETE COVER > = db, c/c BAR SPACING > = 2db AND WITH STIRRUPS OR TIES THROUGHOUT Ld NOT LESS THAN THE CODE MINIMUM.
   b. OTHER ELEMENTS SUCH AS SLABS, WALLS, ETC. WHERE CONCRETE COVER > = db, c/c BAR SPACING > = 3db.
4. FOR TOP BARS, MULTIPLY THE SPLICE LENGTHS BY 1.30. TOP BARS REQUIRE A MINIMUM OF 12" OF FRESH CONCRETE BELOW BAR.
5. WHEN BARS OF A DIFFERENT SIZE ARE LAP SPLICED IN TENSION, SPLICE LENGTH SHALL BE THE LARGER OF Ld OF THE LARGER BAR AND COMPRESSION LAP SPLICE LENGTH OF SMALLER BAR.
6. BARS SPLICED BY NON-CONTACT LAP SPLICES SHALL NOT BE SPACED TRANSVERSELY FARTHER APART THAN THE SMALLER OF ONE-FIFTH THE REQUIRED LAP SPLICE LENGTH AND 6

17 TYPICAL DETAIL
TENSION DEVELOPMENT AND SPLICE LENGTHS
(NORMAL WEIGHT CONCRETE)

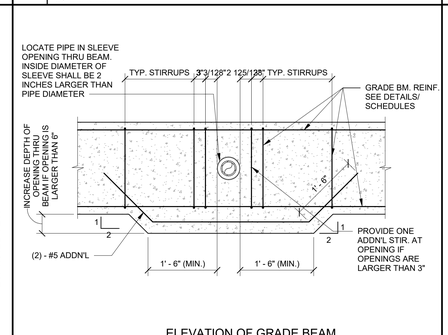
SCALE: N.T.S.



NOTES:
1. PLAN VIEWS FOR TYPICAL WIDENED GRADE BEAMS ARE SHOWN. FOR SIMILAR CONDITION NOT SHOWN, PROVIDE #4 ADDN'L. @ 12" O.C. MAX. IN WIDENED SECTION.
2. SEE DETAIL SHEETS FOR GRADE BEAM WIDTH.

13 TYPICAL DETAIL
ADDITIONAL BARS AT
WIDENED GRADE BEAM (PLAN VIEW)

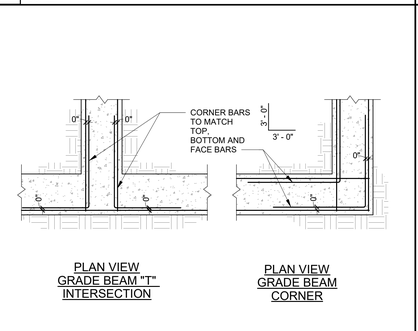
SCALE: N.T.S.



ELEVATION OF GRADE BEAM

9 TYPICAL DETAIL
OPENING THRU GRADE BEAM

SCALE: N.T.S.

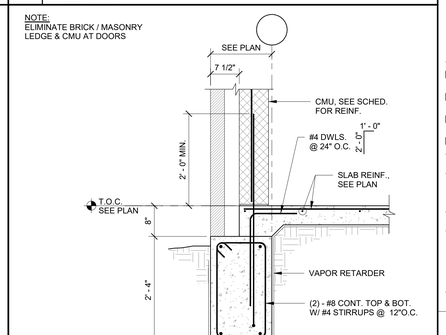


PLAN VIEW
GRADE BEAM "T" INTERSECTION

PLAN VIEW
GRADE BEAM CORNER

5 TYPICAL DETAIL
GRADE BEAM REINF. STEEL
CORNER BARS

SCALE: N.T.S.



1A 1 TYPICAL DETAIL
EXTERIOR GRADE BEAM

SCALE: 3/4" = 1'-0"

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PROFESSIONAL ENGINEER
10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
3 Addendum 3	10-17-2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	HR
Drawn By	RJC

PROJECT NO.

25-0056.00

SHEET TITLE

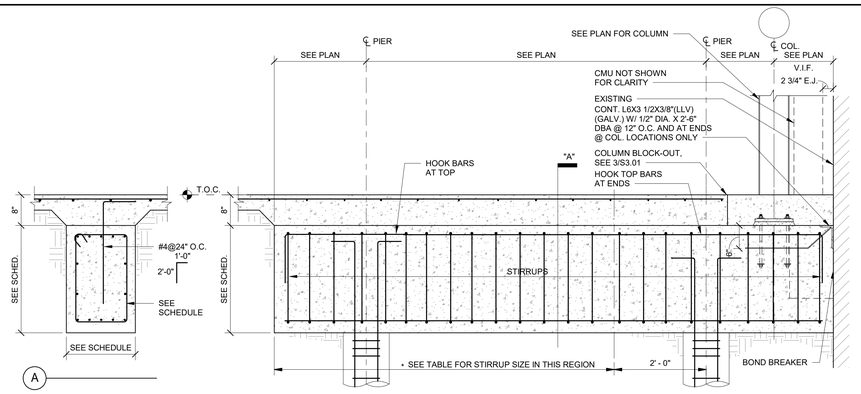
FOUNDATION DETAILS

SHEET NO.

S3.02

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	GRADE BEAM SCHEDULE				
	GR. BEAM DEPTH	GR. BEAM WIDTH	TOP & BOTT. REINF.	STIRRUPS	EACH FACE REINF.
20	3' - 6"	2' - 0"	(6)-#9 (TOP) (6)-#6 (BOT)	#4 @ 12" O.C. (2 LEGS)	(4)-#4
20A	3' - 6"	3' - 0"	(8)-#9 (TOP) (6)-#6 (BOT)	#4 @ 12" O.C. (2 LEGS)	(4)-#4
20B	2' - 4"	1' - 4"	(2)-#8 (TOP & BOT)	#4 @ 12" O.C. (2 LEGS)	N.A
20C	3' - 0"	1' - 6"	(4)-#9 (TOP) (4)-#6 (BOT)	#4 @ 12" O.C. (2 LEGS)	N.A
20D	2' - 4"	1' - 6"	(3)-#9 (TOP & BOT)	#3 @ 10" O.C. (2 LEGS)	N.A

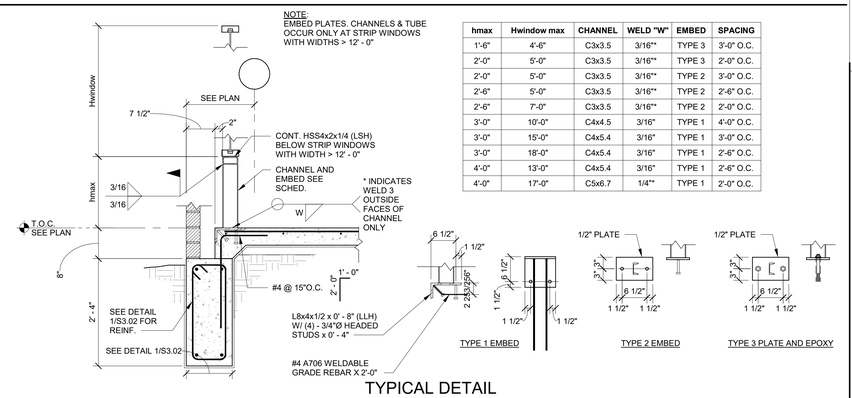


20 SCALE: 3/4" = 1'-0"

TYPICAL DETAIL CANTILEVER GRADE BEAM

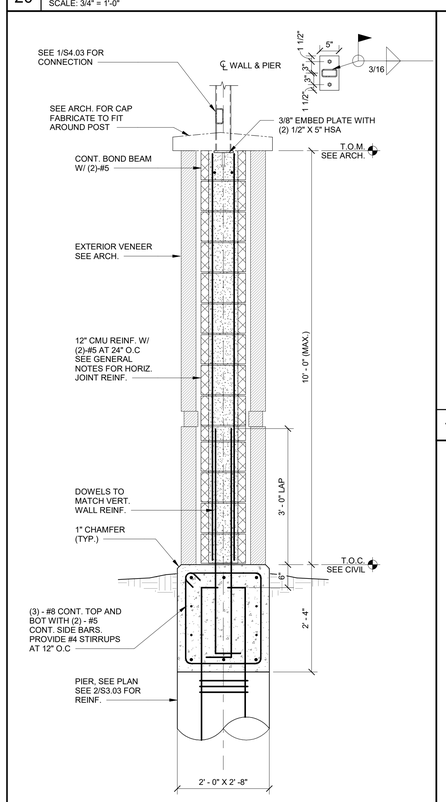
NOTE:
EMBED PLATES, CHANNELS & TUBE OCCUR ONLY AT STRIP WINDOWS WITH WIDTHS > 12' - 0"

hmax	Hwindow max	CHANNEL	WELD "W"	EMBED	SPACING
1'-6"	4'-6"	C3x3.5	3/16"*	TYPE 3	3'-0" O.C.
2'-0"	5'-0"	C3x3.5	3/16"*	TYPE 3	2'-0" O.C.
2'-0"	5'-0"	C3x3.5	3/16"*	TYPE 2	3'-0" O.C.
2'-6"	5'-0"	C3x3.5	3/16"*	TYPE 2	2'-6" O.C.
2'-6"	7'-0"	C3x3.5	3/16"*	TYPE 2	2'-0" O.C.
3'-0"	10'-0"	C4x4.5	3/16"	TYPE 1	4'-0" O.C.
3'-0"	15'-0"	C4x5.4	3/16"	TYPE 1	3'-0" O.C.
3'-0"	18'-0"	C4x5.4	3/16"	TYPE 1	2'-6" O.C.
4'-0"	13'-0"	C4x5.4	3/16"	TYPE 1	2'-6" O.C.
4'-0"	17'-0"	C5x6.7	1/4"*	TYPE 1	2'-0" O.C.



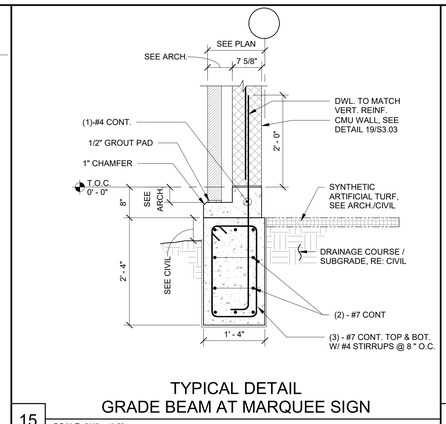
8 SCALE: 3/4" = 1'-0"

TYPICAL DETAIL STEEL SCHEDULE AT STRIP WINDOWS



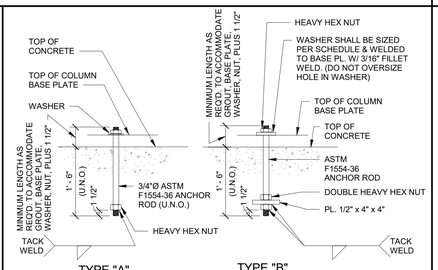
18 SCALE: 3/4" = 1'-0"

DETAIL AT MARQUEE SIGN



15 SCALE: 3/4" = 1'-0"

TYPICAL DETAIL GRADE BEAM AT MARQUEE SIGN



TYPE "A" TYPE "B"

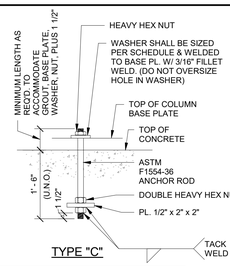
TYPE "B" WASHER SCHEDULE		
ANCHOR ROD DIA.	WASHER SIZE*	MIN. WASHER THICKNESS
3/4"	2"	1/4"
7/8"	2 1/2"	5/16"
1"	3"	3/8"
1 1/4"	3 1/2"	1/2"
1 1/2"	4"	1/2"
1 3/4"	4 1/2"	5/8"
2"	5"	3/4"
2 1/2"	5 1/2"	7/8"

NOTE:
USE TYPE "B" ANCHOR BOLTS AT COLUMNS WITH DIAGONAL BRACES, MOMENT CONNECTIONS, & AT CANOPY COLUMNS

*CIRCULAR OR SQUARE WASHERS MEETING WASHER SIZE ARE ACCEPTABLE

11 SCALE: N.T.S.

TYPICAL DETAIL ANCHOR BOLT



TYPE "C"

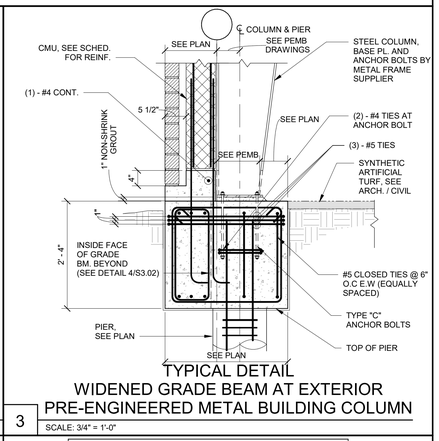
TYPE "B" WASHER SCHEDULE		
ANCHOR ROD DIA.	WASHER SIZE*	MIN. WASHER THICKNESS
3/4"	2"	1/4"
7/8"	2 1/2"	5/16"
1"	3"	3/8"
1 1/4"	3 1/2"	1/2"
1 1/2"	4"	1/2"
1 3/4"	4 1/2"	5/8"
2"	5"	3/4"
2 1/2"	5 1/2"	7/8"

NOTE:
USE TYPE "B" ANCHOR BOLTS AT COLUMNS WITH DIAGONAL BRACES, MOMENT CONNECTIONS, & AT CANOPY COLUMNS

*CIRCULAR OR SQUARE WASHERS MEETING WASHER SIZE ARE ACCEPTABLE

7 SCALE: N.T.S.

TYPICAL DETAIL ANCHOR BOLT

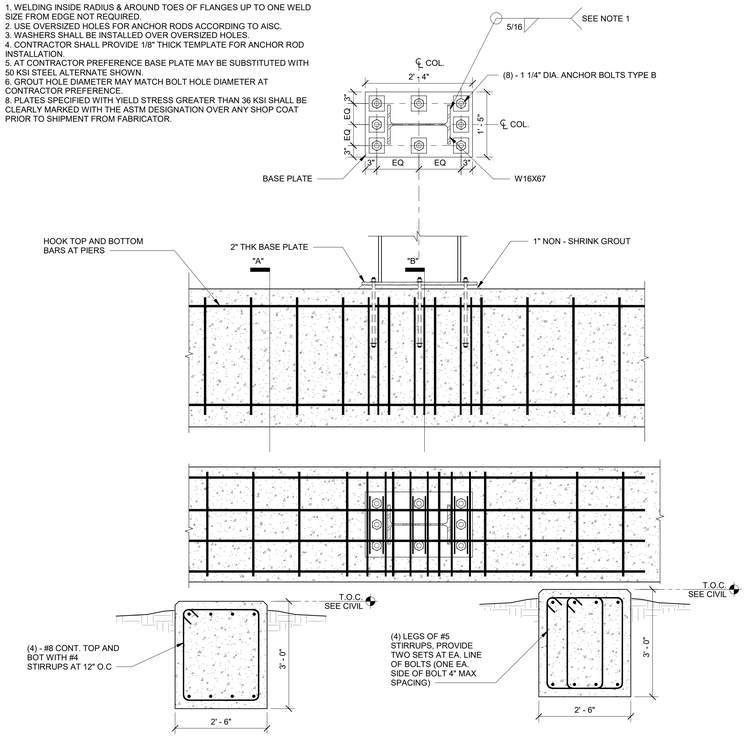


3 SCALE: 3/4" = 1'-0"

TYPICAL DETAIL WIDENED GRADE BEAM AT EXTERIOR PRE-ENGINEERED METAL BUILDING COLUMN

NOTES:

1. WELDING INSIDE RADIUS & AROUND TOES OF FLANGES UP TO ONE WELD SIZE FROM EDGE NOT REQUIRED.
2. USE OVERSIZED HOLES FOR ANCHOR RODS ACCORDING TO AISC.
3. WASHERS SHALL BE INSTALLED OVER OVERSIZED HOLES.
4. CONTRACTOR SHALL PROVIDE 1/8" THICK TEMPLATE FOR ANCHOR ROD INSTALLATION.
5. AT CONTRACTOR PREFERENCE BASE PLATE MAY BE SUBSTITUTED WITH 50 KSI STEEL ALTERNATE SHOWN.
6. GROUT HOLE DIAMETER MAY MATCH BOLT HOLE DIAMETER AT CONTRACTOR PREFERENCE.
8. PLATES SPECIFIED WITH YIELD STRESS GREATER THAN 36 KSI SHALL BE CLEARLY MARKED WITH THE ASTM DESIGNATION OVER ANY SHOP COAT PRIOR TO SHIPMENT FROM FABRICATOR.

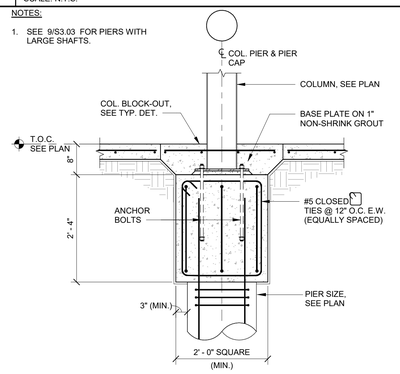


13 SCALE: 3/4" = 1'-0"

GRADE BEAM AND BASE PLATE DETAIL AT MARQUEE SIGN

NOTES:

1. SEE 9/S3.03 FOR PIERS WITH LARGE SHAFTS.

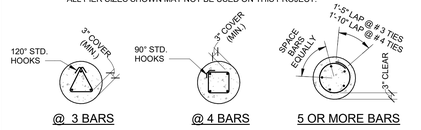


6 SCALE: 3/4" = 1'-0"

TYPICAL DETAIL INTERIOR COLUMN WITH PIER CAP

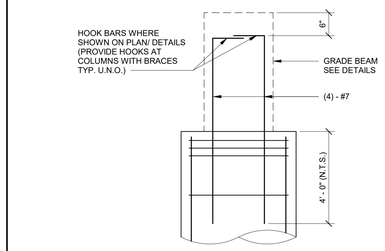
DRILLED PIER VERTICAL REINFORCEMENT SCHEDULE		
SHAFT DIAMETER (INCHES)	VERTICAL REINFORCEMENT	TIES (USE #3 @ 12" U.N.O.)
12	3 - #5	#3 @ 10"
14, 16	4 - #5	#3 @ 10"
18, 20	4 - #6	
22, 24, 26	5 - #7	
28, 30	5 - #8	
36	5 - #9	
42	7 - #9	
48	7 - #10	
54	9 - #10	
60	9 - #11	#4 @ 12"
66	11 - #11	#4 @ 12"
72	13 - #11	#4 @ 12"

*ALL PIER SIZES SHOWN MAY NOT BE USED ON THIS PROJECT.



2 SCALE: N.T.S.

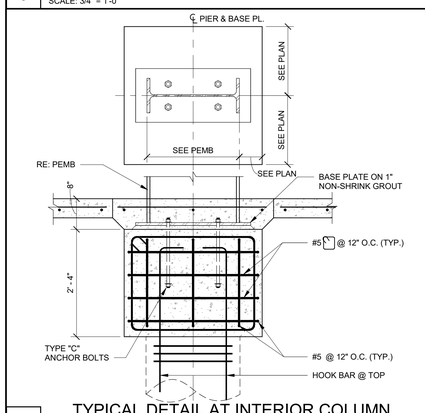
SHAFT BAR PLACEMENT PLANS



NOTES:
1. THIS DETAIL SHALL BE USED WHERE PIER REINFORCING STEEL CAN NOT BE ACCOMMODATED WITHIN WIDTH OF GRADE BEAMS.
2. SEE TYPICAL DRILLED PIER DETAIL FOR ADDITIONAL INFORMATION.

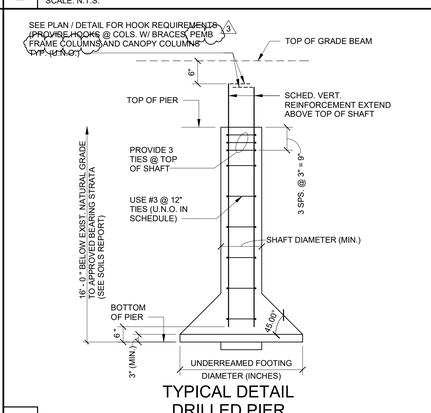
17 SCALE: N.T.S.

TYPICAL DETAIL SHAFT SIZE LARGER THAN GRADE BM. WIDTH



5 SCALE: 3/4" = 1'-0"

TYPICAL DETAIL AT INTERIOR COLUMN



1 SCALE: N.T.S.

TYPICAL DETAIL DRILLED PIER

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10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 1	10-08-2025
3 Addendum 3	10-17-2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	HR
Drawn By	RJC

PROJECT NO.

25-0056.00

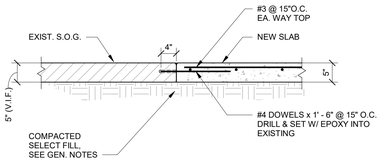
SHEET TITLE

FOUNDATION DETAILS

SHEET NO.

S3.03

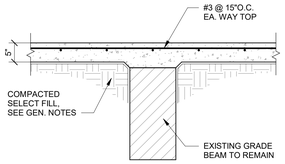
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NOTE:
1. SAWCUT TOP 1" OF EXISTING SLAB PRIOR TO REMOVING EXISTING CONCRETE.
2. EXTENT OF SLAB DEMOLITION TO BE DETERMINED BY CONTRACTOR.

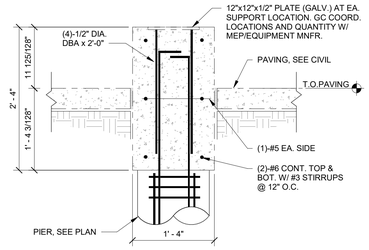
16 SCALE: 3/4" = 1'-0"

TYPICAL DETAIL
AT EXISTING SLAB-ON-GRADE



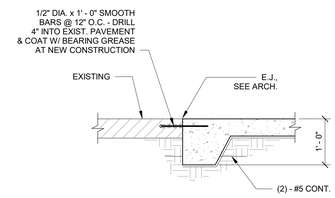
12 SCALE: 3/4" = 1'-0"

TYPICAL DETAIL
SLAB REPAIR OVER EXISTING BEAM



9 SCALE: 1" = 1'-0"

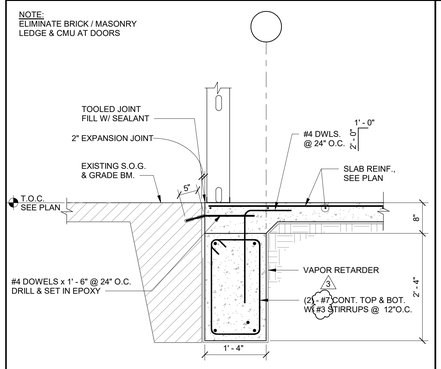
TYPICAL DETAIL
GRADE BEAM AT CHILLER



4 SCALE: 3/4" = 1'-0"

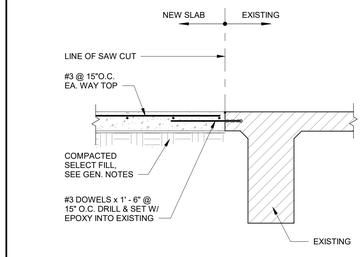
TYPICAL DETAIL
NEW SLAB-ON-GRADE AT EXISTING SLAB

NOTE:
ELIMINATE BRICK / MASONRY
LEDGE & CMU AT DOORS



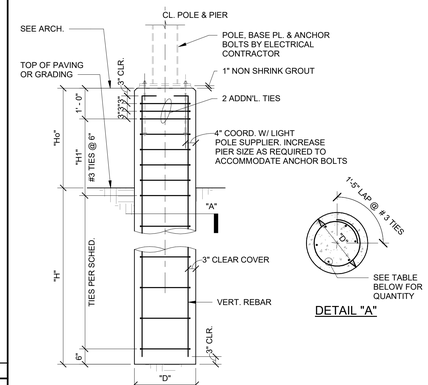
19 SCALE: 3/4" = 1'-0"

GRADE BEAM AT EXISTING



15 SCALE: 3/4" = 1'-0"

TYPICAL DETAIL
SLAB REPAIR NEAR BEAM

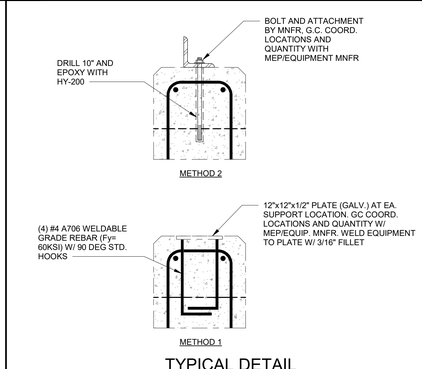


POLE MARK	NOM. POLE HEIGHT	ASSUMED EPA (sf)	"H" DEPTH OF PIER	"Ho" ABOVE GRADE	"H1"	"D" DIAMETER OF PIER	VERTICAL REINF	TIES	REMARKS
LP1	15' - 0"	5.0	5' - 0"	RE: ARCH.	1' - 6"	24"	6 - #6	#3 @ 12"	TYPICAL PARKING
LP2	25' - 0"	10.0	8' - 0"	RE: ARCH.	1' - 6"	24"	6 - #6	#3 @ 12"	TYPICAL PARKING
LP3	35' - 0"	10.0	10' - 0"	RE: ARCH.	1' - 6"	24"	6 - #7	#3 @ 12"	

NOTES:
1. WIND LOAD CRITERIA IS PER IBC 2021. Vult = 146 MPH.
2. CONCRETE COMPRESSIVE STRENGTH, F'C = 3,000 PSI (NWC), WITH A MAX WATER/CEMENT RATIO OF 0.54.
3. STEEL REINFORCEMENT SHALL BE ASTM A615, GR. 60.
4. REFER TO ARCH DRAWINGS/CIVIL DRAWINGS FOR LOCATIONS OF LIGHT POLES.
5. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION (AND SPECIFICATIONS FOR LIGHT STANDARDS).
6. VERIFY PROJECTION OF CONCRETE ABOVE GROUND WITH ARCHITECT.
7. EPA INDICATES MAXIMUM EXPOSED PROJECTED AREA AT THE TOP OF THE POLE IN ANY DIRECTION.
8. FOR A STATED POLE HEIGHT SHOWN ON THE TABLE, THE DEPTH OF PIER IS DEEMED ADEQUATE IF EPA IS LESS THAN SHOWN ON TABLE ABOVE.
9. THE PRESENCE OF SAND SEAMS AND SLICKENSIDES IN THE LAYERS MAY CAUSE SLOUGHING DURING PIER EXCAVATION. THIS MAY REQUIRE THE USE OF TEMPORARY STEEL CASING.
10. CONCRETE SHALL BE POURED IMMEDIATELY AFTER EXCAVATION.

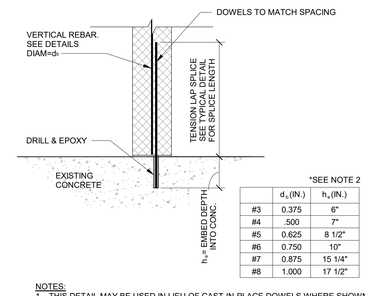
11 SCALE: N.T.S.

TYPICAL DETAIL
LIGHT POLE FOUNDATION



8 SCALE: 1 1/2" = 1'-0"

TYPICAL DETAIL
COOLING TOWER TO
CONCRETE ATTACHMENT



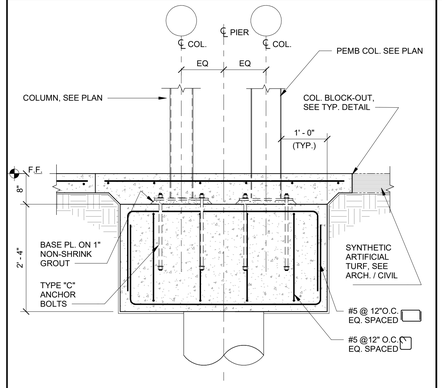
*SEE NOTE 2

	d_s (IN.)	h_e (IN.)
#3	0.375	6"
#4	.500	7"
#5	0.625	8 1/2"
#6	0.750	10"
#7	0.875	15 1/4"
#8	1.000	17 1/2"

NOTES:
1. THIS DETAIL MAY BE USED IN LIEU OF CAST-IN-PLACE DOWELS WHERE SHOWN ON STRUCTURAL DETAILS EXCEPT WHERE PROHIBITED BY NOTE 2.
2. THIS DETAIL IS NOT APPLICABLE AT CANTILEVER WALLS OR WALLS SUBJECTED TO MOMENT AT THE BASE.
3. USE HILTI HIT-HY200 ADHESIVE SYSTEM OR APPROVED EQUIVALENT.

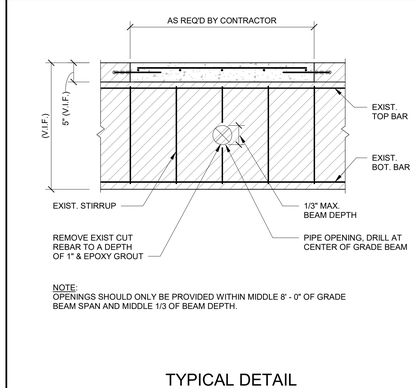
3 SCALE: 1" = 1'-0"

ALTERNATE DETAIL
EPOXY DOWELS AT CMU WALLS



18 SCALE: 3/4" = 1'-0"

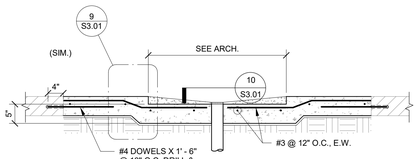
SHARED PIER CAP



NOTE:
OPENINGS SHOULD ONLY BE PROVIDED WITHIN MIDDLE 8' - 0" OF GRADE BEAM SPAN AND MIDDLE 1/3 OF BEAM DEPTH.

14 SCALE: 3/4" = 1'-0"

TYPICAL DETAIL
PIPE OPENING THROUGH EXIST GRADE BEAM

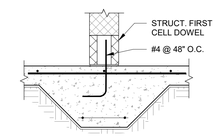


NOTE:
SEE ARCH. FOR LOCATIONS AND EXTENTS.

7 SCALE: 3/4" = 1'-0"

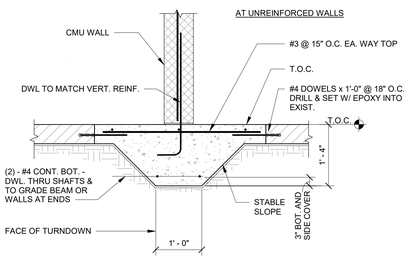
TYPICAL DETAIL
SHOWER SLAB DEPRESSION AT EXISTING

FOUNDATION TYPE							
	4" CMU	6" CMU			8" CMU		
GROUT	NONE	NONE	AT 48"	AT 24"	NONE	AT 48"	AT 24"
WALL HEIGHT (FT)							
0-10	1	1	1	1	1	1	1
12	1	1	1	1	1	1	2
14	1	1	1	2	1	2	2
16	1	1	2	2	2	2	2
18	1	2	2	2	2	2	2
20	2	2	2	2	2	2	2



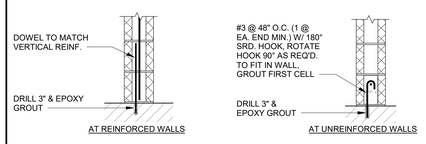
NOTE :
THIS DETAIL APPLIES AT ALL CMU WALL LOCATIONS WITHOUT GRADE BEAMS.

AT UNREINFORCED WALLS



NOTE:
SEE PLAN FOR LOCATIONS MARKED "TURNDOWN", T.D. OR OTHERWISE NOTED.

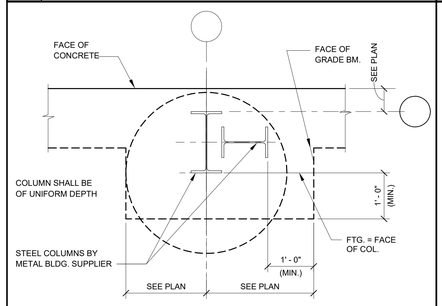
TYPE 2 DETAIL



TYPE 1 DETAIL

1 SCALE: 3/4" = 1'-0"

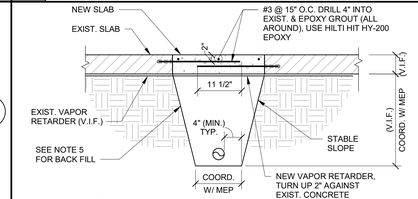
TYPICAL DETAIL
EXISTING FOUNDATION AT NON-LOAD
BEARING CMU WALL



NOTE:
1. LOCATIONS OF PORTAL FRAMES ARE UNKNOWN UNTIL PEMB SHOP DRAWINGS ARE RECEIVED, G.C. TO COORDINATE LOCATIONS AND ADJUST PLINTH SIZES ACCORDINGLY

17 SCALE: 3/4" = 1'-0"

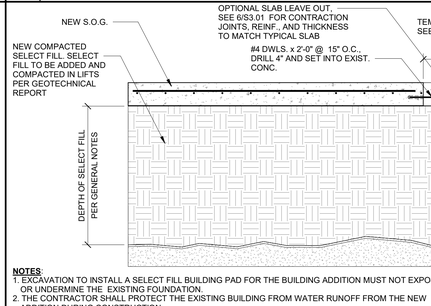
TYPICAL DETAIL
PLAN AT PORTAL FRAME



GENERAL NOTES:
1. COORDINATE LOCATION AND SIZE OF ALL TRENCHES WITH ARCH./MEP DRAWINGS.
2. CONCRETE SHALL BE NORMAL WEIGHT CONCRETE AND SHALL HAVE 28 DAYS COMPRESSION STRENGTH OF MINIMUM 3,000 PSI (MAXIMUM AGGREGATE SIZE = 1 1/2"). MIX DESIGN SHALL CONFORM TO THE STANDARDS OF ACI 318 AND ACI 301.
3. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
4. VAPOR RETARDER UNDER THE NEW SLAB SHALL BE 15 MIL STEGO VAPOR BARRIERS AS MANUFACTURED BY STEGO OR EQUIVALENT. ALL SEAMS SHALL BE OVERLAPPED MINIMUM 6 INCHES AND TAPED WITH MANUFACTURER'S TAPE.
5. FILL UNDER THE NEW SLAB SHALL BE STRUCTURAL FILL (SANDY CLAY OR CLAYEY SAND) HAVING PLASTICITY INDEX BETWEEN 10 AND 20 AND LIQUID LIMIT NOT EXCEEDING 40. FILL MATERIAL SHALL BE PLACED IN 6 INCH LOOSE LIFTS AND COMPACTED TO AT LEAST 95% MAXIMUM DENSITY (ASTM D698). THE SELECT FILL SHALL BE MOISTURE ADJUSTED TO WITHIN 2% OF OPTIMUM MOISTURE CONTENT. AS AN ALTERNATE TO SELECT FILL, CONTRACTOR MAY UTILIZE CEMENT STABILIZED SAND FOR BACKFILLING TRENCHES. SAND SHALL BE CLEAN AND SHALL CONFORM TO ASTM C33 AND CEMENT SHALL CONFORM TO ASTM C150. SAND-CEMENT MIXTURE SHALL PROVIDE COMPRESSIVE STRENGTH OF MINIMUM 100 PSI WHEN COMPACTED TO MINIMUM 95% (ASTM D558). PLACE MATERIAL IN 8 INCH LOOSE LIFTS AND COMPACT TO MINIMUM 95% WITH MOISTURE CONTENT AT OPTIMUM OR BELOW OPTIMUM MOISTURE CONTENT.
6. V.I.F. - VERIFY IN FIELD.

13 SCALE: 3/4" = 1'-0"

TYPICAL DETAIL AT PLUMBING TRENCHES



NOTES:
1. EXCAVATION TO INSTALL A SELECT FILL BUILDING PAD FOR THE BUILDING ADDITION MUST NOT EXPOSE OR UNDERMINE THE EXISTING FOUNDATION.
2. THE CONTRACTOR SHALL PROTECT THE EXISTING BUILDING FROM WATER RUNOFF FROM THE NEW ADDITION DURING CONSTRUCTION.
3. AT CONTRACTOR OPTION, A SLAB LEAVE-OUT MAY BE PROVIDED ADJACENT TO THE EXISTING BUILDING TO PROVIDE TEMPORARY DRAINAGE.
4. IF CONTRACTOR CHOOSES TO POUR SLAB MONOLITICALLY, A CONTINUOUS WATERSTOP AND FLASHING SHALL BE PROVIDED ADJACENT TO THE EXISTING BUILDING TO PREVENT WATER DAMAGE. FLASHING DETAIL SHALL BE SUMBITTED TO ARCH. FOR APPROVAL.
5. CONTRACTOR SHALL HAVE TESTING LAB PERFORM OBSERVATIONS AND COMPACTION TESTS AT LEAVE OUTS PRIOR TO POURING LEAVE OUT CONCRETE BUT AFTER THE REMAINING SLAB HAS BEEN POURED.

10 SCALE: 3/4" = 1'-0"

TYPICAL DETAIL NEW SLAB AND SELECT FILL NEAR EXISTING BUILDING

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North Shore Multi-use Indoor Facility

Matrix Structural Engineers
TBPE Firm Registration No. F-2640

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KHALIL TABAJA
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LICENSED
PROFESSIONAL
ENGINEER
10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
3 Addendum 3	10-17-2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	HR
Drawn By	RJC

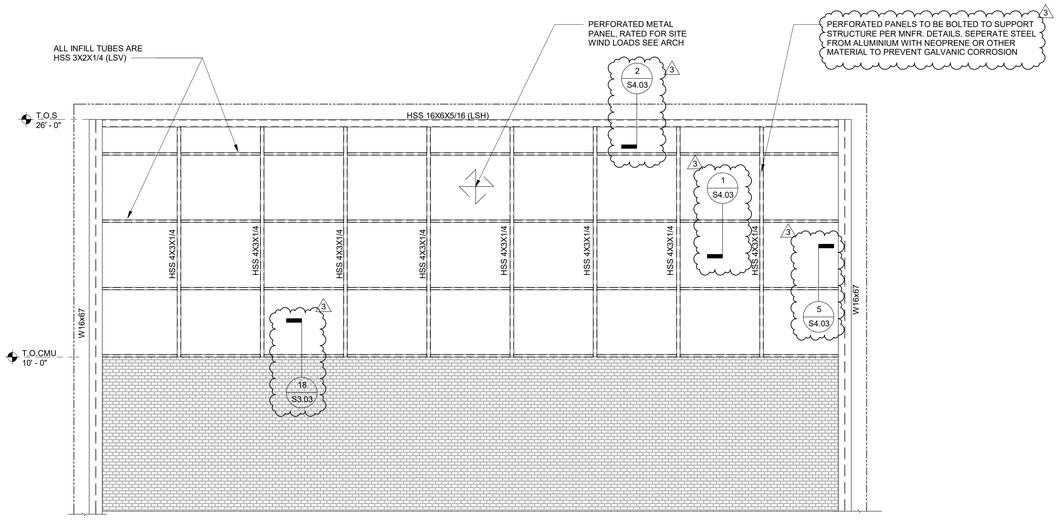
PROJECT NO.
25-0056.00

SHEET TITLE
FOUNDATION DETAILS

SHEET NO.
S3.04

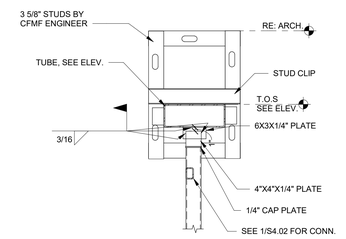
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NOTE:
REFER TO 13 & 18 / S3.03 FOR
FOUNDATION AND CMU INFORMATION



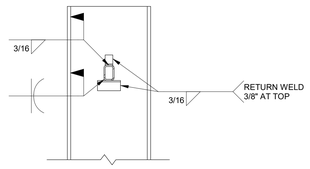
MARQUEE ELEVATION

14 SCALE: 1/4" = 1'-0"



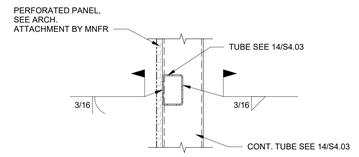
TYPICAL DETAIL TUBE TO GIRT DETAIL

2 SCALE: 3/4" = 1'-0"



TYPICAL DETAIL TUBE TO COLUMN DETAIL

5 SCALE: N.T.S.



TYPICAL DETAIL TUBE TO TUBE CONNECTION AT PERFORATED PANEL

1 SCALE: N.T.S.

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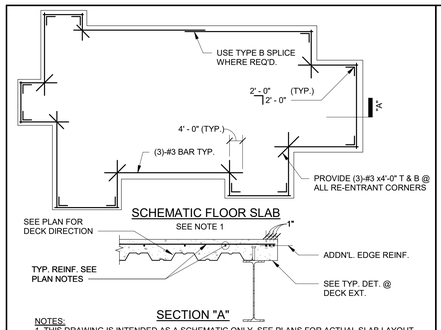
PROJECT NO.
25-0056.00

SHEET TITLE
STEEL DETAILS

SHEET NO.
S4.03

North Shore Multi-use Indoor Facility

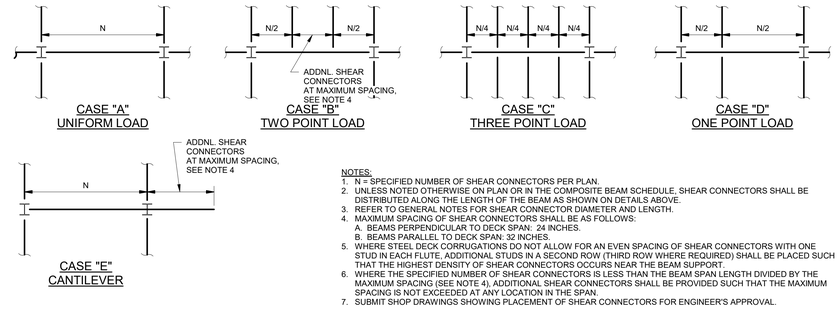
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NOTES:
1. THIS DRAWING IS INTENDED AS A SCHEMATIC ONLY. SEE PLANS FOR ACTUAL SLAB LAYOUT.
2. TYPICAL REINFORCING PARALLEL TO EDGE REINF. SHALL START 6" FROM EDGE REBAR.
3. ADDITIONAL BARS NEED ONLY BE PROVIDED AT OPENINGS LARGER THAN 4' - 0" WIDE.

TYPICAL DETAIL
REINFORCING AT SLAB EDGE

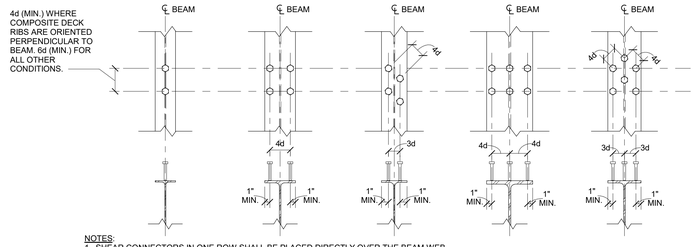
20 SCALE: N.T.S.



NOTES:
1. N = SPECIFIED NUMBER OF SHEAR CONNECTORS PER PLAN.
2. UNLESS NOTED OTHERWISE ON PLAN OR IN THE COMPOSITE BEAM SCHEDULE, SHEAR CONNECTORS SHALL BE DISTRIBUTED ALONG THE LENGTH OF THE BEAM AS SHOWN ON DETAILS ABOVE.
3. REFER TO GENERAL NOTES FOR SHEAR CONNECTOR DIAMETER AND LENGTH.
4. MAXIMUM SPACING OF SHEAR CONNECTORS SHALL BE AS FOLLOWS:
   A. BEAMS PERPENDICULAR TO DECK SPAN: 24 INCHES.
   B. BEAMS PARALLEL TO DECK SPAN: 32 INCHES.
5. WHERE STEEL DECK CORRUGATIONS DO NOT ALLOW FOR AN EVEN SPACING OF SHEAR CONNECTORS WITH ONE STUD IN EACH FLUTE, ADDITIONAL STUDS IN A SECOND ROW (THIRD ROW WHERE REQUIRED) SHALL BE PLACED SUCH THAT THE HIGHEST DENSITY OF SHEAR CONNECTORS OCCURS NEAR THE BEAM SUPPORT.
6. WHERE THE SPECIFIED NUMBER OF SHEAR CONNECTORS IS LESS THAN THE BEAM SPAN LENGTH DIVIDED BY THE MAXIMUM SPACING (SEE NOTE 4), ADDITIONAL SHEAR CONNECTORS SHALL BE PROVIDED SUCH THAT THE MAXIMUM SPACING IS NOT EXCEEDED AT ANY LOCATION IN THE SPAN.
7. SUBMIT SHOP DRAWINGS SHOWING PLACEMENT OF SHEAR CONNECTORS FOR ENGINEER'S APPROVAL.

TYPICAL DETAIL
SHEAR CONNECTOR PLACEMENT DIAGRAMS COMPOSITE METAL DECK

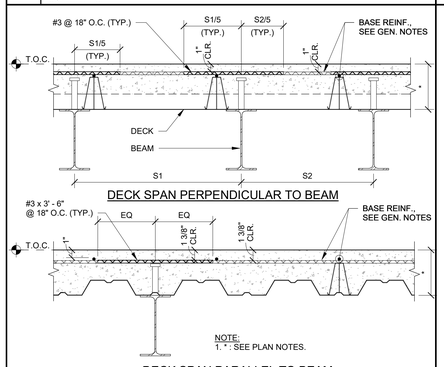
16 SCALE: N.T.S.



NOTES:
1. SHEAR CONNECTORS IN ONE ROW SHALL BE PLACED DIRECTLY OVER THE BEAM WEB.
2. PLACE STUDS IN A SINGLE ROW WHERE SPACING REQUIREMENTS PERMIT. STUDS SHALL BE PLACED IN TWO ROWS OR THREE ROWS ONLY WHERE REQUIRED IN ORDER TO PLACE THE TOTAL NUMBER OF STUDS. SEE TYPICAL DETAIL, "SHEAR CONNECTOR PLACEMENT DIAGRAMS COMPOSITE METAL DECK".
3. PROVIDE MINIMUM 1" SPACING FROM EDGE OF FLANGE TO CENTERLINE OF STUD.
4. SUBMIT SHOP DRAWINGS SHOWING PLACEMENT OF SHEAR CONNECTORS FOR ENGINEER'S APPROVAL.
5. D - INDICATES STUD SHAFT DIAMETER.
6. IF THE STEEL BEAM FLANGE IS NARROW. SPACING REQUIREMENTS MAYBE MET BY STAGGERING STUDS AS SHOWN.
7. SPACINGS SHOWN ARE MINIMUM AND MAY BE EXCEEDED WHERE SPACE IS AVAILABLE. SEE TYPICAL DETAIL "SHEAR CONNECTOR PLACEMENT DIAGRAMS ON COMPOSITE METAL DECK" FOR ADDITIONAL INFO.

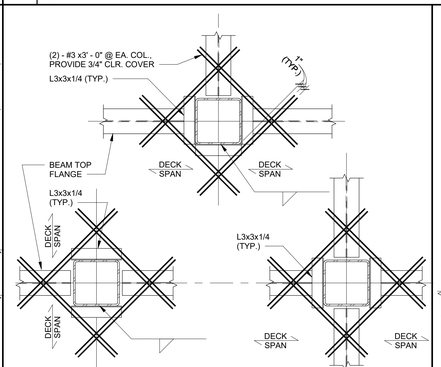
TYPICAL DETAIL
SHEAR CONNECTOR SPACING CRITERIA

8 SCALE: N.T.S.



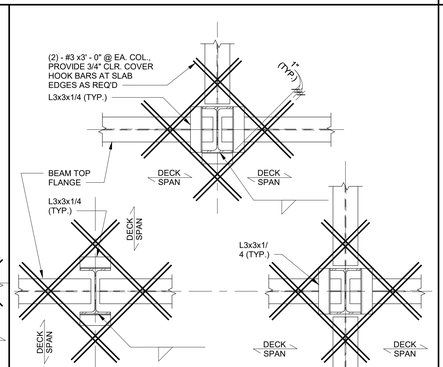
TYPICAL DETAIL
ADDITIONAL REBAR FOR CONCRETE ON STEEL DECK

19 SCALE: N.T.S.



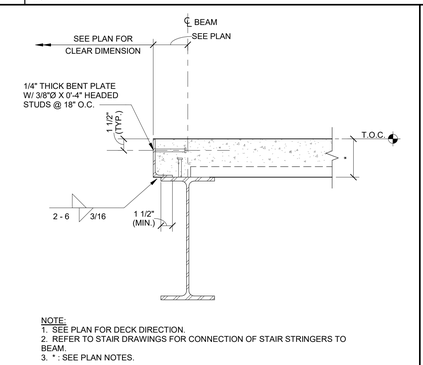
TYPICAL DETAIL
METAL DECK SUPPORT AT STEEL COLUMNS

15 SCALE: N.T.S.



TYPICAL DETAIL
METAL DECK SUPPORT AT STEEL COLUMNS

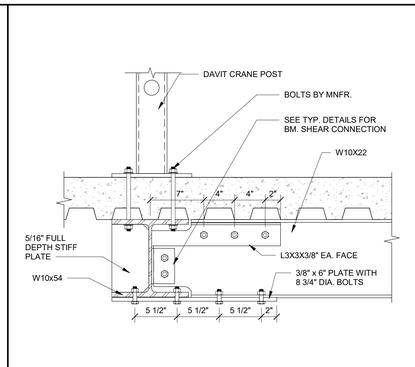
11 SCALE: N.T.S.



NOTE:
1. SEE PLAN FOR DECK DIRECTION.
2. REFER TO STAIR DRAWINGS FOR CONNECTION OF STAIR STRINGERS TO BEAM.
3. * : SEE PLAN NOTES.

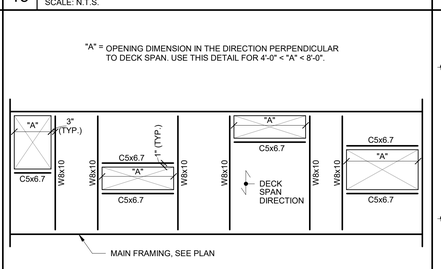
TYPICAL DETAIL
STEEL STAIR FLOOR LANDING COMPOSITE METAL DECK

7 SCALE: N.T.S.



DETAIL AT DAVIT CRANE POST

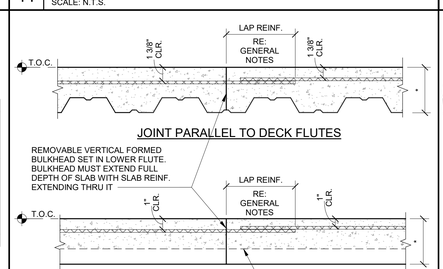
3 SCALE: 1 1/2" = 1'-0"



NOTES:
1. COORDINATE OPENING SIZE AND LOCATIONS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
2. THIS DETAIL SHOWS TYPICAL CONFIGURATIONS. VERIFY WITH STRUCTURE ENGINEER FOR SPECIAL CASES.
3. REFER TO STRUCTURAL ENGINEER FOR FRAMING IF DIMENSION "A" EXCEEDS 8'-0".
4. DECK MANUFACTURER TO PROVIDE 14 GAGE METAL EDGE CLOSURE AROUND EACH OPENING UNLESS DETAILED OTHERWISE.

TYPICAL DETAIL
FRAMED OPENINGS IN COMPOSITE METAL DECK SLAB FLOOR OR ROOF

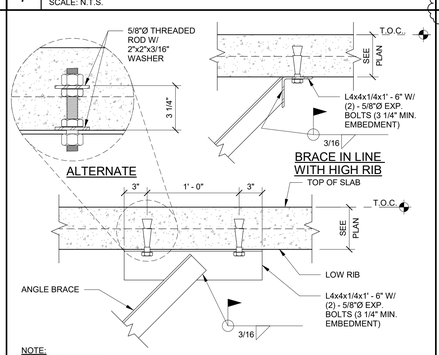
14 SCALE: N.T.S.



NOTES:
1. CONSTRUCTION JOINTS PARALLEL TO DECK FLUTES SHALL BE LOCATED NO CLOSER THAN 5' - 0" FROM THE CENTERLINE OF THE NEAREST GIRDER.
2. CONSTRUCTION JOINTS PERPENDICULAR TO DECK FLUTES SHALL BE LOCATED AT THE CENTER OF THE METAL DECK SPAN.
3. * : SEE PLAN NOTES.

TYPICAL DETAIL
CONSTRUCTION JOINT CONCRETE SLAB ON METAL DECK

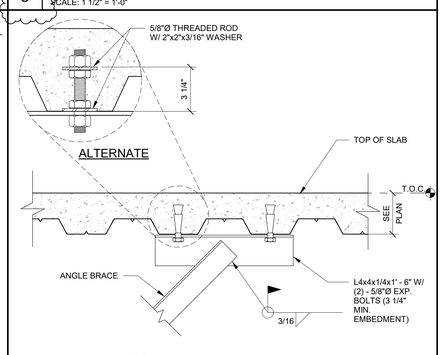
10 SCALE: N.T.S.



NOTE:
LOCATE EXPANSION BOLTS IN CENTER OF DECK FLUTE

TYPICAL DETAIL
BRACE CONNECTION TO SLAB

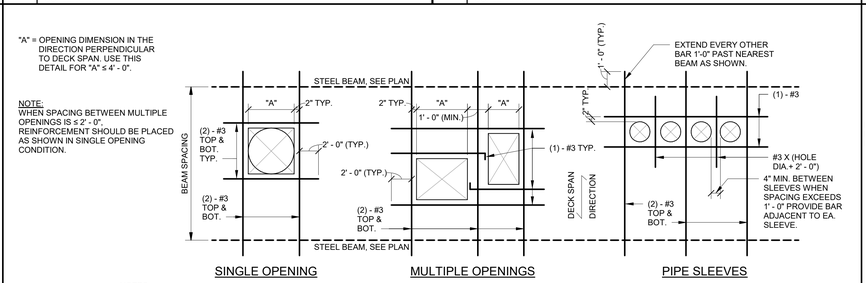
6 SCALE: N.T.S.



NOTE:
LOCATE EXPANSION BOLTS IN CENTER OF DECK FLUTE

TYPICAL DETAIL
BRACE CONNECTION TO SLAB

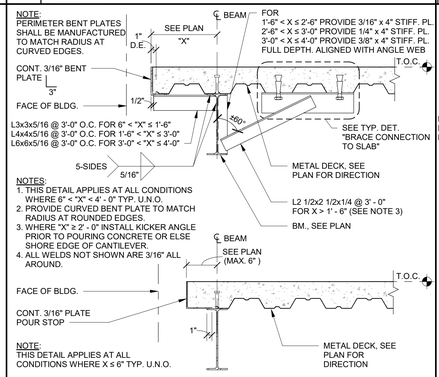
2 SCALE: N.T.S.



NOTES:
1. COORDINATE OPENING SIZE AND LOCATIONS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
2. MAXIMUM DIMENSION "A" SHALL BE 4'-0". REFER TO PLAN OR DETAIL ON DRAWINGS FOR FRAMING OF OPENINGS GREATER THAN 4' - 0".
3. WWF SLAB REINFORCEMENT SHALL BE CUT AROUND OPENING. WWF SHALL EXTEND TO WITHIN 2" OF OPENING ON ALL SIDES.
4. OPENINGS 10" AND SMALLER DO NOT REQUIRE ADDITIONAL REINFORCEMENT.
5. FIELD CUT OPENINGS IN DECK AFTER CONCRETE SLAB HAS BEEN POURED AND HAS ATTAINED MINIMUM OF 75% OF ITS SPECIFIED 28-DAY COMPRESSIVE STRENGTH.
6. REINFORCEMENT PERPENDICULAR TO DECK SPAN SHALL BE PLACED ON TOP OF DECK FLUTES.
7. REINFORCEMENT PARALLEL TO DECK SPAN SHALL BE PLACED IN THE LOWER FLUTE AND SHALL BE CHAIRED TO PROVIDE 3/4" COVER.
8. THIS DETAIL SHOWS TYPICAL CONDITIONS, VERIFY REINFORCING STEEL PLACEMENT WITH ENGINEER FOR SPECIAL CASES.
9. PROVIDE REINFORCEMENT AS SHOWN FOR SQUARE, RECTANGULAR AND ROUND OPENINGS.

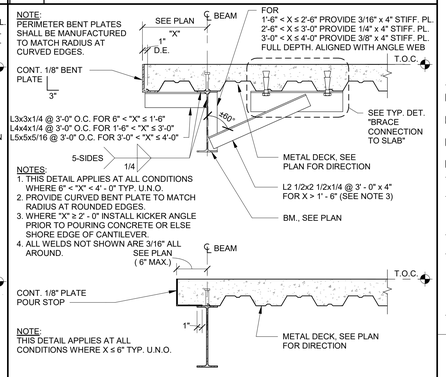
TYPICAL DETAIL
OPENINGS IN COMPOSITE METAL DECK SLAB, FLOOR OR ROOF

13 SCALE: N.T.S.



TYPICAL DETAIL
EDGE DETAIL - EXTERIOR COMPOSITE METAL DECK

5 SCALE: N.T.S.



TYPICAL DETAIL
EDGE DETAIL - INTERIOR COMPOSITE METAL DECK

1 SCALE: N.T.S.

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TBPE Firm Registration No. F-2640

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10/17/2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 1	10-08-2025
3 Addendum 3	10-17-2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

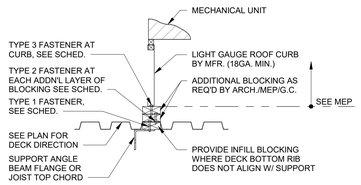
SHEET TITLE
FLOOR DETAILS

SHEET NO.
S5.01

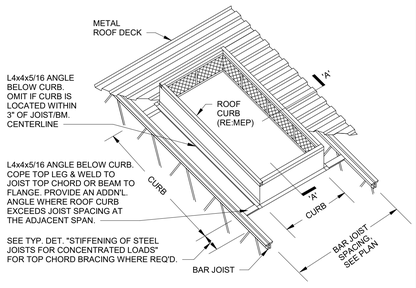
North Shore Multi-use Indoor Facility

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NOTE:
SIZES SHOWN ARE VALID ONLY FOR JOIST / BEAM SPACING ≤ 6' - 0" O.C.



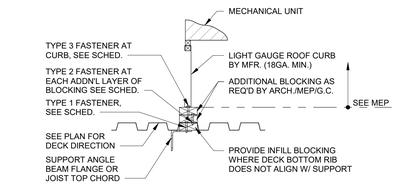
SECTION 'A'



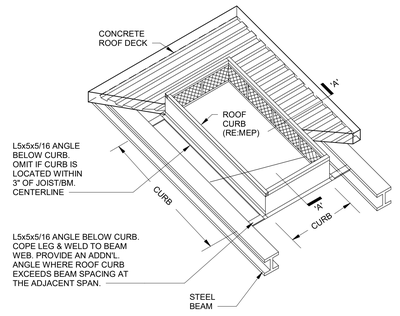
TYPICAL DETAIL ROOF CURB AT MECHANICAL UNITS

7 SCALE: 1" = 1'-0"

NOTE:
SIZES SHOWN ARE VALID ONLY FOR JOIST / BEAM SPACING ≤ 6' - 0" O.C.



SECTION 'A'

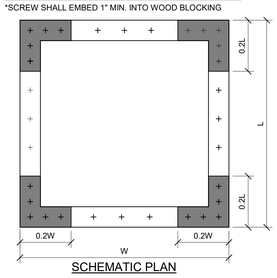


TYPICAL DETAIL ROOF CURB AT MECHANICAL UNITS AND DUCT PENETRATIONS

3 SCALE: 1" = 1'-0"

FASTENER SCHEDULE			
		SPACINGS	
TYPE	MINIMUM FASTENER SIZE	TYPICAL	CORNER
1	#8 SELF TAPPING SCREW	16" O.C.	6" O.C.
2	#10 SCREW*	12" O.C.	4" O.C.
3	#10 SCREW*	12" O.C.	4" O.C.

*SCREW SHALL EMBED 1" MIN. INTO WOOD BLOCKING



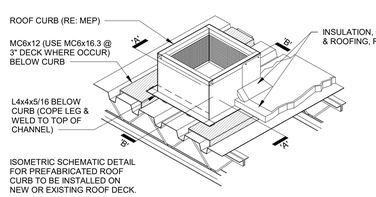
SCHEMATIC PLAN

NOTES:
1. FASTENING SCHEDULE SHALL ONLY APPLY UNDER THE FOLLOWINGS CONDITIONS.
   a. MEAN ROOF HEIGHT IS ≤ 60' - 0"
   b. MECHANICAL EQUIPMENT IS LESS THAN 6'-0" TALL
   c. MECHANICAL UNIT HEIGHT TO WIDTH RATIO IS ≤ 1.5
   d. WIND SPEED IS LESS THAN OR EQUAL TO 140mph(V_{ULT}) OR 110mph (V_{ASD}), SEE GEN. NOTES FOR DESIGN WIND SPEED.
2. REFER TO MEP/MFR. FOR W & L DIMENSIONS.

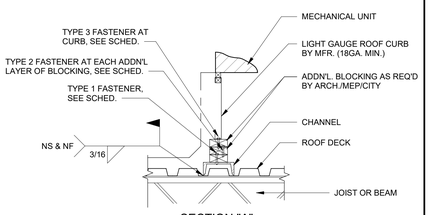
TYPICAL DETAIL FASTENER SCHEDULE AT MECHANICAL UNITS

9 SCALE: 1/2" = 1'-0"

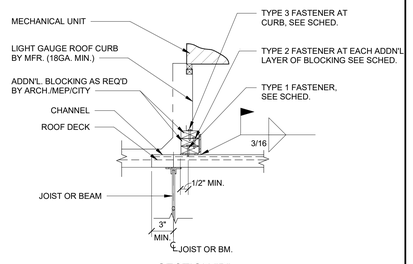
NOTE:
SIZES SHOWN ARE VALID ONLY FOR JOIST / BEAM SPACING ≤ 6' - 0" O.C.



ISOMETRIC SCHEMATIC DETAIL FOR PREFABRICATED ROOF CURB TO BE INSTALLED ON NEW OR EXISTING ROOF DECK.



SECTION "A"

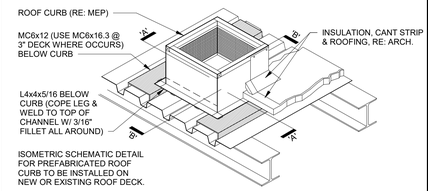


SECTION "B"

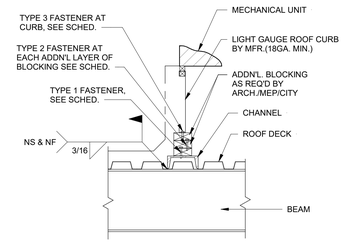
ALTERNATE DETAIL SUPPORT AT ROOFTOP MECHANICAL EQUIPMENT

5 SCALE: 1" = 1'-0"

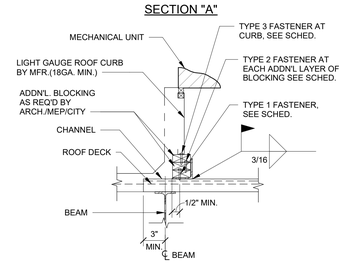
NOTE:
SIZES SHOWN ARE VALID ONLY FOR BEAM SPACING ≤ 12'-0" O.C.



ISOMETRIC SCHEMATIC DETAIL FOR PREFABRICATED ROOF CURB TO BE INSTALLED ON NEW OR EXISTING ROOF DECK.



SECTION "A"



SECTION "B"

ALTERNATE DETAIL SUPPORT AT ROOFTOP MECHANICAL EQUIPMENT

1 SCALE: 1" = 1'-0"

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10/17/2025

ISSUED: OCTOBER 17, 2025

REVISIONS

Revision No.	Revision Date

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	HR
Drawn By	RJC

PROJECT NO.
25-0056.00

SHEET TITLE
ROOF DETAILS

SHEET NO.
S6.03

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FIRE PUMP SIZING

STANDPIPE SYSTEM
N/A

SPRINKLER SYSTEM
ORDINARY HAZARD = 0.20 GPM/SF X 1,500 SF = 300 GPM PLUS
OVERAGE OF 20% = 360 GALLON DEMAND

MINIMUM 100 GPM HOSE DEMAND

500 GPM FIRE PUMP IS SUFFICIENT (AS LONG AS NO CEILING HEIGHTS ARE ABOVE 20FT.)

FIRE SURGE TANK SIZING

500 GPM FIRE PUMP X 150% = 750 GPM
15 MINUTE RUN TIME X 750 GPM = 11,250 GALLON
FLOW TEST REPORT:
993 GPM @ 20 PSI X 15 MINUTE RUN TIME = 14,865 GALLON

14,895 (INCOMING SUPPLY) - 11,250 (BLDG. DEMAND) = SURPLUS OF 3,645 GPM

*MINIMUM CODE REQUIRED 2,500 GALLON STORAGE TANK IS ACCEPTABLE
FIRE TANK STORAGE SHALL BE 2,500 GALLON USEABLE
DOMESTIC WATER STORAGE 1,000 GALLON USEABLE

3,500 GALLON TOTAL

**FILL VALVES MUST BE SIZED PER FIRE PUMP (150% OF LOAD, SAME AS FIRE PUMP SIZING) REQUIRED BY NFPA

FIRE PUMP DYNAMIC HEAD SIZING

1.	TOTAL BLDG HT.(FT): (pumps to highest point in system)	50	FT
2.	ADD - PIPE PRESSURE LOSS (FT): (10% of static head) 8' minimum	8	FT
3.	ADD - MIN. PRESS. AT TOP OF SYSTEM (FT): (7 psi at furthest head, allow 25 psi hydraulic calc loss 4" Mains, 32 PSI x 2.31 = feet of head)	74	FT
4.	EQUALS - SYSTEM PRESSURE (FT.) Discharge (sum of 1 - 3) Divide by 2.31 = PSIG	132	FT (57 PISG)
5.	ADD - PACKAGED PUMPING LOSS (usually 10 PSI or 23 ft) total package loss	23	FT (155 ft)
6.	MINUS SUCTION PRESSURE (FT) (from Break Tank Height or 8' minimum)	- 8	FT
	FIRE PUMP TOTAL DYNAMIC HEAD REQUIRED: of 4 + 5, minus 6 equals **TDH (FT)**	**147**	**TDH (FT)**
	Divide by 2.31 equals **TDH (PSIG)**	**64**	**in (PSIG)**

DOMESTIC BOOSTER PUMP SIZING

1.	TOTAL BLDG HT.(FT): (pumps to highest point in system)	25	FT
2.	ADD - PIPE PRESSURE LOSS (FT): (10% of static head or 8' minimum)	8	FT
3.	ADD - MIN. PRESS. AT TOP OF SYSTEM (FT): (use 35 psi, 25 psi required for flush valves + 10 PSI safety factor PSI x 2.31 = feet of head)	81	FT
4.	EQUALS - SYSTEM PRESSURE (FT.) Discharge (sum of 1 - 3) Divide by 2.31 = PSIG	114	FT (74 PSI)
5.	ADD - PACKAGED PUMPING LOSS (usually 10 PSI or 23 ft) total package loss	23	FT (137 ft)
6.	MINUS SUCTION PRESSURE (FT) (from Height Break Tank) or 8' minimum	- 8	FT (56 psi)
	DOMESTIC BOOSTER PUMP TDH REQUIRED: TOTAL DEMAND:	**135**	**GPM**
	of 4 + 5, minus 6 equals **TDH (FT)**	**129**	**(FT)**
	Divide by 2.31 equals **TDH (PSIG)**	**56**	**in (PSIG)**

PLUMBING GENERAL NOTES:

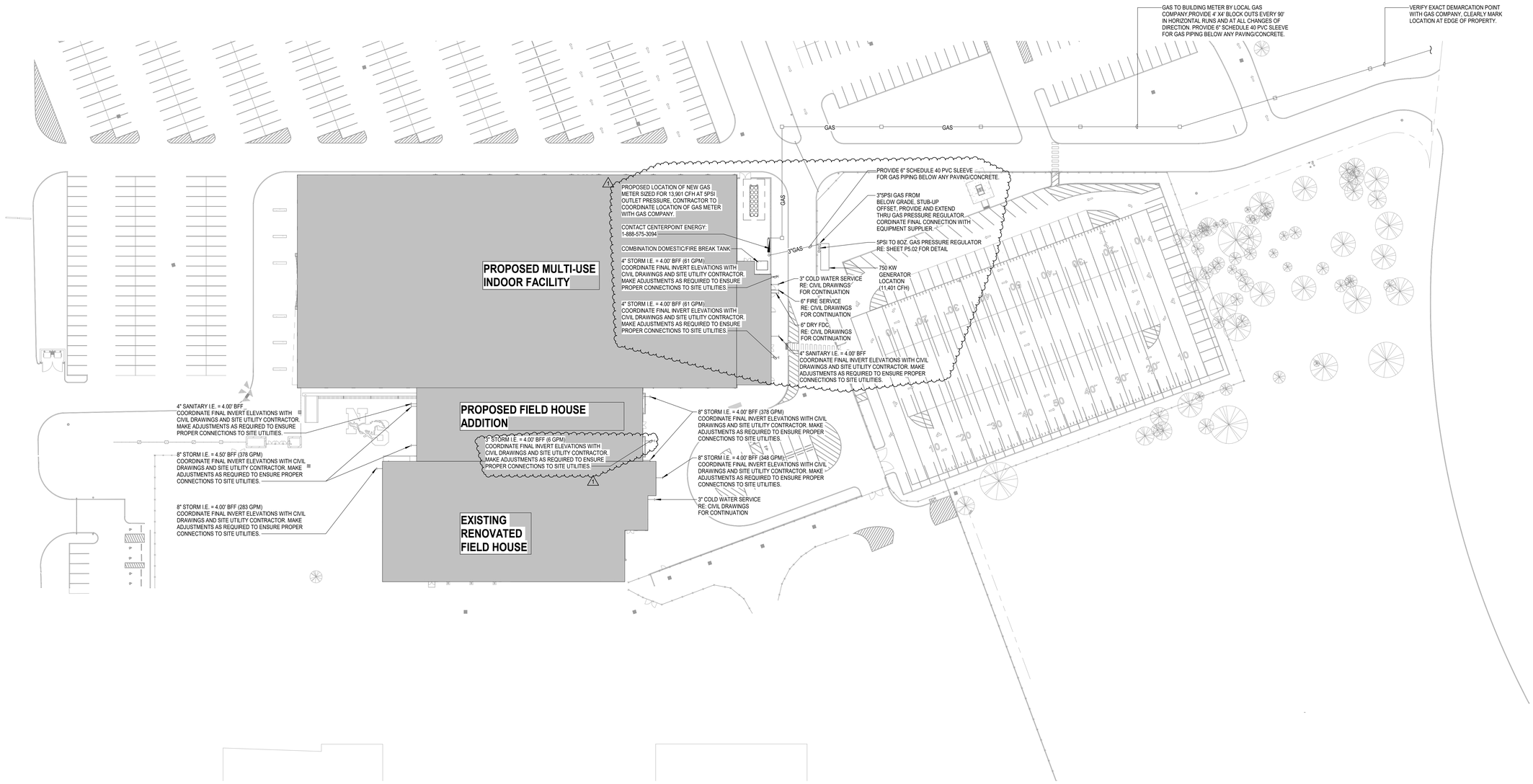
1. IT IS IMPRACTICAL DUE TO THE STREET SEWER, STRUCTURAL FEATURES AND ARRANGEMENT OF BUILDING TO OBTAIN A SLOPE OF 1/4" PER FOOT PIPING 4" THRU 6" SHALL HAVE A SLOPE OF 1/8" PER FOOT BELOW BUILDING TO 5'-0" OUTSIDE OF BUILDING.

2. DO NOT SCALE THE PLUMBING DRAWINGS, REFER TO THE DIMENSIONED ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONAL DATA.

3. REFER TO CIVIL DRAWINGS FOR UTILITY STUB CONTINUATIONS. THIS CONTRACTOR TO MAKE CONNECTIONS AS REQUIRED FROM STUB LOCATIONS TO SITE UTILITIES.

4. INVERT ELEVATIONS LISTED ARE APPROXIMATE. PRIOR TO CONSTRUCTION, COORDINATE FINAL INVERT ELEVATIONS OF BUILDING SANITARY AND STORM OUTFALLS WITH SITE UTILITY CONTRACTOR. MAKE ADJUSTMENTS AS REQUIRED TO ENSURE PROPER CONNECTIONS TO SITE UTILITIES.

5. REFER TO LATEST CIVIL DRAWINGS FOR BUILDING FINISHED FLOOR ELEVATIONS



N

1 **PLUMBING SITE PLAN**
Scale: 1" = 40'-0"

M.E.P. ENGINEER

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Salas O'Brien Registration: F-4111
Salas O'Brien Project Number: 2550-01455-00

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North Shore Multi-Use Indoor Facility

BRADLEY KALMANS — 80219 — LICENSED — STATE OF TEXAS — PROFESSIONAL ENGINEER
10.17.2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
PLUMBING SITE PLAN

SHEET NO.
P1.00

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PLUMBING GENERAL NOTES:

1. IT IS IMPRACTICAL DUE TO THE STREET SEWER, STRUCTURAL FEATURES AND ARRANGEMENT OF BUILDING TO OBTAIN A SLOPE OF 1/4" PER FOOT PIPING 3" THRU 6" SHALL HAVE A SLOPE OF 1/8" PER FOOT BELOW BUILDING TO 5'-0" OUTSIDE OF BUILDING.

2. REFER TO ARCHITECTS DRAWING FOR EXACT LOCATION OF FLOOR DRAINS.

3. ALL FLOOR DRAINS AND FLOOR SINKS MUST BE EASILY ACCESSIBLE FOR SERVICING. RE: SHEET P5.01 FOR DETAILS AND SHEET P6.01 FOR SCHEDULES

4. DO NOT SCALE THE PLUMBING DRAWINGS, REFER TO THE DIMENSIONED ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONAL DATA.

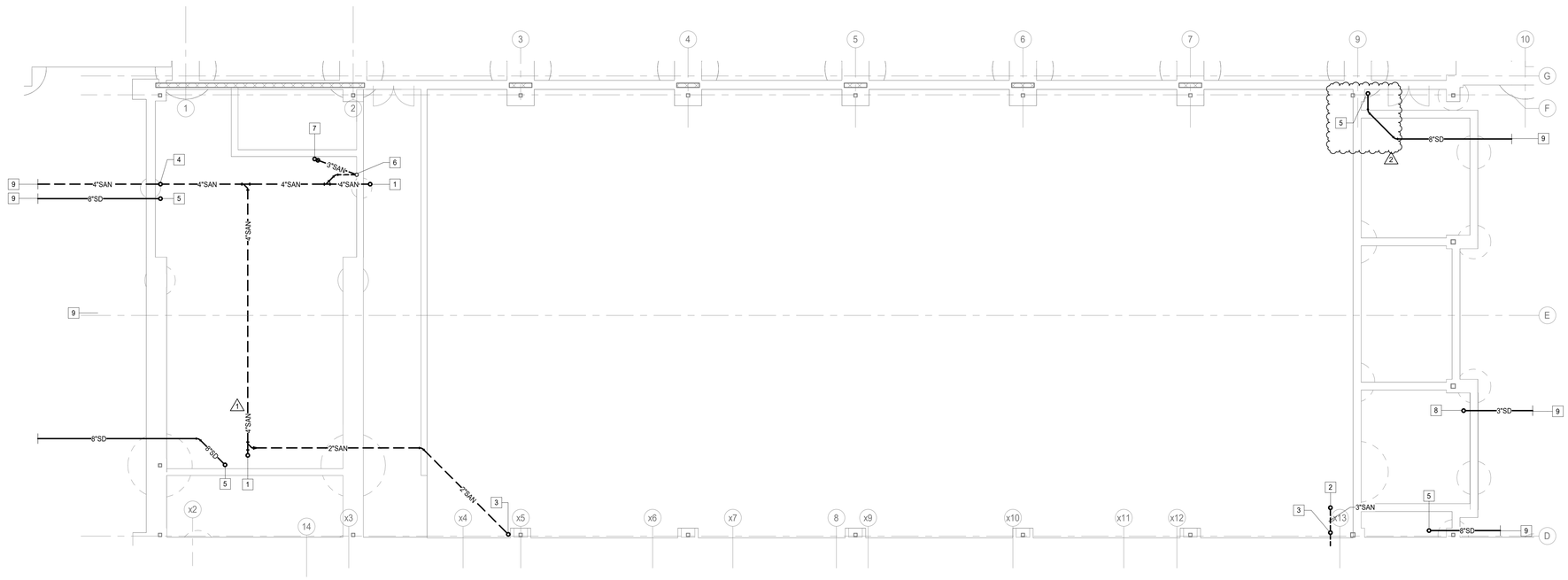
5. REFER TO SHEETS P5.01, FOR DETAILS AND SHEETS P6.01 FOR PLUMBING SCHEDULES.

6. SAWCUT EXISTING SLAB AS REQUIRED TO INSTALL NEW PIPING BELOW FLOOR. SEAL AND PATCH FLOOR TO MATCH EXISTING UPON COMPLETION. AVOID STRUCTURAL BEAMS.

PLUMBING KEYED NOTES "☒"

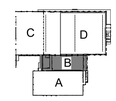
1 4" WASTE FROM CLEANOUT ABOVE.
2 3" WASTE FROM CLEANOUT ABOVE.
3 2" WASTE FROM ABOVE.
4 4" WASTE FROM ABOVE.
5 8" STORM FROM ABOVE.
6 3" WASTE DOWN, 2" VENT UP.
7 3" WASTE FROM DRAIN ABOVE PROVIDE P-TRAP.
8 3" STORM FROM ABOVE.
9 RE: SHEET P1.01 FOR CONTINUATION.

⚠1



N

1 **PLUMBING UNDERFLOOR PLAN - UNIT B**
Scale: 1/8" = 1'-0"



VLK

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Salas O'Brien Project Number: 2550-01455-00

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PROFESSIONAL ENGINEER
10.17.2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
PLUMBING UNDERFLOOR PLAN - UNIT B

SHEET NO.
P2.03B

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FIRE SPRINKLER NOTE:

LICENSED SPRINKLER ENGINEER OR LICENSED SPRINKLER CONTRACTOR, TO PROVIDE DRAWINGS AND HYDRAULIC CALCULATIONS FOR AN AUTOMATIC FIRE SPRINKLER SYSTEM FOR THIS BUILDING, TO COMPLY WITH SPACE LAYOUT, NFPA 13, ALL STATE AND LOCAL CODE REQUIREMENTS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

PLUMBING GENERAL NOTES:

1. REFER TO ARCHITECTS DRAWING FOR EXACT LOCATION OF FLOOR DRAINS.

2. ALL FLOOR DRAINS AND FLOOR SINKS MUST BE EASILY ACCESSIBLE FOR SERVICING. RE: SHEET P5.01 FOR DETAIL AND SHEET P6.01 FOR SCHEDULES

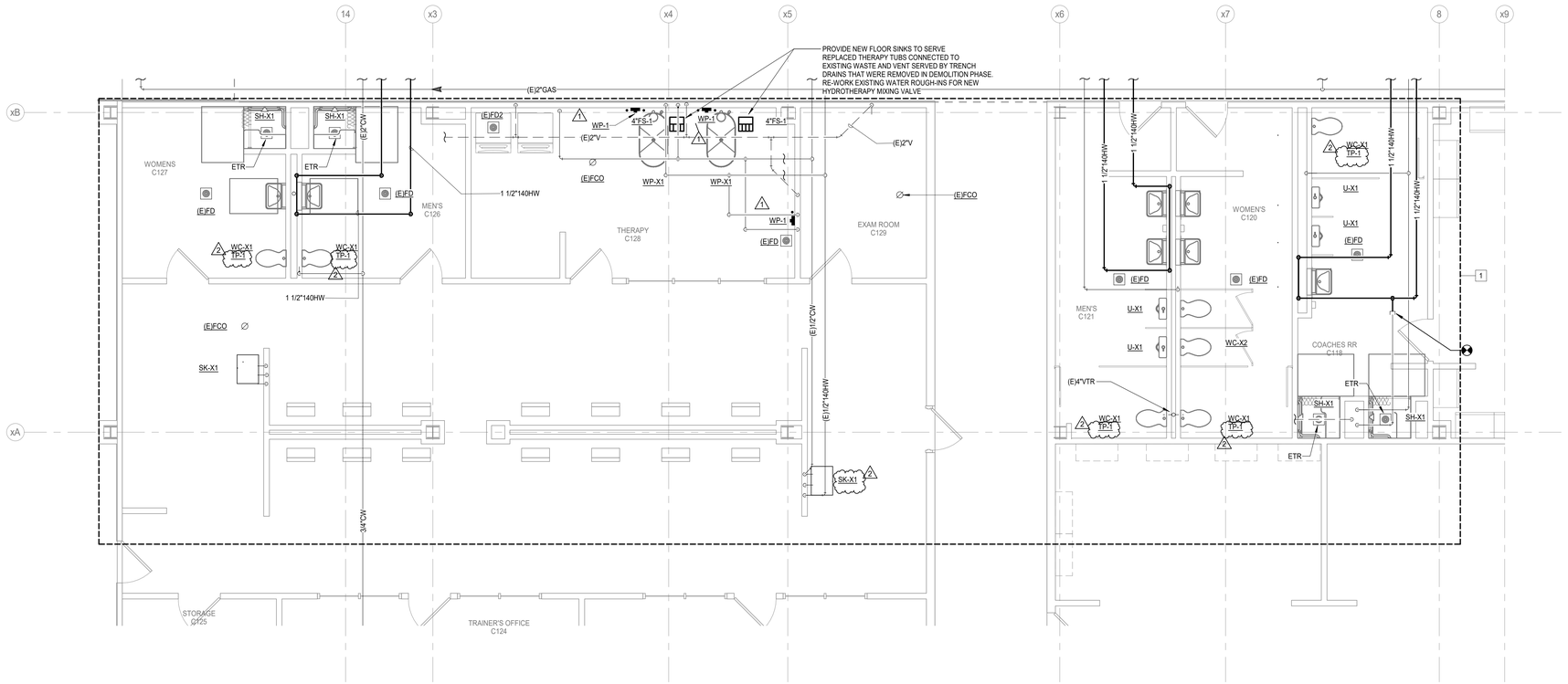
3. DO NOT SCALE THE PLUMBING DRAWINGS, REFER TO THE DIMENSIONED ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONAL DATA.

4. REFER TO SHEETS P5.01 FOR PLUMBING DETAILS AND SHEET P6.01 FOR PLUMBING SCHEDULES.

5. CONRACTOR SHALL REMOVE AND REPLACE CEILING WHERE REQUIRED TO COMPLETE INDICATED SCOPE OF WORK. EXISTING CEILING SHALL BE RE-INSTALLED IN THE EXACT CONDITION IT WAS REMOVED IN. DAMAGED CEILING AND/OR CEILING TILES SHALL BE REPLACED TO MATCH EXISTING CONDITIONS PRIOR TO CONSTRUCTION. IF A MATCH IS NOT POSSIBLE, CONTRACTOR SHALL REPLACE ALL CEILING FROM WALL TO WALL OR BOUNDARY SEPARATING IN ADJOINING ROOMS. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR ADDITIONAL INFORMATION.

PLUMBING KEYED NOTES "⊠"

1 PROVIDE NEW PLUMBING FIXTURE(S) TO REPLACE EXISTING REMOVED DURING DEMOLITION PHASE. MODIFY AS REQUIRED AND RE-USE EXISTING WASTE, VENT AND WATER ROUGH-INS FOR NEW FIXTURE(S). CLEAN AND RESTORE FLOOR DRAIN STRAINER TO LIKE NEW CONDITION. REPLACE IF CRACKED OR BROKEN..



N

1 PLUMBING FLOOR PLAN - LEVEL ONE - UNIT A - ALTERNATE

Scale: 1/4" = 1'-0"

M.E.P. ENGINEER

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GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

STATE OF TEXAS
BRADLEY KALMANS
80219
LICENSED
PROFESSIONAL ENGINEER
10.17.2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.		Revision Date
1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

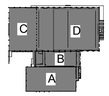
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SHEET TITLE

PLUMBING FLOOR PLAN - LEVEL ONE - UNIT A - ALTERNATE

SHEET NO.

P3.02A.1



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PLUMBING GENERAL NOTES:

1. REFER TO ARCHITECTS DRAWING FOR EXACT LOCATION OF FLOOR DRAINS.

2. ALL FLOOR DRAINS AND FLOOR SINKS MUST BE EASILY ACCESSIBLE FOR SERVICING. RE: SHEET P5.01 FOR DETAIL AND SHEET P6.01 FOR SCHEDULES

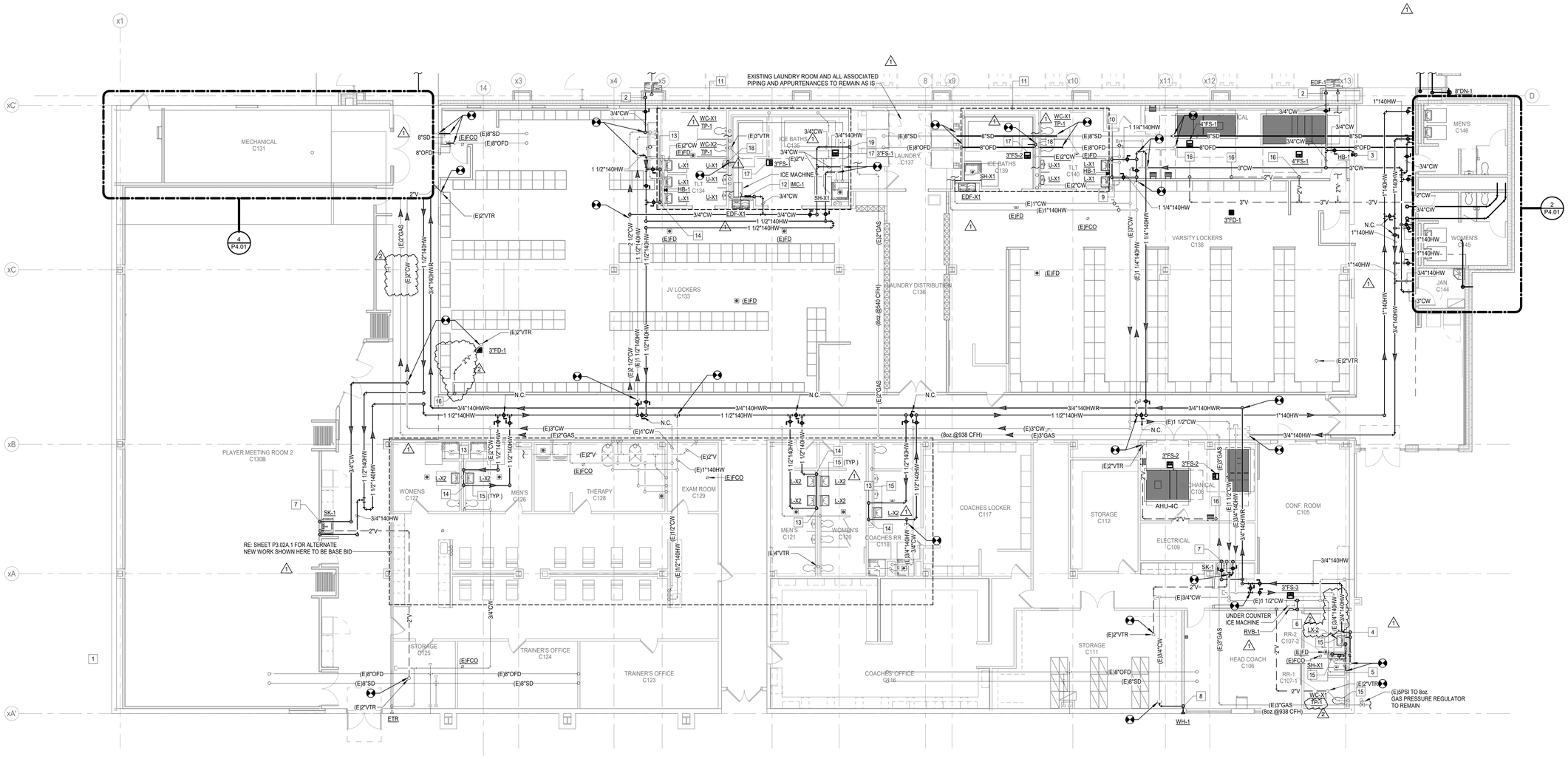
3. DO NOT SCALE THE PLUMBING DRAWINGS, REFER TO THE DIMENSIONED ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONAL DATA.

4. REFER TO SHEETS P5.01 FOR PLUMBING DETAILS AND SHEET P6.01 FOR PLUMBING SCHEDULES.

5. CONRACTOR SHALL REMOVE AND REPLACE CEILING WHERE REQUIRED TO COMPLETE INDICATED SCOPE OF WORK. EXISTING CEILING SHALL BE RE-INSTALLED IN THE EXACT CONDITION IT WAS REMOVED IN. DAMAGED CEILING AND/OR CEILING TILES SHALL BE REPLACED TO MATCH EXISTING CONDITIONS PRIOR TO CONSTRUCTION. IF A MATCH IS NOT POSSIBLE, CONTRACTOR SHALL REPLACE ALL CEILING FROM WALL TO WALL OR BOUNDARY SEPARATING IN ADJOINING ROOMS. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR ADDITIONAL INFORMATION.

PLUMBING KEYED NOTES "⊠"

1	
2	3/4" COLD WATER DOWN, 2" WASTE DOWN, 2" VENT UP EXTEND AND ROUGH-IN TO EQUIPMENT/FIXTURE(S).
3	DROP 3/4" COLD WATER AND CONNECT TO HOSE BIBB MOUNT AT MINIMUM 18" AFF. VERIFY EXACT HEIGHT WITH ARCHITECT/OWNER PRIOR TO INSTALLATION.
4	DROP 3/4" HOT WATER LOOP DOWN IN CHASE, ROUTE THRU CHASE, ROUGH-IN AND CONNECT TO FIXTURES.
5	PROVIDE NEW 3/4 COLD WATER TAP OFF EXISTING COLD WATER RISER, EXTEND 3/4" COLD WATER LINE IN CHASE, OFFSET AND ROUGH-IN TO FIXTURES.
6	DROP 3/4" COLD WATER DOWN, EXTEND 1/2" CW TO RVB-1 AND CONNECT. RE: DETAIL SHEET P5.01 FOR VALVE BOX HOOK-UP. PROVIDE WILKINS 700XL BACKFLOW PREVENTER WHEN MAKING FINAL CONNECTION TO UNDERCOUNTER ICE MAKER RE: SHEET P5.02 FOR DETAIL
7	DROP 3/4" HOT AND COLD WATER, RISE 2" VENT UP, 2" WASTE DOWN, ROUTE HOT AND COLD WATER LINES THRU POINT OF USE MIXING VALVE EXTEND AND ROUGH-IN TO FIXTURE(S). RE: SHEET P5.02 FOR DETAIL
8	DROP 3/4" COLD WATER TO SERVE WALL HYDRANT, MOUNT AT MINIMUM 18" ABOVE FINISHED GRADE COORDINATE EXACT LOCATION AND HEIGHT WITH ARCHITECT/OWNER.
9	DROP 1-1/4" HOT WATER LOOP DOWN IN CHASE, ROUTE THRU CHASE AND ROUGH-IN TO FIXTURES
10	RISE 1-1/4" HOT(120°) UP FROM W, RE: SHEET P5.02 FOR HW CIRCULATION AT PUBLIC LAVATORIES DETAIL.
11	PROVIDE NEW PLUMBING FIXTURE(S) TO REPLACE EXISTING REMOVED DURING DEMOLITION PHASE. MODIFY AS REQUIRED AND RE-USE EXISTING WASTE, VENT AND WATER ROUGH-INS FOR NEW FIXTURE(S). CLEAN AND RESTORE FLOOR DRAIN STRAINER TO LIKE NEW CONDITION. REPLACE IF CRACKED OR BROKEN..
12	3/4" COLD WATER DOWN EXTEND AND CONNECT TO ICE MACHINE THROUGH BACKFLOW PREVENTER.(IMC-1) RE: SHEET P5.01 FOR ICE MACHINE CONNECTION DETAIL. PROVIDE FILTER AS SPECIFIED ON SHEET P6.02(IMC-1) WHEN MAKING FINAL CONNECTION, PROVIDE FILTER IN AN ACCESSIBLE LOCATION OFF TO THE SIDE. DO NOT LOCATE FILTER BEHIND ICE MACHINE.
13	DROP 1-1/2" HOT WATER LOOP DOWN IN CHASE, ROUTE THRU CHASE AND ROUGH-IN TO FIXTURES
14	RISE 1-1/2" HOT(140°) UP. RE: SHEET P5.02 FOR HW CIRCULATION AT PUBLIC LAVATORIES DETAIL.
15	PROVIDE NEW PLUMBING FIXTURE TO REPLACE EXISTING REMOVED DURING DEMOLITION PHASE. MODIFY AS REQUIRED AND RE-USE EXISTING WASTE, VENT AND WATER ROUGH-INS FOR NEW FIXTURE(S).
16	2" VENT UP FROM BELOW SLAB.
17	COORDINATE WITH DIVISION 11 FOR EXACT PLACEMENT OF FLOOR SINK WITH THERAPY TUB DRAIN OUTLET.
18	PROVIDE NEW 3/4" COLD WATER ROUGH-IN FROM EXISTING COLD WATER MAIN IN CHASE, FOR NEW ICE BATH, COORDINATE WITH DIVISION 11 FOR EXACT LOCATION.
19	DROP NEW 3/4" COLD WATER AND ROUGH-IN FOR NEW ICE BATH, COORDINATE WITH DIVISION 11 FOR EXACT LOCATION.



N

1 **PLUMBING FLOOR PLAN - LEVEL ONE - UNIT A**

Scale: 1/8" = 1'-0"

VLK

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Salas O'Brien Registration: F-4111
Salas O'Brien Project Number: 2550-01455-00

GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

BRADLEY KALMANS — STATE OF TEXAS — 80219 — LICENSED — PROFESSIONAL ENGINEER

10.17.2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 1	10/08/2025
2 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.

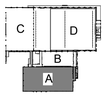
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SHEET TITLE

PLUMBING FLOOR PLAN - LEVEL ONE - UNIT A

SHEET NO.

P3.02A



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PLUMBING GENERAL NOTES:

1. REFER TO ARCHITECTS DRAWING FOR EXACT LOCATION OF FLOOR DRAINS.

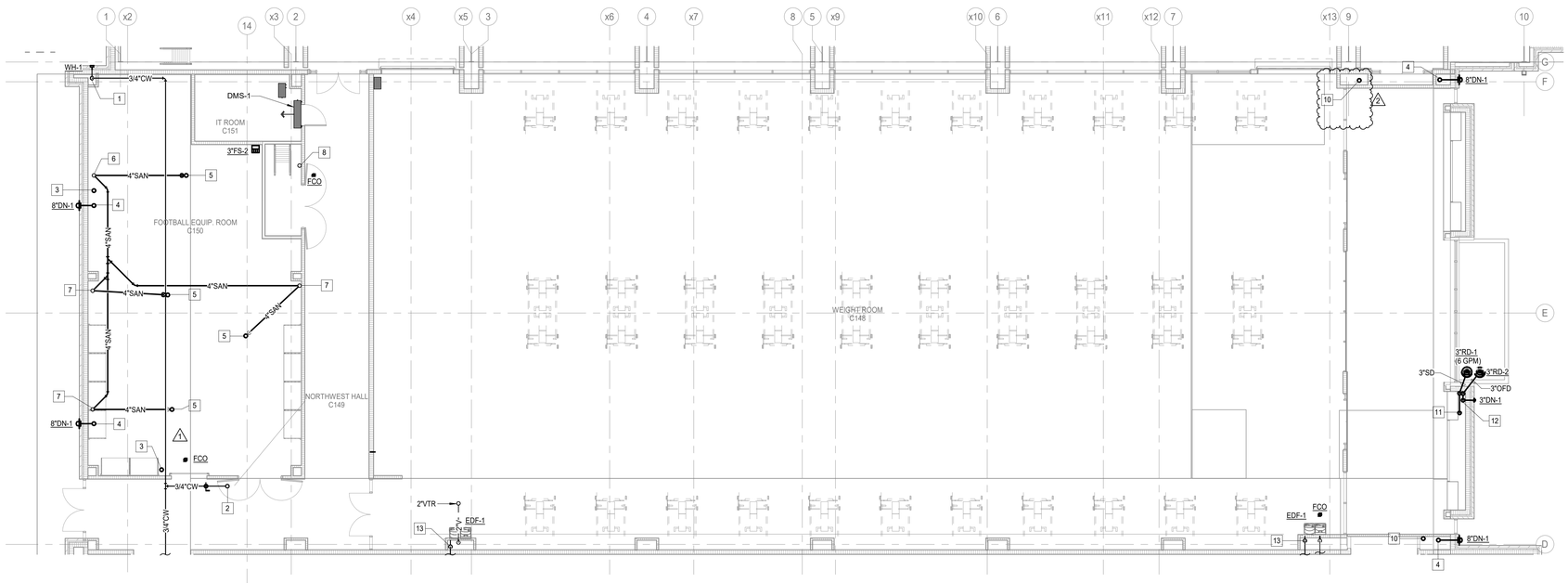
2. ALL FLOOR DRAINS AND FLOOR SINKS MUST BE EASILY ACCESSIBLE FOR SERVICING. RE: SHEET P5.01 FOR DETAIL AND SHEET P6.01 FOR SCHEDULES

3. DO NOT SCALE THE PLUMBING DRAWINGS, REFER TO THE DIMENSIONED ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONAL DATA.

4. REFER TO SHEETS P5.01 FOR PLUMBING DETAILS AND SHEET P6.01 FOR PLUMBING SCHEDULES.

PLUMBING KEYED NOTES "⊠"

1. DROP 3/4" COLD WATER TO SERVE WALL HYDRANT, COORDINATE MOUNTING HEIGHT LOCATION WITH ARCHITECT/OWNER. RE: SHEET P5.01 FOR DETAIL.
2. 3/4" COLD WATER UP.
3. 8" STORM FROM ABOVE.
4. 8" OVERFLOW DOWN. EXTEND AND CONNECT TO DOWNSPOUT NOZZLE(DN-1). RE: SHEET P5.01 FOR DOWNSPOUT NOZZLE DETAIL
5. 4" WASTE FROM DRAIN ABOVE. PROVIDE P-TRAP.
6. 4" WASTE DOWN, 3" VENT UP.
7. 4" WASTE DOWN, 2" VENT UP.
8. 3" VENT UP FROM BELOW FLOOR, UP TO 3"VTR
10. 8" STORM FROM ABOVE, TO BELOW SLAB.
11. 3" STORM DOWN TO BELOW SLAB.
12. 3" OVERFLOW DOWN. EXTEND AND CONNECT TO DOWNSPOUT NOZZLE(DN-1). RE: SHEET P5.01 FOR DOWNSPOUT NOZZLE DETAIL
13. 3/4" COLD WATER DOWN, 2" WASTE DOWN, 2" VENT UP EXTEND AND ROUGH-IN TO EQUIPMENT/FIXTURE(S).



N

1 **PLUMBING FLOOR PLAN - LEVEL ONE - UNIT B**
Scale: 1/8" = 1'-0"

M.E.P. ENGINEER

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Salas O'Brien Registration: F-4111
Salas O'Brien Project Number: 2550-01455-00

GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

BRADLEY KALMANS
80219
LICENSED
PROFESSIONAL ENGINEER
10.17.2025

ISSUED: OCTOBER 1, 2025

REVISIONS

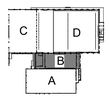
Revision No.		Revision Date
1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
PLUMBING FLOOR PLAN - LEVEL ONE - UNIT B

SHEET NO.
P3.03B



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FIRE SPRINKLER NOTE:

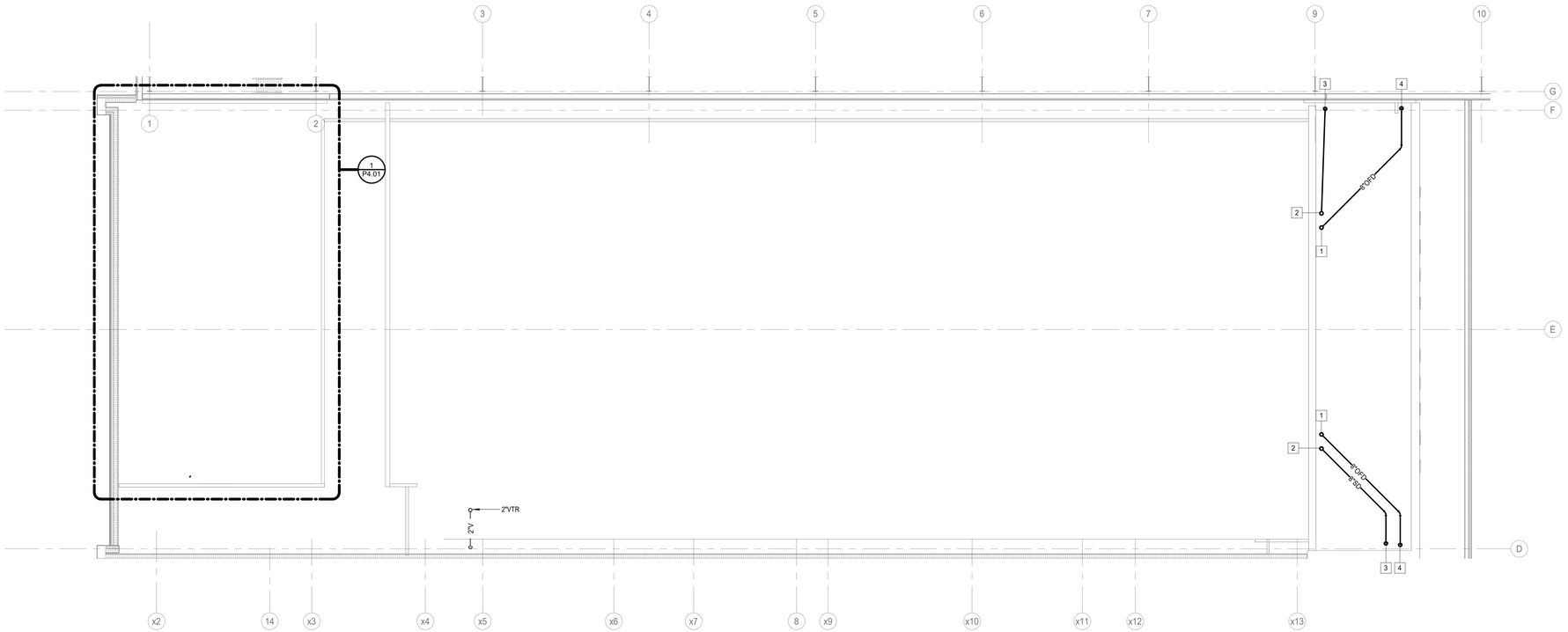
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PLUMBING GENERAL NOTES:

1. REFER TO ARCHITECTS DRAWING FOR EXACT LOCATION OF FLOOR DRAINS.
2. ALL FLOOR DRAINS AND FLOOR SINKS MUST BE EASILY ACCESSIBLE FOR SERVICING. RE: SHEET P5.01 FOR DETAIL AND SHEET P6.01 FOR SCHEDULES
3. DO NOT SCALE THE PLUMBING DRAWINGS, REFER TO THE DIMENSIONED ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONAL DATA.
4. REFER TO SHEETS P5.01 FOR PLUMBING DETAILS AND SHEET P6.01 FOR PLUMBING SCHEDULES.

PLUMBING KEYED NOTES "⊠"

1. 8" OVERFLOW FROM ABOVE.
2. 8" STORM FROM ABOVE.
3. 8" STORM DOWN.
4. 8" OVERFLOW DOWN.



N

1 **PLUMBING FLOOR PLAN - LEVEL TWO - UNIT B**
Scale: 1/8" = 1'-0"

VLK

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North Shore Multi-Use Indoor Facility

BRADLEY KALMANS
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10.17.2025

ISSUED: OCTOBER 1, 2025

REVISIONS

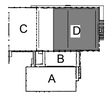
Revision No.		Revision Date
1	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
PLUMBING FLOOR PLAN - LEVEL TWO - UNIT B

SHEET NO.
P3.06B



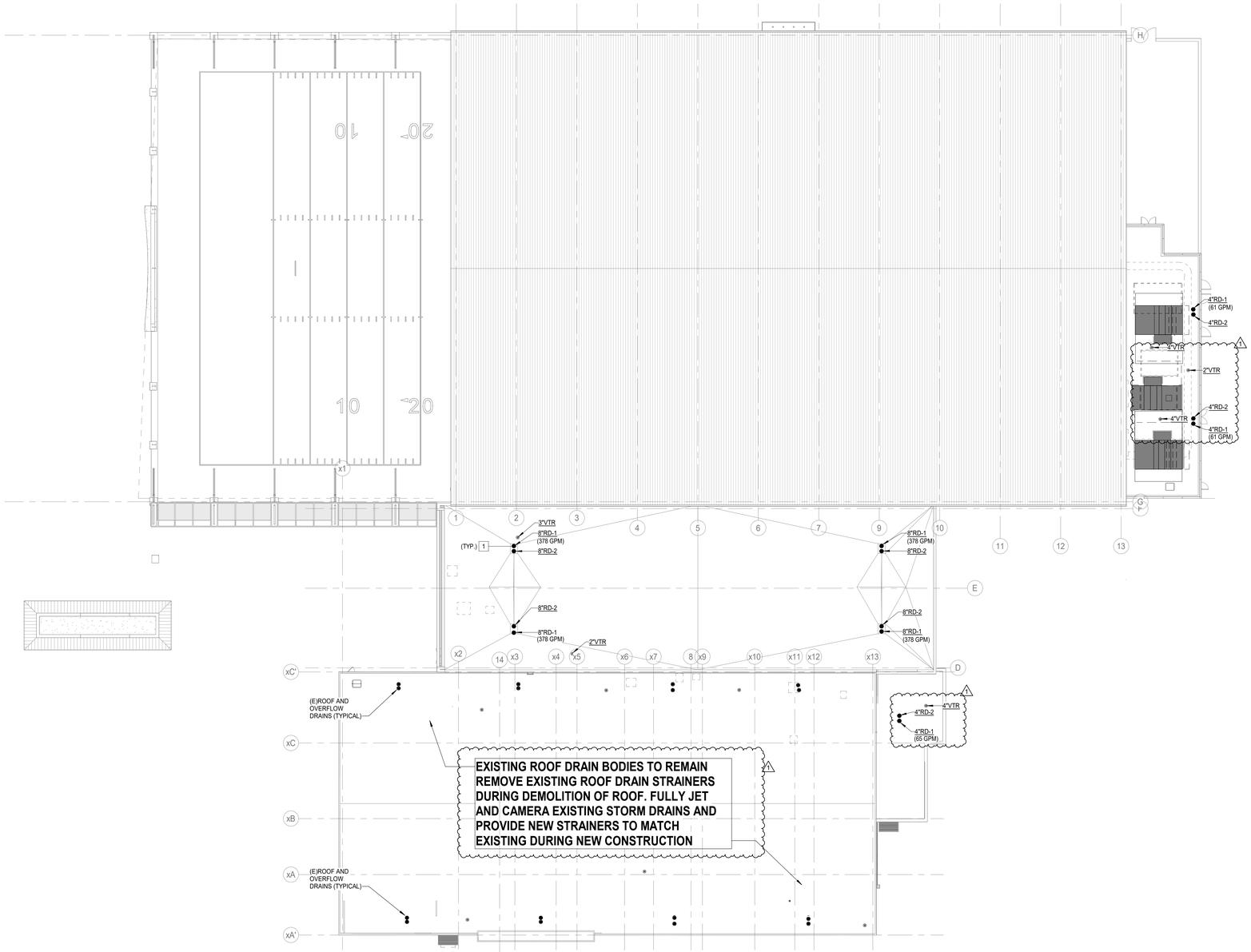
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PLUMBING GENERAL NOTES:

1. REFER TO ARCHITECTS DRAWING FOR EXACT LOCATION OF DRAINS.
2. STORM SIZING IS BASED ON 4.6" PER HOUR RAINFALL.
3. DO NOT SCALE THE PLUMBING DRAWINGS, REFER TO THE DIMENSIONED ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONAL DATA.
4. REFER TO SHEETS P5.01 AND P5.02 FOR PLUMBING DETAILS AND SHEET P6.01 FOR PLUMBING SCHEDULES.

PLUMBING KEYED NOTES "⊠"

1 RE: SHEET P5.01 FOR ROOF DRAIN DETAIL.



N

1 **PLUMBING ROOF PLAN**
Scale: 1" = 20'-0"

M.E.P. ENGINEER

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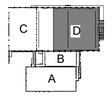
Revision No.		Revision Date
1	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

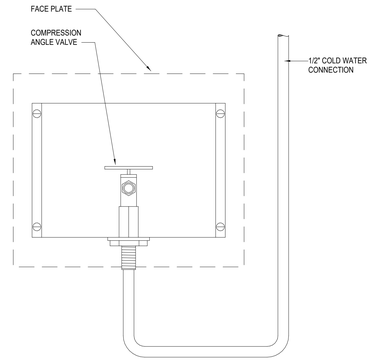
PROJECT NO.
25-0056.00

SHEET TITLE
PLUMBING ROOF PLAN

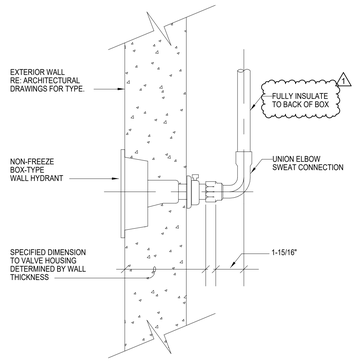
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P3.07



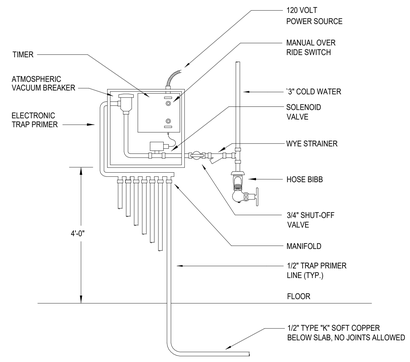
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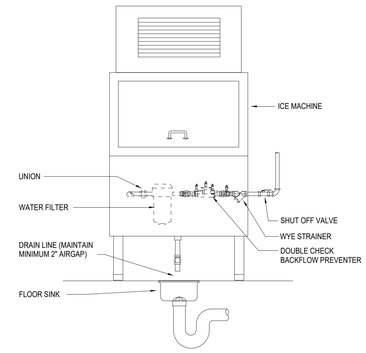
16 RECESSED VALVE BOX HOOK-UP - RVB-1
SCALE: NONE



12 NON-FREEZE WALL HYDRANT CONNECTION
SCALE: NONE

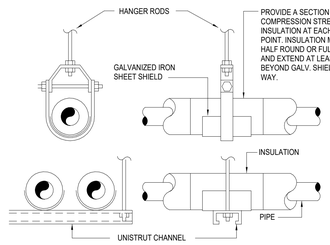


8 ELECTRONIC TRAP PRIMER

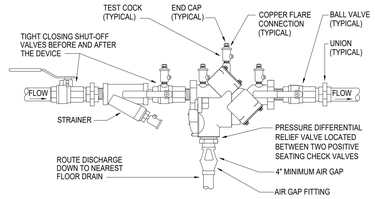


4 ICE MACHINE CONNECTION
SCALE: NONE

MINIMUM DIMENSIONS OF GALVANIZED SHEETMETAL PROTECTION SHIELDS AT PIPE HANGERS		
NOMINAL SIZE PIPE	SHIELD LENGTH (IN.)	GAUGE THICKNESS
1/2" & 3/4"	12	18
1" - 2-1/2"	12	18
3" - 4"	16	18
6"	18	16

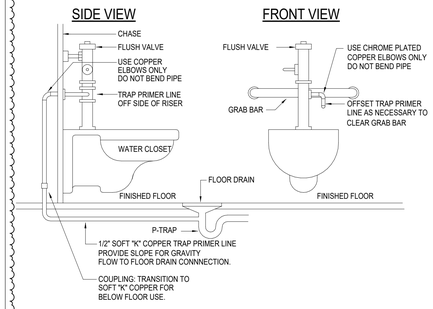


15 SHIELDS FOR INSULATED PIPING
SCALE: NONE

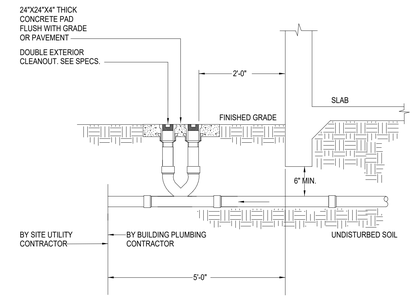


NOTE: MOUNT AT 48"-60" A.F.F. UNLESS NOTED OTHERWISE ON PLANS.

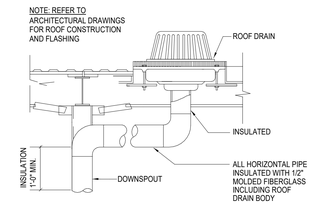
14 REDUCED PRESSURE ZONE BACKFLOW PREVENTER
SCALE: NONE



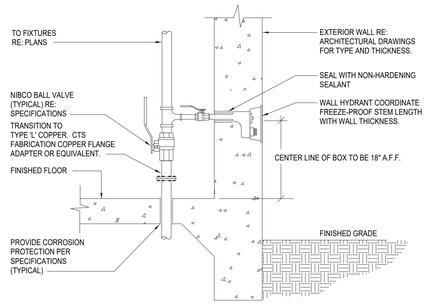
7 FLUSH VALVE TRAP PRIMER
SCALE: NONE



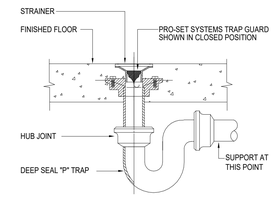
3 TWO-WAY CLEANOUT
SCALE: NONE



14 ROOF DRAIN DOWNSPOUT
SCALE: NONE

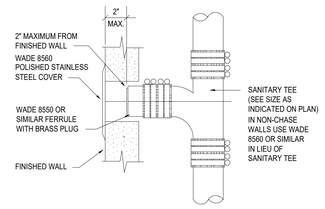


10 DOMESTIC WATER ENTRY
SCALE: NONE

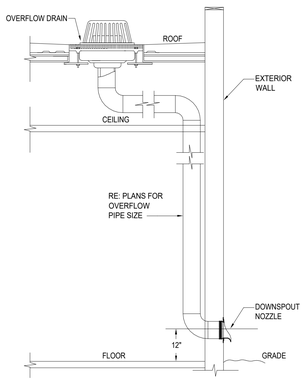


NOTES:
1. TRAP GUARD SHALL BE FACTORY FITTED TO MATCH EACH FLOOR DRAIN (AND FLOOR SINK) BY SIZE, MODEL, AND MANUFACTURER.
2. FLOOR SINK TRAP GUARD INSTALLATION IS SIMILAR.
3. INSTALLATION OF TRAP GUARD TO BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. INSERT TRAP GUARD ONLY AFTER FINAL RODDING OF DRAINS. INSTALL TRAP GUARD WITH CLEAR SILICONE CAULK FOR GAS TITE SEAL. FOR DRAIN RODDING AFTER INSTALLATION, INSERT SEWER TAPE THROUGH LIGHTLY GREASED 1-1/2" PVC PIPE TO PROTECT TRAP GUARD.

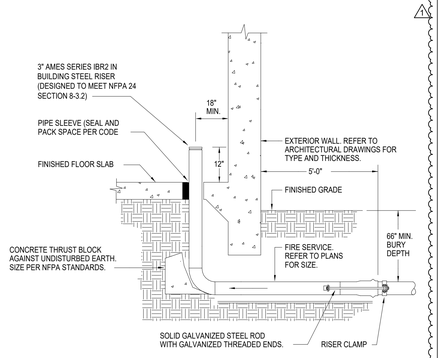
6 FLOOR DRAIN WITH TRAP SEAL PROTECTION
SCALE: NONE



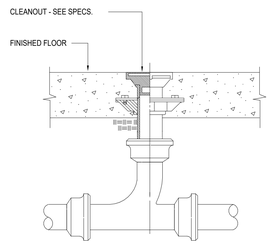
2 WALL CLEANOUT
SCALE: NONE



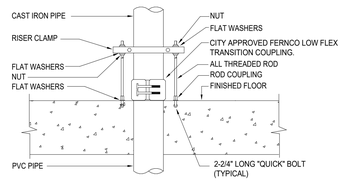
13 DOWNSPOUT NOZZLE
SCALE: NONE



9 DOMESTIC WATER SERVICE ENTRY
SCALE: NONE



5 FLOOR CLEANOUT



NOTE:
1. MAKE CONNECTION FROM PVC BELOW SLAB TO CAST IRON ABOVE SLAB WITH FERNCO TRANSITION COUPLING.
2. THERE IS TO BE NO EXPOSED PVC ABOVE SLAB.

1 CAST IRON TO PVC TRANSITION
SCALE: NONE

VLK

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Houston, TX 77064
Salas O'Brien Registration: F-4111
Salas O'Brien Project Number: 2550-01455-00

GALENA PARK ISD
HOUSTON, TEXAS

BRADLEY KALMANS
80219
LICENSED
CENSED
10.17.2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

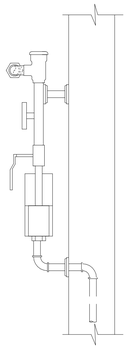
PROJECT NO.
25-0056.00

SHEET TITLE
PLUMBING DETAILS

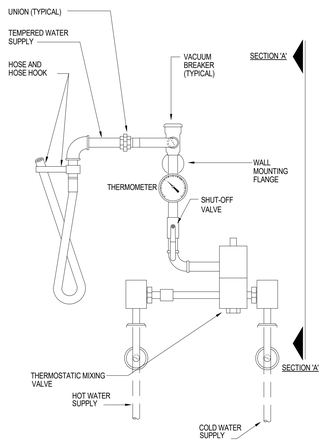
SHEET NO.
P5.01

North Shore Multi-Use Indoor Facility

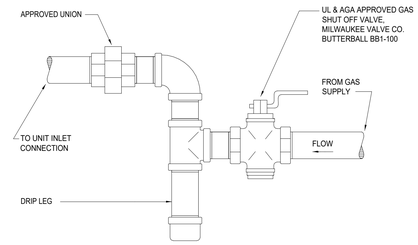
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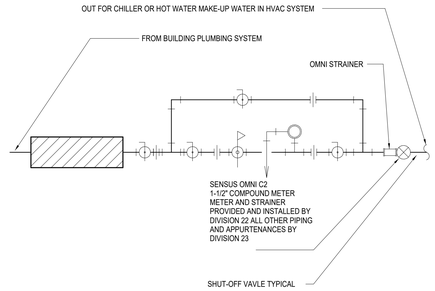
SECTION 'A-A'



13 WHIRLPOOL MIXING VALVE (WP-1) - ALTERNATE
SCALE: NONE

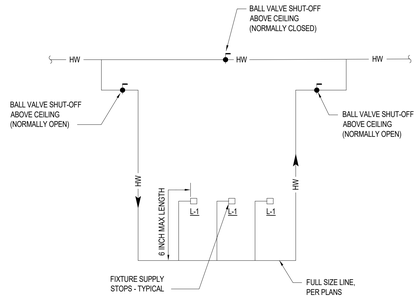


11 GAS CONNECTION
SCALE: NONE



NOTE: PROVIDE WATER SUB METER ON CHILLED AND HOT WATER MAKE-UP LINES.

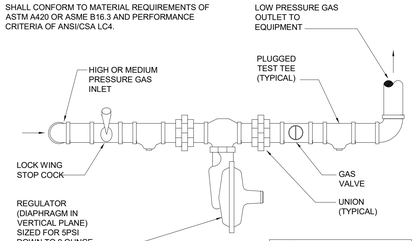
7 MAKE-UP WATER SUB-METER
SCALE: NONE



3 HW CIRCULATION FOR PUBLIC LAVATORIES
SCALE: NONE

PROVIDE AMERICAN METER COMPANY REGULATORS OR APPROVED EQUAL, SUITABLE FOR OUTDOOR INSTALLATION. REGULATORS OUTSIDE EXPOSED TO WEATHER SHALL BE INSTALLED WITH VENT IN VERTICAL DOWN POSITION.

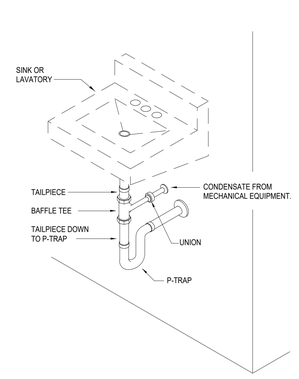
SHALL CONFORM TO MATERIAL REQUIREMENTS OF ASTM A420 OR ASME B16.3 AND PERFORMANCE CRITERIA OF ANSI/CSA LC4.



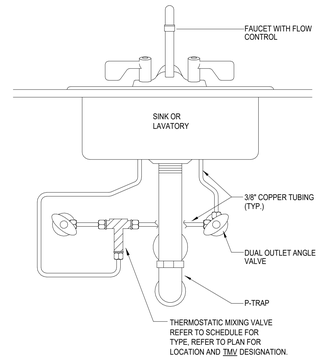
NOTE: REFERENCE DRAWINGS FOR PIPE SIZES.

NOTE:
ALL GAS PRESSURE REGULATOR LOCATED IN PLENUMS ARE TO BE ROUTED TO EXTERIOR

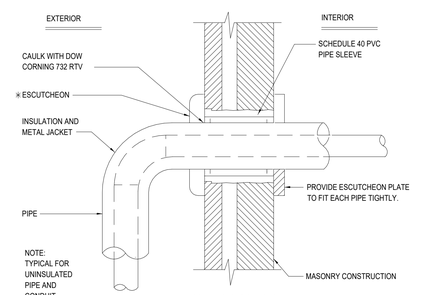
10 GAS PRESSURE REGULATOR INSTALLATION
SCALE: NONE



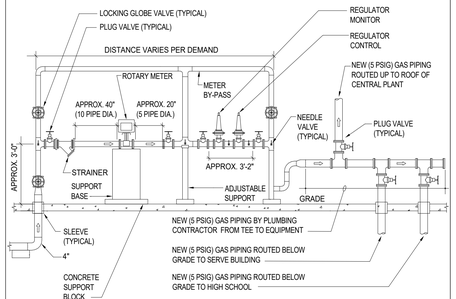
6 BAFFLE TEE CONNECTION
SCALE: NONE



2 POINT OF USE MIXING VALVE
SCALE: NONE



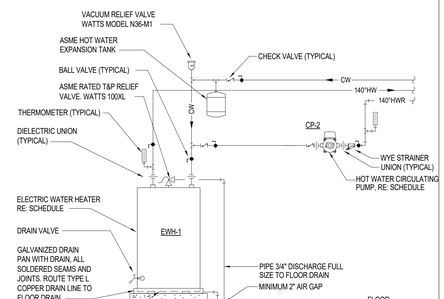
13 EXTERIOR WALL PENETRATION
SCALE: NONE



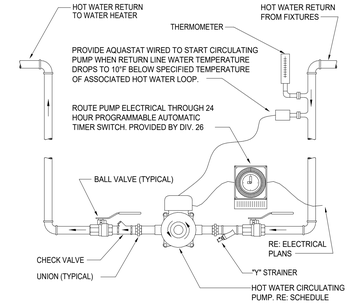
NOTE:
ALL SERVICE GAS PIPING FROM GAS MAIN TO METER OUTLET PROVIDED BY LOCAL GAS COMPANY.

TOTAL GAS DEMAND FOR BUILDING:
0 - 4,000 CFH 12'-0"
4,001 - 6,000 CFH 14'-0"
6,001 - 8,000 CFH 16'-0"
8,001 - 10,000 CFH 18'-0"
10,000 + CFH 22'-0"

9 GAS METER PIPING
SCALE: NONE

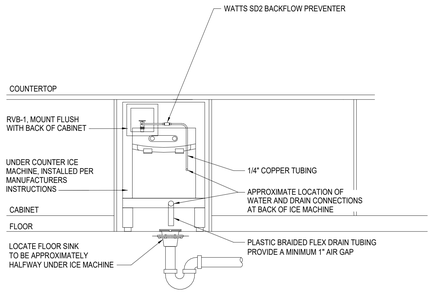


5 ELECTRIC WATER HEATER PIPING
SCALE: NONE

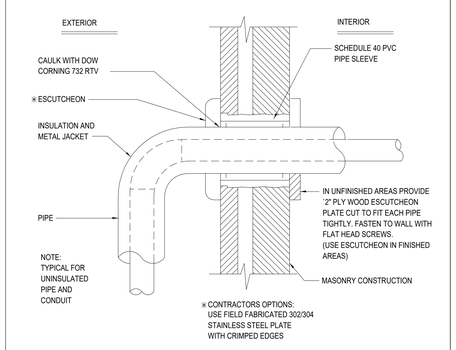


NOTE: MOUNT AT 54"-60" A.F.F. UNLESS NOTED OTHERWISE ON PLANS.

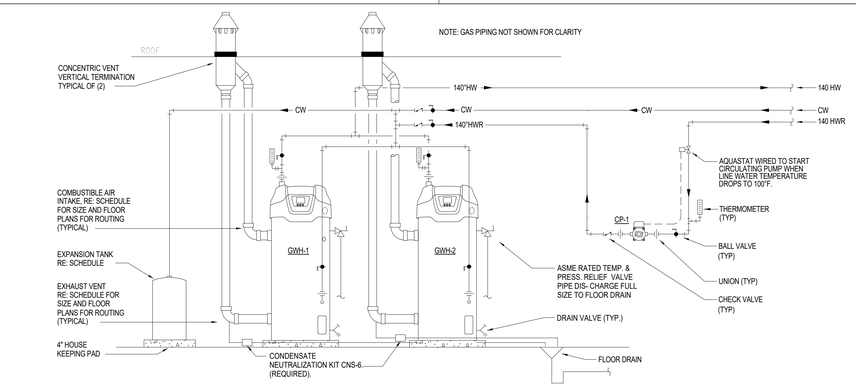
1 HOT WATER CIRCULATING PUMP
SCALE: NONE



12 UNDER COUNTER ICE MACHINE CONNECTION
SCALE: NONE



8 EXTERIOR WALL PENETRATION
SCALE: NONE



4 DOMESTIC GAS WATER HEATER PIPING (GWH-1 AND GWH-2)
SCALE: NONE

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Salas O'Brien Registration: F-4111
Salas O'Brien Project Number: 2550-01455-00

GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

BRADLEY KALMANS — STATE OF TEXAS — 80219 — LICENSED — PROFESSIONAL ENGINEER
10.17.2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 1	10/08/2025
2 Addendum 3	10/17/2025

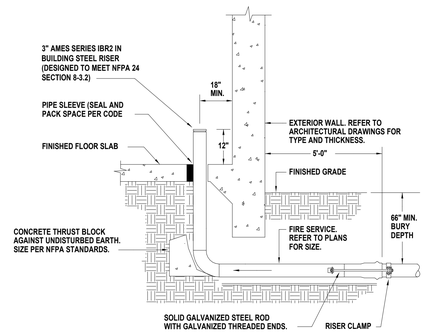
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

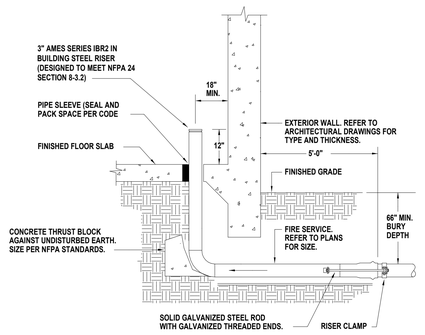
SHEET TITLE
PLUMBING DETAILS

SHEET NO.
P5.02

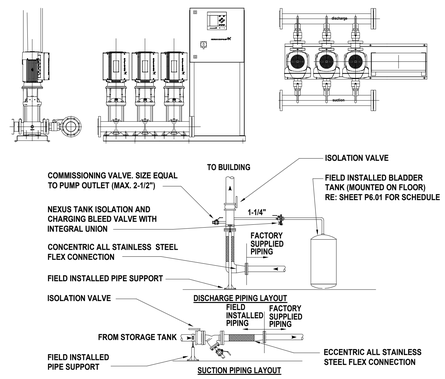
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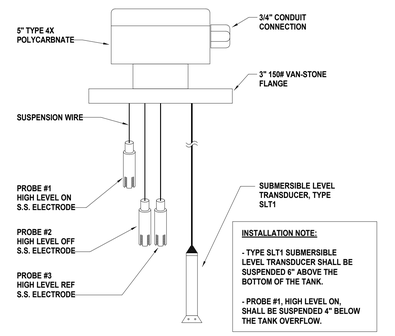
10 FDC SERVICE ENTRY
SCALE: NONE



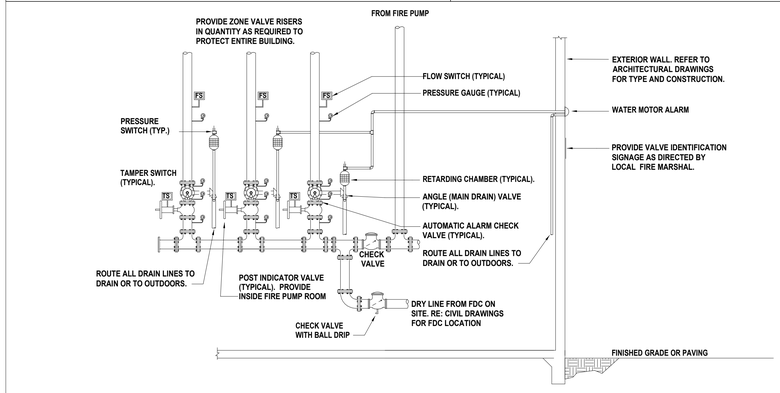
9 FIRE/WATER SERVICE ENTRY
SCALE: NONE



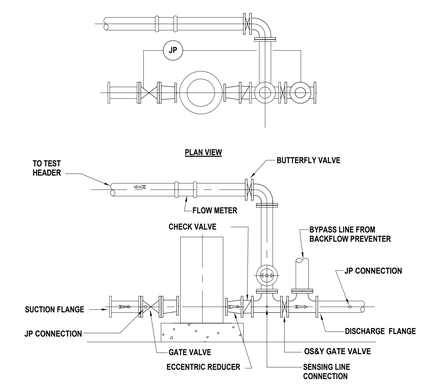
5 DOMESTIC TRIPLEX BOOSTER PUMP DETAIL
SCALE: NONE



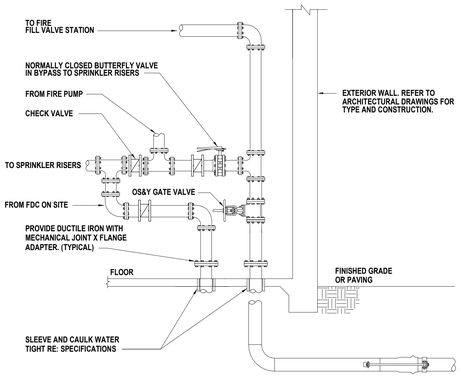
3 LEVEL SENSOR ASSEMBLY
SCALE: NONE



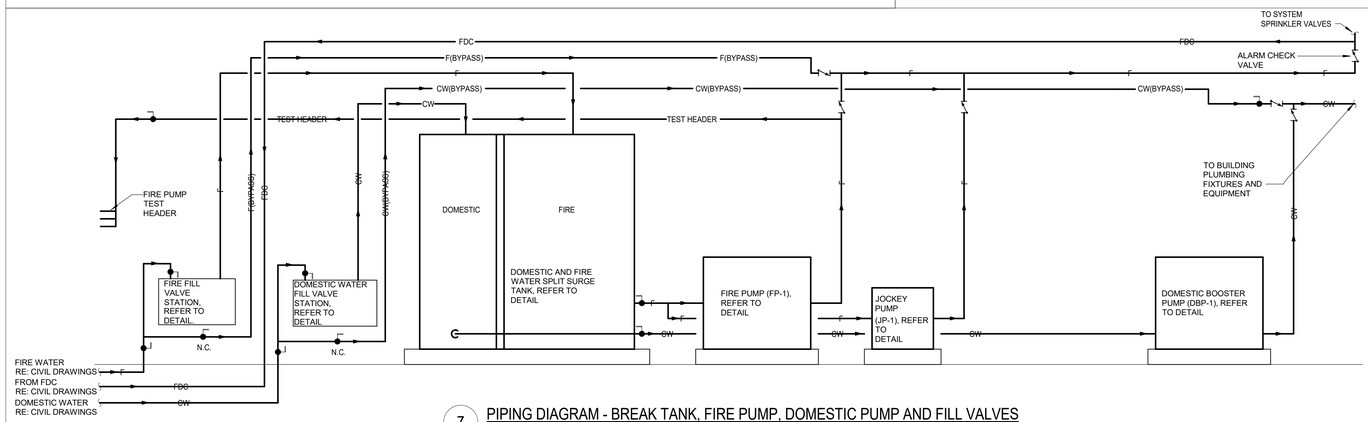
8 FIRE PIPING DETAIL
SCALE: NONE



4 INLINE FIRE PROTECTION PUMP (FP-1)
SCALE: NONE

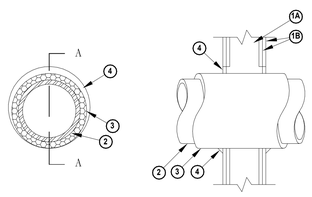


2 FIRE ENTRY PIPING DETAIL
SCALE: NONE



7 PIPING DIAGRAM - BREAK TANK, FIRE PUMP, DOMESTIC PUMP AND FILL VALVES
SCALE: NONE

System No.W-L-5039 For Insulated Pipe
System No.W-L-1010 For Uninsulated Pipe
May 04, 2017
ANSI/UL1479 (ASTM E814)
F Ratings - 1 & 2 Hr (See Item 1)
T Ratings - 0,1 and 1-1/2 Hr (See Item 3)



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum wallboard type, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening in wallboard layers is 13-3/4 in. (349 mm). The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly.
2. Through Penetrant — One metallic pipe or tube to be installed either concentrically or eccentrically within the firestop system. Pipe to be rigidly supported on both sides of wall assembly. The following types and sizes of pipe and tubing may be used:
   A. Steel Pipe — Nom 8 in. (203 mm) diam (or smaller) Sch 10 (or heavier) steel pipe.
   B. Copper Tube — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
3. Pipe Covering* — Nom 1/2 to 2 in. (13 to 51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 24 kg/m3) glass fiber units for 1 hr rated assemblies, nom 1/2 to 1-1/2 in. (13 to 38 mm) thick cylindrical heavy density (min 3.5 pcf or 24 kg/m3) glass fiber units for 2 hr rated assemblies, jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied SSL tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the edge of the through opening shall be min 0 in. (continuous point contact) to max 1-1/4 in. (32 mm).
   The hourly T, FT and FTH Ratings are 0 hr when pipe covering less than nom 1-1/2 in. (38 mm) thick is used and/or when nom penetrant diam exceeds 4 in. (102 mm). When 1-1/2 in. (38 mm) thick pipe covering is used and penetrant diam does not exceed 4 in. (102 mm), the hourly T, FT and FTH Ratings are 1 hr when installed in 1 hr rated walls. When 1-1/2 in. (38 mm) thick pipe covering is used in 2 hr rated wall, the T, FT and FTH Ratings are 1 hr when copper tube is used and 1-1/2 hr when steel pipe not exceeding 4 in. (102 mm) diam is used.
   See Pipe and Equipment Covering — Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4. Fill, Void or Cavity Materials* — Caulk or Sealant — Min 5/8 in. (16 mm) thickness of caulk aplied within annular space flush with each surface of wall. A min 1/2 in. (13 mm) diam bead of caulk shall be applied to the pipe insulation/ wallboard interface at the point contact location on both sides of wall.
   3M COMPANY — Type CP 25WB+ or FB-3000 WT
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

6 INTERIOR WALL PENETRATION

- Min 5-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks* . Diam of opening to be 1 1/4 in. to 1-3/4 in. larger than outside diam of insulated pipe. Max diam of opening is 12 in.

SeeConcrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Pipe - Nom 4 in. diam (or smaller) Type L (or heavier) copper pipe or nom 6 in. diam (or smaller) Schedule 10 (or heavier) steel pipe centered in the opening and rigidly supported on both sides of the floor or wall assembly.

3. Pipe Covering* - Nom 1 or 2 in. thick hollow cylindrical heavy density glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self sealing lap tape. Transverse joints secured with metal fasteners or with butt strip tape supplied with the product.
SeePipe and Equipment Covering - Materials* (BRGU) category in Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

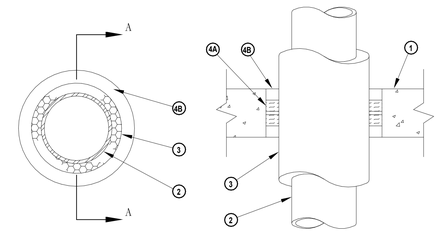
4. Firestop System - The details of the firestop system shall be as follows:

A.Packing Material - Min 1 in. thickness of tightly-packed mineral wool batt insulation firmly packed into opening as a permanent form on both sides of floor or wall assembly. Packing material to be recessed min 1 in. from both surfaces of floor or wall assembly.
B.Fill,Void or Cavity Materials* - Caulk or Sealant - Applied to fill the annular space to a min depth of 1 in., flush with both surfaces of floor or wall assembly.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant.

*Bearing the UL Classification Marking

System No. C-BJ-5002 FOR INSULATED PIPES
System No. C-AJ-1557 FOR UNINSULATED PIPE
September 07, 2004
(Formerly System No. 91)
F Rating - 4 Hr
T Rating - 1/2 Hr
L Rating At Ambient - 2 CFM/sq ft
L Rating At 400 F - Less Than 1 CFM/sq ft



SECTION A-A

1 INTERIOR FLOOR/WALL PENETRATION - INSULATED PIPE
SCALE: NONE

VLK

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Houston, TX 77064
Salas O'Brien Registration: F-4111
Salas O'Brien Project Number: 2550-01455-00

GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

BRADLEY KALMANS
80219
LICENSED
PROFESSIONAL ENGINEER
10.17.2025

ISSUED: OCTOBER 17, 2025

REVISIONS

Revision No.	Revision Date

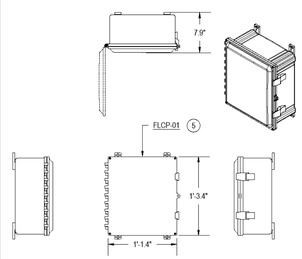
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
PLUMBING DETAILS

SHEET NO.
P5.03

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CONTROL PANEL
SCALE: 1" = 1'-0"

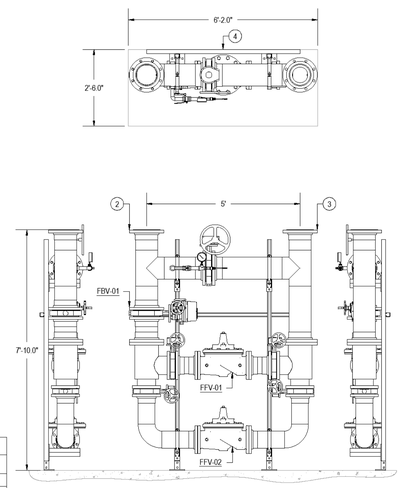
GENERAL NOTES

1. ALL FILL STATION COMPONENTS TO BE PURCHASED FROM A SINGLE SUPPLIER.
2. FILL STATION INLET, 8"Ø ANSI FLANGED CONNECTION.
3. FILL STATION DISCHARGE, 8"Ø ANSI FLANGED CONNECTION.
4. SUPPORT STRUCTURE. 5' SEGMENT PROVIDED LOOSE AND FIELD INSTALLED ON WALL, SUPPORT STRUCTURE THEN CONNECTS TO 5' SEGMENT FOR A FULLY SUPPORTED INSTALLATION.
5. COUGAR CONTROL PANEL TO BE SHIPPED LOOSE AND FIELD INSTALLED AT A REMOTE LOCATION.

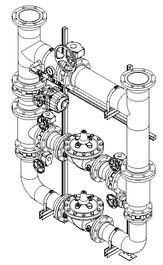
1 GENERAL EQUIPMENT SCHEDULE

TAG	DESCRIPTION	PIPE CONNECTION SIZE(S)	MODEL	NOTES
FFV-01, 02	SOLENOID ACTUATED FILL VALVE	8" ANSI FLANGE	CLA-VAL 136-01-ACXC-SS	3, 4
FBV-01	MOTORIZED BLOCK VALVE	8" ANSI FLANGE	A-T CONTROLS NS SERIES	3, 4
FLCP-01	COUGAR PLC CONTROL PANEL	-	MODEL ET10F2811T1	1, 2, 3, 4

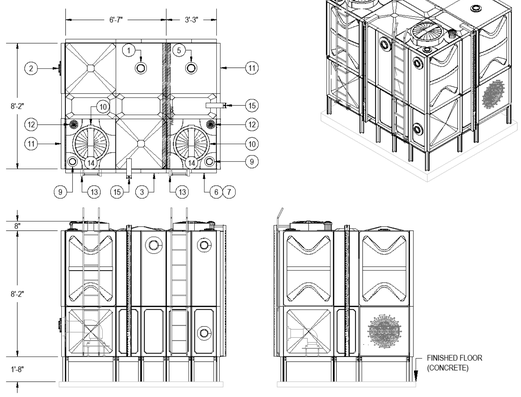
NOTES
1. LEVEL CONTROL DONE BY PRESSURE TRANSDUCER WITH BACK UP HIGH LEVEL PROBE. TANK LEVEL & SET POINTS DISPLAYED IN INCHES.
2. MONITOR CITY PRESSURE WITH PRESSURE TRANSMITTER.
3. START-UP DONE BY SYSTEM SUPPLIER.
4. FIELD WIRING FROM CONTROL PANEL TO VALVES AND LEVEL SENSOR ASSEMBLY BY SYSTEM SUPPLIER.



PROVIDE AS SIMILAR TO COUGAR USA
FIRE FILL VALVE STATION
MICHAEL BALBONI
832-912-7500



FILL STATION PLAN, ELEVATION, AND ISOMETRIC VIEWS
SCALE: 1/2" = 1'-0"



WATER STORAGE TANK COORDINATION SCHEDULE

NO.	DESCRIPTION	QTY.	SIZE	TYPE
1	FIRE TANK INLET CONNECTION	1		GROOVED
2	FIRE TANK VORTEX OUTLET CONNECTION	1		GROOVED
3	FIRE OVERFLOW CONNECTION	1		GROOVED
4	FIRE DRAIN CONNECTION	1		NPT
5	DOMESTIC TANK INLET CONNECTION	1		GROOVED
6	DOMESTIC TANK VORTEX OUTLET CONNECTION	1		GROOVED
7	DOMESTIC OVERFLOW CONNECTION	1		GROOVED
8	DOMESTIC DRAIN CONNECTION	1		NPT
9	LEVEL CONTROL CONNECTIONS	2	3"	FLANGE
10	TOP MANHOLE COVER	2	24"	FRP
11	SIDE MANHOLE COVER	2	24"	FRP
12	COWL TYPE AIR VENT	2	4"	VENT
13	EXTERNAL LADDER	2	-	LADDER
14	INTERNAL LADDER	2	-	SS LADDER
15	WATER LEVEL GUIDE	2	-	FLOAT AND BOARD TYPE

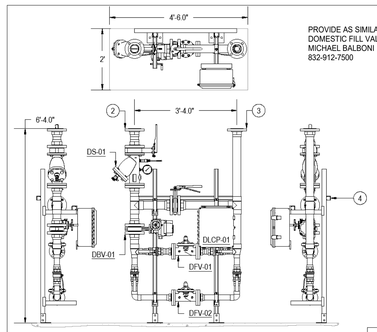
NOTES
1. ALLOW FOR A MINIMUM OF 2" CLEARANCE AROUND TANK FOUNDATION.
2. OVERFLOWS SHALL FLOW FREELY TO THE GROUND AND BE DIRECTLY ROUTED TO A DRAIN.

WATER STORAGE TANK SCHEDULE

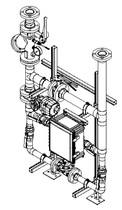
TAG	USEABLE CAPACITY (GALLONS)	DIMENSIONS (L x W x H)	TYPE	MODEL	EMPTY WEIGHT (LBS)	NOTES
ST-04	FIRE 2,500 DOMESTIC 1,000	FIRE: 6'-7" x 8'-2" x 8'-2" DOM: 3'-3" x 8'-2" x 8'-2"	FIELD BUILT BOLTED FIBERGLASS	FTC-(1.95+0.1+0.95)x2.5x2.5	4,100	1, 2, 3, 4, 5, 6, 7

NOTES
1. FOR TANK CONNECTIONS AND INSTALLATION DIMENSIONS, REFER TO STORAGE TANK DETAIL AND COORDINATION SCHEDULE.
2. TANK TO BE INSTALLED BY SUPPLIER.
3. TANK TO BE INSTALLED ON ENGINEERED STEEL BASE WITH MODULAR STEEL PEDESTAL FOOTING OR CONCRETE DUNNAGE. SEE DETAIL FOR PLATFORM INSTALLATION HEIGHT.
4. TANK MUST BE COMPLIANT WITH AWWA D12-121 AND NSF 61 WITHOUT A LINER.
5. SHEET MOLDING COMPOUND TO BE HOT PRESSED AT 300° F AND 3000 PSI.
6. TANK SEALANT TO BE A SOLID SYNTHETIC RUBBER SEALANT RIBBED IN NO LESS THAN 4 LOCATIONS.
7. ALL HARDWARE TO BE 316 STAINLESS STEEL.

3 FIRE FILL VALVE STATION AND CONTROLS WITH BYPASS
Scale: 12" = 1'-0"



PROVIDE AS SIMILAR TO COUGAR USA
DOMESTIC FILL VALVE STATION
MICHAEL BALBONI
832-912-7500



PLAN AND ELEVATION SYSTEM VIEWS
SCALE: 1/2" = 1'-0"

ISO SYSTEM VIEW
SCALE: 1/2" = 1'-0"

GENERAL NOTES

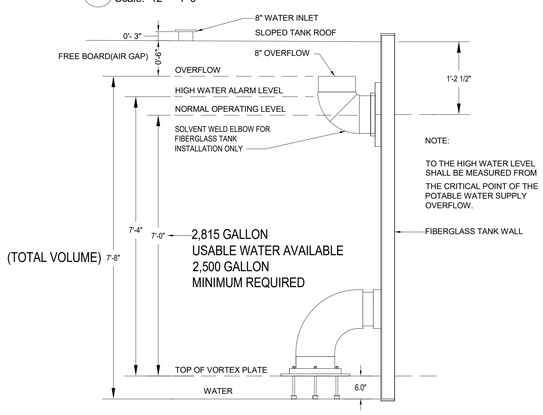
1. ALL FILL STATION COMPONENTS TO BE PURCHASED FROM A SINGLE SUPPLIER.
2. FILL STATION INLET, 3.0"Ø ANSI FLANGED CONNECTION.
3. FILL STATION DISCHARGE, 3.0"Ø ANSI FLANGED CONNECTION.
4. SUPPORT STRUCTURE PROVIDED BY SYSTEM SUPPLIER FOR PREFABRICATED SYSTEMS.

1 GENERAL EQUIPMENT SCHEDULE

TAG	DESCRIPTION	PIPE CONNECTION SIZE(S)	MODEL	NOTES
DFV-01, 02	DOMESTIC FILL VALVE	2" ANSI FLANGE	CLA-VAL 136-01-ACXC-SS	2, 3
DBV-01	MOTORIZED BLOCK VALVE	3" ANSI FLANGE	A-T CONTROLS NS SERIES	2, 3
DS-01	STRAINER, BLOW-DOWN, ISOLATION VALVE	2" ANSI FLANGE	NEXUS DXFV	1, 2
DLCP-01	COUGAR PLC CONTROL PANEL	-	MODEL ET10F2811T1	1, 2, 3

NOTES
1. MONITOR CITY PRESSURE WITH PRESSURE TRANSMITTER.
2. START-UP DONE BY SYSTEM SUPPLIER.
3. FIELD WIRING FROM CONTROL PANEL TO FILL VALVES AND BLOCK VALVE COMPLETED BY SYSTEM SUPPLIER.

4 DOMESTIC FILL VALVE STATION AND CONTROLS WITH BYPASS
Scale: 12" = 1'-0"



5 BREAK TANK VOLUME
Scale: 12" = 1'-0"

2 FIBERGLASS COMBINATION DOMESTIC/FIRE SURGE TANK
Scale: 12" = 1'-0"

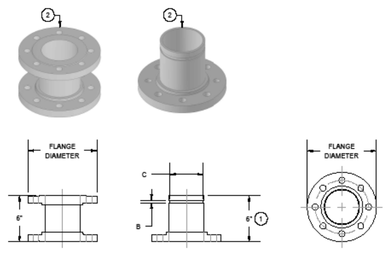
TANK CONNECTION DIMENSIONS SCHEDULE

NOMINAL SIZE	FLANGE DIAMETER (IN)	GROOVE DIMENSIONS (IN)			NOTES
		A	B	C	
2"	6.0	0.625	0.344	2.250	1, 2, 3
2-1/2"	7.0	0.625	0.344	2.720	1, 2, 3
3"	7.5	0.625	0.344	3.344	1, 2, 3
4"	9.0	0.625	0.344	4.334	1, 2, 3
6"	11.0	0.625	0.344	6.455	1, 2, 3
8"	13.5	0.750	0.469	8.441	1, 2, 3
10"	16.0	0.750	0.469	10.562	1, 2, 3

NOTES
1. FLANGE DIMENSIONS PER ANSI CLASS 150 B16.5 SLIP ON FLANGE.
2. GROOVED DIMENSIONS PER ORIGINAL GROOVE SYSTEM (OGS) GROOVE SPECIFICATIONS FROM VICTAULIC.
3. FLANGES TO BE PREINSTALLED ON FTC TANKS WITH GROOVED END BEING CONTRACTOR CONNECTION POINT.

TANK CONNECTION CONSTRUCTION NOTES

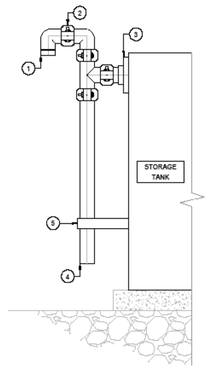
1. DRAWING SHOWS 4" NOMINAL SIZE DIMENSIONS, ALL VARIATION MAINTAIN THE SAME 6" DISTANCE SHOWN.
2. ISOMETRIC DRAWING IS NTS. 3D DRAWINGS AVAILABLE UPON REQUEST.



STANDARD TANK CONNECTION DETAIL
SCALE: 1 1/2" = 1'-0"

OVERFLOW CONSTRUCTION NOTES

1. OVERFLOW VENT INSTALLED WITH SS BIRD AND INSECT SCREEN.
2. RECOMMENDED OVERFLOW PIPE FITTINGS TO BE INSTALLED USING VICTAULIC PGS-300 AND STYLE 357 RIGID COUPLINGS. SEE SPEC FOR APPROVED PIPE MATERIALS.
3. OVERFLOW TO BE INSTALLED ON SITE BY CONTRACTOR. TANK WILL INCLUDE AN INSTALLED VICTAULIC GROOVED FITTING OVERFLOW CONNECTION POINT.
4. OVERFLOW TO BE FIELD ROUTED TO NEAREST FLOOR DRAIN, RECOMMENDED TO BE AS SHORT AS POSSIBLE.
5. TANKS SUPPORTS TO BE PROVIDED IF REQUIRED.



OVERFLOW DETAIL
SCALE: NTS

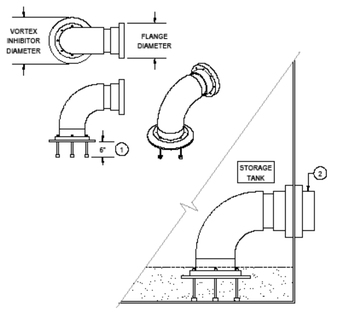
ANTI-VORTEX DIMENSIONS SCHEDULE

NOMINAL SIZE	FLANGE DIAMETER (IN)	VORTEX INHIBITOR DIA (IN)	NOTES
2"	6.0	8.0	1
2-1/2"	7.0	9.0	1
3"	7.5	12.0	1
4"	9.0	16.0	1
6"	11.0	18.0	1
8"	13.5	20.0	1
10"	16.0	24.0	1

NOTES
1. FLANGE DIMENSIONS PER ANSI CLASS 150 B16.5 SLIP ON, PVC OR STEEL AVAILABLE.

ANTI-VORTEXT CONSTRUCTION NOTES

1. ALL SIZES INSTALLED WITH 6" VORTEX INLET STANDS.
2. EXTERIOR CONNECTION TO BE ANSI FLANGED AS EITHER PVC OR STEEL FLANGE.



VORTEX CONNECTION DETAIL
SCALE: NTS

1 DOMESTIC/FIRE SURGE TANK CONNECTIONS
Scale: 12" = 1'-0"

M.E.P. ENGINEER

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REVISIONS

Revision No.	Revision Date

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
PLUMBING DETAILS

SHEET NO.
P5.04

North Shore Multi-Use Indoor Facility

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GAS WATER HEATER SCHEDULE

MARK	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	STORAGE CAPACITY (GAL)	BTU/HR INPUT	WH GALS. PER HR. RECOVERY RATE 100°F RISE	STORED WATER TEMP	ELECTRICAL CHAR. V	P	MCA	MOCP	REMARKS
GWH-1	AO SMITH	BTH-199A	100 GAL	199	256	140 °F	120	1	0	20	
GWH-2	AO SMITH	BTH-199A	100 GAL	199	256	140 °F	120	1	0	20	

1 INDIVIDUAL VERTICAL 4" CONCENTRIC FLUE VENT FOR EACH WATER HEATER. PROVIDE CONCENTRIC VENT KIT "9006144003". REFER TO DRAWINGS FOR FLUE ROUTING AND LOCATIONS THROUGH ROOF. CONTRACTOR SHALL COORDINATE FLUE LOCATION THROUGH ROOF AND PIPE ROUTING IN CEILING SPACES WITH ALL OTHER DISCIPLES PRIOR TO CONSTRUCTION.

2 PROVIDE ACID NEUTRALIZING TANK KIT "9007960005"

NOTE: PROVIDE HOT WATER EXPANSION TANK DOWNSTREAM OF CHECK VALVE ON COLD WATER SUPPLY.

ELECTRIC WATER HEATER SCHEDULE

MARK	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	STORAGE CAPACITY	KW	WH GALS. PER HR. RECOVERY RATE 100°F RISE	STORED WATER TEMP	ELECTRICAL CHAR. V	P	MCA	MOCP	REMARKS
EWH-1	AO SMITH	DSE-30A	30 GAL	12.3	50	140	480	3	0	20	

NOTE: PROVIDE HOT WATER EXPANSION TANK DOWNSTREAM OF CHECK VALVE ON COLD WATER SUPPLY.

CIRCULATION PUMP SCHEDULE

MARK	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	DESCRIPTION	TYPE	GPM	HEAD FEET	HP MIN	ELECTRICAL CHAR. V	P	F	MAX RPM
CP-1	GRUNDFOS	ALPHA HWR 15-55SF	CIRCULATION PUMP	INLINE BRONZE	5	12'-0"	1/25	120	1	60	1750
CP-2	GRUNDFOS	ALPHA HWR 15-55SF	CIRCULATION PUMP	INLINE BRONZE	5	4'-0"	1/25	120	1	60	1750

NOTE: FACTORY SET PUMP TO AUTO-ADAPT SETTING

SHOCK ARRESTORS

P.D.I SYMBOL	FIXTURE UNITS	CHAMBER LENGTH	THREADED CONNECTION
A	1-11	9 5/8"	1/2"
B	12-32	11 3/4"	3/4"
C	33-60	14 11/16"	1"
D	61-113	12 3/8"	1"
E	114-154	15 3/8"	1"
F	155-330	17 3/8"	1"

PUMPS

ITEM	DESCRIPTION	TYPE	GPM	HEAD FEET	H.P. MIN.	VOLT/ PHASE	MAX RPM	MANUFACTURER AND MODEL
FP-1	FIRE PUMP	VERTICAL IN-LINE	500	148'	25	460/3/60	3525	PATTERSON 5X3 VIP
JP-1	JOCKEY PUMP	VERTICAL IN-LINE MULTISTAGE	5	185'	3/4	460/3/60	3500	EBARA MODEL-EVI-7F0075T3S

NOTES:

1. PROVIDE (FC-1) FIRE PUMP CONTROLLER - FIRETROL MODEL-FTT1000-AM25R, SOFT START WITH TRANSFER SWITCH
2. PROVIDE (JC-1) JOCKEY PUMP CONTROLLER - FIRETROL MODEL-FTA570F-AG034B

DOMESTIC BOOSTER PUMP

ITEM NO.	DESCRIPTION	TYPE	GPM (EA.)	HEAD FEET (TOTAL)	H.P MIN. (EA.)	ELECTRICAL REQUIRED V/P2/HZ	MAX RPM	MANUFACTURER AND MODEL
TBP-1	TRIPLEX BOOSTER PUMP	VERTICAL MULTI-STAGE	45	130	3	460/3/60	3500	GRUNDFOS HYDRO MPC-E 3CRE 10-4

PUMP NOTES:

1. PROVIDE AN 44 GALLON ELBI WTL-170 BLADDER/DIAPHRAGM TANK.
2. PROVIDE INTEGRAL VFD ON EACH PUMP OR IF EXTERNAL DRIVES THEY SHALL BE CONTAINED WITHIN A SINGLE ELECTRICAL ENCLOSURE (MIN. NEMA 3R UNLESS NOTED OTHERWISE). PANEL SHALL HAVE MAIN DISCONNECT AND SINGLE POINT CONNECTION.
3. PROVIDE REDUNDANT DISCHARGE PRESSURE TRANSDUCER AND CONTROL CAPABILITY TO MONITOR BOTH SENSOR AND AUTOMATICALLY SWITCH TO SECONDARY SENSOR IN THE EVENT OF A PRIMARY SENSOR FAILURE
4. PROVIDE SURGE PROTECTION, BATTERY BACKUP, SERVICE DISCONNECTS, INDIVIDUAL PUMP RUN INDICATION, AUDIBLE & VISUAL ALARM, BACNET COMMUNICATION INTERFACE.
5. HEADERS SHALL BE CONSTRUCTED OF 316 SS WITH FLANGED CONNECTIONS ON ALL ENDS, PROVIDE SUCTION & DISCHARGE ISOLATION VALVES AND DISCHARGE CHECK VALVES ON EACH PUMP.
6. CONTRACTOR TO ROUTE A PIPE OFF THE SYSTEM DISCHARGE LINE TO THE BLADDER TANK PROVIDING A BLOCK & BLEED PIPING ARRANGEMENT THAT ALLOWS THE TANK TO BE ISOLATED FROM THE SYSTEM AND DRAINED.
7. WHEN REQUIRED, SYSTEM SUPPLIER TO PROVIDE 150# FLANGED X 150# FLANGED REDUCING FLEX CONNECTORS, OF ALL STAINLESS STEEL CONSTRUCTION (RE: PLANS FOR PIPE CONNECTION SIZES).
8. FOR PACKAGES BEING FED FROM A BREAK TANK, PACKAGE TO BE WIRED INTO THE LEVEL CONTROL PANEL'S LOW LEVEL ALARM FOR DRY RUN PROTECTION (NOTE: DRY RUN PROTECTION BY SUCTION PRESSURE SENSOR IS NOT ACCEPTABLE).

GAS PIPING CALCULATIONS		
5 PSI GAS		
MEASURED LENGTH	=	110'
ADD FOR VALVES AND FITTINGS (10%)	=	11'
TOTAL EQUIVALENT LENGTH	=	121'
DESIGN: 1999 NATIONAL FUEL GAS CODE TABLE 9.9 - 150' COLUMN		
8 OUNCE GAS		
MEASURED LENGTH	=	333'
ADD FOR VALVES AND FITTINGS (10%)	=	33'
TOTAL EQUIVALENT LENGTH	=	366'
DESIGN: 2021 INTERNATIONAL FUEL GAS CODE TABLE 402.4(1)- 400' COLUMN		

PLUMBING PIPING LEGEND

SYMBOLS	DESCRIPTION
	EXISTING TO BE REMOVED
SAN	SANITARY OR WASTE PIPING BELOW SLAB(SAN)
SAN	SANITARY OR WASTE PIPING ABOVE SLAB(SAN.)
SD	STORM DRAIN PIPING (SD)
OFD	STORM OVERFLOW DRAIN (OFD)
ST	STORM PIPING BELOW SLAB(SD)
AW	ACID WASTE PIPING BELOW SLAB (AW)
PD	PUMPED DISCHARGE (PD)
CD	CONDENSTATE DRAIN PIPING (CD)
D	CONDENSTATE - INDIRECT DRAIN PIPING (D)
V	VENT PIPING (V)
CW	COLD WATER PIPING (CW)
HW	HOT WATER PIPING (HW)
HWR	HOT WATER RETURN PIPING (HWR)
SCW	SOFT COLD WATER PIPING (SCW)
AIR	COMPRESSED AIR PIPING (A)
TP	TRAP PRIMER LINE (TP)
F	FIRE PROTECTION PIPING (F)
AS	AUTOMATIC SPRINKLER PIPING (AS)
GAS	NATURAL GAS PIPING (G)
DI	DEMINERALIZATION WATER(DI)
OWS	OIL WATER SEPARATOR
	FLOW DIRECTIONAL ARROW
	SHUT-OFF VALVE
BV	BALANCING VALVE (BV)
SV	SOLENOID VALVE (SV)
	BALL VALVE (BV)
	BUTTERFLY VALVE
	LUBRICATED PACKED PLUG STOP STOP COCK (PC)
	HORIZONTAL SWING CHECK
	UNION
	HORIZONTAL SWING CHECK
	REDUCER OR INCREASER
	ECCENTRIC REDUCER
	REDUCED PRESSURE BACKFLOW PREVENTER (RPBFP)
	PIPING DOWN
	RISE OR DROP PIPING
	PIPING UP -OR- PIPING UP & DOWN
	CAP ON END OF PIPE
CO	CLEANOUT (WALL OR CEILING) (CO)
FCO	FLOOR CLEANOUT (FCO)
ECO	EXTERIOR CLEANOUT WITH 18"x18"x4" CONCRETE PAD (ECO)
	TWO-WAY CLEANOUT (PROVIDE 18"x24"x4" CONCRETE PAD OUTSIDE)
	FIRE DEPARTMENT VALVE AT RISER
	FIRE HYDRANT
	FIRE DEPARTMENT CONNECTION
PRV	PRESSURE REDUCING VALVE (PRV)
	BRANCH CONNECTION OUT OF TOP
	BRANCH CONNECTION OUT OF BOTTOM
	BRANCH CONNECTION OUT OF SIDE
	WYE & 1/8TH BEND BRANCH CONNECTION
	WYE BRANCH CONNECTION
	HOSE BIBB
	PRESSURE GAUGE WITH COCK
	THERMOMETER
	GAS PRESSURE REGULATOR
	TEST COCK
	GAS METER
	WALL HYDRANT
	VALVE IN RISE
	ASME TEMPERATURE & PRESSURE RELIEF VALVE
	VACUUM RELIEF VALVE
	ANGLE VALVE
	OS&Y VALVE
	ROOF DRAIN
1	REFER TO KEYED NOTE
	FLOW SWITCH
FS	FLOOR SINK (FS)
FD	FLOOR DRAIN (FD)
FD	FLOOR DRAIN WITH P-TRAP (FD)
FD	FLOOR DRAIN WITH P-TRAP AT 45° ANGLE (FD)
HD	HUB DRAIN (HD)
	ACCESS PANEL FOR TRAP PRIMER OR SHOCK ABSORBER
AP	ACCESS PANEL LOCATION SYMBOL
A	SHOCK ABSORBER
(E)	EXISTING
ETR	EXISTING TO REMAIN
(N)	NEW
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
	NEW CONNECTION
S.F.	SQUARE FEET
TYP	TYPICAL
VTR	VENT THROUGH ROOF
VTA	VENT TO ATMOSPHERE
EL.=100.00'	INVERT ELEVATION
1/4" PER FOOT	QUARTER OF AN INCH SLOPE
1/8" PER FOOT	1/8TH OF AN INCH SLOPE
1/16" PER FOOT	1/16TH OF AN INCH SLOPE
	DELTA CHANGE SYMBOL

DISREGARD SYMBOLS AND ABBREVIATIONS NOT USED ON CONTRACT DRAWINGS

PLUMBING FIXTURE SCHEDULE

TYPE: WC-1 (T.A.S. COMPLIANT)
DESCRIPTION: WATER CLOSET, WALL HUNG, WHITE VITREOUS CHINA, 1.28 GALLON PER FLUSH SIPHON JET ACTION, ELONGATED CLOSET BOWL WITH 1-1/2" TOP SPUD AND BOLT COVERS. WITH EVERCLEAN. AMERICAN STANDARD "AFWALL" 3351.101.
SEAT: ELONGATED OPEN FRONT WHITE PLASTIC SEAT WITH SELF SUSTAINING CONCEALED CHECK HINGES. CHURCH 9500SSCT
FLUSH VALVE: 1.28 GALLON FLUSH CYCLE. EXPOSED, DIAPHRAGM TYPE, POLISHED CHROME CLOSET FLUSHOMETER. VACUUM BREAKER, SPUD COUPLING FOR 1-1/2" TOP SPUD. SLOAN ROYAL 111-1.28
CARRIER: WADE 311 AND 330 SERIES -AM1.
ROUGH-IN: 4" WASTE, 2" VENT, 1" COLD WATER. REFER TO ARCHITECTURAL DRAWINGS FOR HEIGHT REQUIREMENTS.

TYPE: WC-X1 (T.A.S. COMPLIANT)
DESCRIPTION: WATER CLOSET, WALL HUNG, WHITE VITREOUS CHINA, 1.28 GALLON PER FLUSH SIPHON JET ACTION, ELONGATED CLOSET BOWL WITH 1-1/2" TOP SPUD AND BOLT COVERS. WITH EVERCLEAN. AMERICAN STANDARD "AFWALL" 3351.101. ELONGATED OPEN FRONT WHITE PLASTIC SEAT WITH SELF SUSTAINING CONCEALED CHECK HINGES. CHURCH 9500SSCT
SEAT:
FLUSH VALVE: 1.28 GALLON FLUSH CYCLE. EXPOSED, DIAPHRAGM TYPE, POLISHED CHROME CLOSET FLUSHOMETER. VACUUM BREAKER, SPUD COUPLING FOR 1-1/2" TOP SPUD. SLOAN ROYAL 111-1.28
CARRIER: EXISTING TO REMAIN
ROUGH-IN: RE-USE EXISTING WASTE, WATER AND VENT ROUGH-INS

TYPE: WC-2 (STANDARD HEIGHT)
DESCRIPTION: WATER CLOSET, WALL HUNG, WHITE VITREOUS CHINA, 1.28 GALLON PER FLUSH SIPHON JET ACTION, ELONGATED CLOSET BOWL WITH 1-1/2" TOP SPUD AND BOLT COVERS. WITH EVERCLEAN. AMERICAN STANDARD "AFWALL" 3351.101. ELONGATED OPEN FRONT WHITE PLASTIC SEAT WITH SELF SUSTAINING CONCEALED CHECK HINGES. CHURCH 9500SSCT
SEAT:
FLUSH VALVE: 1.28 GALLON FLUSH CYCLE. EXPOSED, DIAPHRAGM TYPE, POLISHED CHROME CLOSET FLUSHOMETER. VACUUM BREAKER, SPUD COUPLING FOR 1-1/2" TOP SPUD. SLOAN ROYAL 111-1.28
CARRIER: WADE 311 AND 330 SERIES -AM1.
ROUGH-IN: 4" WASTE, 2" VENT, 1" COLD WATER. REFER TO ARCHITECTURAL DRAWINGS FOR HEIGHT REQUIREMENTS.

TYPE: U-1 (T.A.S. COMPLIANT)
DESCRIPTION: URINAL, WALL HUNG, WHITE VITREOUS CHINA, 0.5 GALLON PER FLUSH, SIPHON JET ACTION, INTEGRAL TRAP. AMERICAN STANDARD ALLBROOK 6550.001
FLUSH VALVE: 0.5 GALLON FLUSH CYCLE. EXPOSED, DIAPHRAGM TYPE, CHROME PLATED URINAL FLUSHOMETER. VACUUM BREAKER, SPUD COUPLING FOR 3/4" TOP SPUD.
CARRIER: SLOAN ROYAL186-0.5-H-573-CP CAP.
RECTANGULAR STEEL TUBING UPRIGHTS WITH WELDED 4" SQUARE BASE ANCHORED TO CONCRETE WITH (4) 1/2" BOLTS. ADJUSTABLE SLEEVE, UPPER AND LOWER BEARING PLATES WITH THREADED STUDS. WADE 401-AM11.
ROUGH-IN: 2" WASTE, 2" VENT, 3/4" COLD WATER. REFER TO ARCHITECTURAL DRAWINGS FOR HEIGHT REQUIREMENTS.

TYPE: U-X1 (T.A.S. COMPLIANT)
DESCRIPTION: URINAL, WALL HUNG, WHITE VITREOUS CHINA, 0.5 GALLON PER FLUSH, SIPHON JET ACTION, INTEGRAL TRAP. AMERICAN STANDARD ALLBROOK 6550.001
FLUSH VALVE: 0.5 GALLON FLUSH CYCLE. EXPOSED, DIAPHRAGM TYPE, CHROME PLATED URINAL FLUSHOMETER. VACUUM BREAKER, SPUD COUPLING FOR 3/4" TOP SPUD. SLOAN ROYAL186-0.5-H-573-CP CAP.
CARRIER: EXISTING TO REMAIN
ROUGH-IN: RE-USE EXISTING WASTE, WATER AND VENT ROUGH-INS

TYPE: L-1 (T.A.S. COMPLIANT) - HOT AND COLD WATER
DESCRIPTION: LAVATORY, WALL HUNG, VITREOUS CHINA, 20-1/2" X 18-1/4" WITH FRONT OVERFLOW AND CONCEALED ARM SUPPORTS, FAUCET HOLES ON 4" CENTERS. AMERICAN STANDARD "LUCERNE" 0355.012.
FAUCET: CHROME PLATED BRASS DECK MOUNTED LAVATORY FAUCET WITH COVER PLATE. 4-1/8" SPOUT, AND PUSH BUTTON HANDLE INDEXED "PUSH". SELF-CLOSING METERING CARTRIDGE, VANDAL RESISTANT 0.5 GPM OUTLET, CHICAGO MODEL 857-E280S-765PSHAB.
MIXING VALVE: PROVIDE ASSE 1070 RATED LAWLER MODEL 570-38 POINT OF USE THERMOSTATIC MIXING VALVE AT LAVATORY TO TEMPER OUTLET WATER SUPPLY TO 105° WITH 0.5 GPM FLOW RATE
STRAINER: 1-1/4" 17 GAUGE CHROME PLATED BRASS GRID STRAINER WITH TAILPIECE. MCGUIRE #155A.
P-TRAP: 1-1/4" 17 GAUGE CHROME PLATED HEAVY CAST BRASS TRAP WITH CLEANOUT AND EXTENSION TO WALL WITH ESCUTCHEON PLATE. MCGUIRE 8872.
SUPPLIES: 1/2" I.P.S. X 3/8" O.D.CHROME PLATED LOOSE KEY STOP VALVE WITH ESCUTCHEON AND 3/8" COMPRESSION CHROME PLATED FLEXIBLE RISERS. MCGUIRE 2165LK.
CARRIER: RECTANGULAR STEEL TUBING UPRIGHTS WITH WELDED 3" X 4-1/2" BASE ANCHORED TO CONCRETE WITH (4) 1/2" BOLTS. ADJUSTABLE SLEEVE, THREADED CONCEALED ARMS, ALIGNMENT BAR, LOCKING DEVICE, AND LEVELING SCREWS. WADE 520-08.
ROUGH-IN: 2" WASTE, 2" VENT, 1/2" HOT AND COLD WATER. REFER TO ARCHITECTURAL DRAWINGS FOR HEIGHT REQUIREMENTS.

TYPE: L-X1 (T.A.S. COMPLIANT) - HOT AND COLD WATER
DESCRIPTION: LAVATORY, WALL HUNG, VITREOUS CHINA, 20-1/2" X 18-1/4" WITH FRONT OVERFLOW AND CONCEALED ARM SUPPORTS, FAUCET HOLES ON 4" CENTERS. AMERICAN STANDARD "LUCERNE" 0355.012.
FAUCET: CHROME PLATED BRASS DECK MOUNTED LAVATORY FAUCET WITH COVER PLATE, 4-1/8" SPOUT, AND PUSH BUTTON HANDLE INDEXED "PUSH". SELF-CLOSING METERING CARTRIDGE, VANDAL RESISTANT 0.5 GPM OUTLET, CHICAGO MODEL 857-E280S-765PSHAB.
MIXING VALVE: PROVIDE ASSE 1070 RATED LAWLER MODEL 570-38 POINT OF USE THERMOSTATIC MIXING VALVE AT LAVATORY TO TEMPER OUTLET WATER SUPPLY TO 105° WITH 0.5 GPM FLOW RATE
STRAINER: 1-1/4" 17 GAUGE CHROME PLATED BRASS GRID STRAINER WITH TAILPIECE. MCGUIRE #155A.
P-TRAP: 1-1/4" 17 GAUGE CHROME PLATED HEAVY CAST BRASS TRAP WITH CLEANOUT AND EXTENSION TO WALL WITH ESCUTCHEON PLATE. MCGUIRE 8872.
SUPPLIES: 1/2" I.P.S. X 3/8" O.D.CHROME PLATED LOOSE KEY STOP VALVES WITH ESCUTCHEONS AND 3/8" COMPRESSION CHROME PLATED FLEXIBLE RISERS. MCGUIRE 2165LK.
CARRIER: RECTANGULAR STEEL TUBING UPRIGHTS WITH WELDED 3" X 4-1/2" BASE ANCHORED TO CONCRETE WITH (4) 1/2" BOLTS. ADJUSTABLE SLEEVE, THREADED CONCEALED ARMS, ALIGNMENT BAR, LOCKING DEVICE, AND LEVELING SCREWS. WADE 520-08.
ROUGH-IN: 2" WASTE, 2" VENT, 1/2" HOT AND COLD WATER. REFER TO ARCHITECTURAL DRAWINGS FOR HEIGHT REQUIREMENTS.

TYPE: L-2 (T.A.S. COMPLIANT) - HOT AND COLD WATER
DESCRIPTION: LAVATORY, WALL HUNG, VITREOUS CHINA, 20-1/2" X 18-1/4" WITH FRONT OVERFLOW AND CONCEALED ARM SUPPORTS, FAUCET HOLES ON 4" CENTERS. AMERICAN STANDARD "LUCERNE" 0355.012.
FAUCET: 4" FIXED CENTERS, SINGLE LEVER HOT AND COLD WATER, THERMOSTATIC MIXING FAUCET. CERAMIC MIXING CARTRIDGE (ASSE 1070 CERTIFIED) INCLUDES SCALD PROTECTION AND INTEGRAL INLET CHECK VALVES, 0.5 GPM AERATOR. HOT WATER INLET TEMPERATURE 100° - 180°, MAXIMUM HOT WATER OUTLET TEMPERATURE OF 105° MINIMUM FLOW RATE. FOR TEMPERATURE LIMITING OF 0.35 GPM. MAXIMUM EMERGENCY TEMPERATURE OUT AT COLD WATER FAILURE: 120°. CHICAGO MODEL 420-T41E2805ABCP
STRAINER: 1-1/4" 17 GAUGE CHROME PLATED BRASS GRID STRAINER WITH TAILPIECE. MCGUIRE #155A.
P-TRAP: 1-1/4" 17 GAUGE CHROME PLATED HEAVY CAST BRASS TRAP WITH CLEANOUT AND EXTENSION TO WALL WITH ESCUTCHEON PLATE. MCGUIRE 8872.
SUPPLIES: 1/2" I.P.S. X 3/8" O.D.CHROME PLATED LOOSE KEY STOP VALVE WITH ESCUTCHEON AND 3/8" COMPRESSION CHROME PLATED FLEXIBLE RISERS. MCGUIRE 2165LK.
CARRIER: EXISTING TO REMAIN
ROUGH-IN: RE-USE EXISTING WASTE, WATER AND VENT ROUGH-INS

TYPE: L-X2 (T.A.S. COMPLIANT) - HOT AND COLD WATER
DESCRIPTION: LAVATORY, WALL HUNG, VITREOUS CHINA, 20-1/2" X 18-1/4" WITH FRONT OVERFLOW AND CONCEALED ARM SUPPORTS, FAUCET HOLES ON 4" CENTERS. AMERICAN STANDARD "LUCERNE" 0355.012.
FAUCET: 4" FIXED CENTERS, SINGLE LEVER HOT AND COLD WATER, THERMOSTATIC MIXING FAUCET. CERAMIC MIXING CARTRIDGE (ASSE 1070 CERTIFIED) INCLUDES SCALD PROTECTION AND INTEGRAL INLET CHECK VALVES, 0.5 GPM AERATOR. HOT WATER INLET TEMPERATURE 100° - 180°, MAXIMUM HOT WATER OUTLET TEMPERATURE OF 105° MINIMUM FLOW RATE. FOR TEMPERATURE LIMITING OF 0.35 GPM. MAXIMUM EMERGENCY TEMPERATURE OUT AT COLD WATER FAILURE: 120°. CHICAGO MODEL 420-T41E2805ABCP
STRAINER: 1-1/4" 17 GAUGE CHROME PLATED BRASS GRID STRAINER WITH TAILPIECE. MCGUIRE #155A.
P-TRAP: 1-1/4" 17 GAUGE CHROME PLATED HEAVY CAST BRASS TRAP WITH CLEANOUT AND EXTENSION TO WALL WITH ESCUTCHEON PLATE. MCGUIRE 8872.
SUPPLIES: 1/2" I.P.S. X 3/8" O.D.CHROME PLATED LOOSE KEY STOP VALVE WITH ESCUTCHEON AND 3/8" COMPRESSION CHROME PLATED FLEXIBLE RISERS. MCGUIRE 2165LK.
CARRIER: RECTANGULAR STEEL TUBING UPRIGHTS WITH WELDED 3" X 4-1/2" BASE ANCHORED TO CONCRETE WITH (4) 1/2" BOLTS. ADJUSTABLE SLEEVE, THREADED CONCEALED ARMS, ALIGNMENT BAR, LOCKING DEVICE, AND LEVELING SCREWS. WADE 520-08.
ROUGH-IN: 2" WASTE, 2" VENT, 1/2" HOT AND COLD WATER. REFER TO ARCHITECTURAL DRAWINGS FOR HEIGHT REQUIREMENTS.

TYPE: SK-1 (T.A.S. COMPLIANT)
DESCRIPTION: SINK, COUNTER MOUNTED, SELF-RIMMING, 18 GAUGE TYPE 304 STAINLESS STEEL, 29" X 18" X 6" DEEP, DOUBLE COMPARTMENT WITH FAUCET DECK. THREE FAUCET HOLES ON 4" CENTERS. ELKAY LRAD291860
FAUCET: 8" CENTERS, 4" CHROME PLATED WRIST BLADE HANDLES. CERAMIC DISC CARTRIDGES. 8" CHROME PLATED BRASS SWING SPOUT WITH 2.2 GPM AERATOR. CHICAGO 1100-317XKABCP.
STRAINER: (2) CHROME PLATED BRASS WIDE TOP SINK STRAINERS WITH PERFORATED STRAINERS, 1-1/2" CHROME PLATED BRASS OFFSET TAILPIECES WITH CAST BRASS ELBOW. MCGUIRE 1152WC.
P-TRAP: 1-1/2" END OUTLET 16" CENTERS 17 GAUGE CONTINUOUS WASTE WITH CAST BRASS TEE. MCGUIRE 111C16G17. 1-1/2" 17 GAUGE CHROME PLATED CAST BRASS TRAP WITH CLEANOUT AND EXTENSION TO WALL WITH ESCUTCHEON PLATE. MCGUIRE 8912.
SUPPLIES: 1/2" I.P.S. X 3/8" O.D. CHROME PLATED LOOSE KEY STOP VALVES WITH ESCUTCHEONS AND 3/8" COMPRESSION CHROME PLATED FLEXIBLE RISERS. MCGUIRE 2165LK.
ROUGH-IN: 2" WASTE, 2" VENT, 1/2" HOT AND COLD WATER. REFER TO ARCHITECTURAL DRAWINGS FOR HEIGHT REQUIREMENTS.

TYPE: MS-1
DESCRIPTION: MOP SINK BASIN, 32" X 32" X 12" HIGH CORNER TYPE, PRECAST TERRAZZO WITH 6" DROPPED FRONT, STAINLESS STEEL THRESHOLD CAP, AND DOUBLE STAINLESS STEEL WALL GUARDS. STERN-WILLIAMS "CORLOW" SBC-1725 WITH BP SPLASH PANELS, #T-40 MOP HANGER, AND #T-35 HOSE.
FAUCET: CHROME PLATED BRASS WALL MOUNTED FITTING WITH CHECK IN STOPS, ADJUSTABLE SUPPLY ARMS, VACUUM BREAKER SPOUT WITH PAIL HOOK AND WALL BRACE. 2-1/2" INDEXED LEVER HANDLES ON 8" CENTERS. CERAMIC DISC CARTRIDGES, 3/4" MALE HOSE THREAD OUTLET. CHICAGO #445-897SRCXKCP.
ROUGH-IN: 3" WASTE, 2" VENT, 1/2" HOT AND COLD WATER.

TYPE: WP-1 - (T.A.S. COMPLIANT) WHIRLPOOL THERAPEUTIC TUB, ALTERNATE THERAPEUTIC TUB BY OWNER, CONTRACTOR TO COORDINATE WITH ARCHITECT FOR ROUGH-IN AND FINAL CONNECTIONS.
DESCRIPTION:
FAUCET: SOLID BIMETAL THERMOSTAT, ASSE 1017 CERTIFIED MIXING VALVE. ADJUSTABLE HIGH TEMPERATURE LIMIT STOP SET FOR 120°, BOTTOM INLETS, SIDE OUTLET. OUTLET VOLUME CONTROL/SHUTOFF WITH VACUUM BREAKER. INTEGRAL COMBINATION CHECK STOPS WITH WALL SUPPORT PROVIDE WITH 9" RUBBER HOSE ATTACHMENT AND WALL HOOK. LEONARD TM-504-26-LF
ROUGH-IN: 3/4" HOT AND COLD WATER

TYPE: SH-X1 (T.A.S. COMPLIANT) - INDIVIDUAL SHOWER STATION
DESCRIPTION: SHOWER, JOB BUILT BASE INSTALLED PER ARCHITECTURAL DRAWINGS.
CONTROLS: PRESSURE BALANCING HOT AND COLD WATER SHOWER CONTROL VALVE WITH VANDAL RESISTANT LEVER HANDLE, INTEGRAL CHECKSTOPS, AND ADJUSTABLE TEMPERATURE LIMIT SCREW NOT TO EXCEED 120°. CAST BRASS VALVE BODY. ALL EXPOSED MATERIALS STAINLESS STEEL OR CHROME PLATED BRASS. 1.5 GPH HAND HELD SHOWER WITH 60" METAL CLAD FLEXIBLE HOSE, CHROME PLATED BRASS SUPPLY ARM, VACUUM BREAKER, MOUNTING BRACKET AND 24" METAL SLIDE BAR. BRADLEY 1C-HD-AKV-A24
DRAIN: EXISTING DRAIN TO REMAIN, CLEAN AND RESTORE STRAINER TO LIKE NEW CONDITION. REPLACE IF CRACKED OR BROKEN.
TRAP SEAL: PROVIDE PRO-SET SYSTEMS, INC. TRAP GUARD FACTORY FITTED TO MATCH EACH FLOOR DRAIN BY SIZE, MODEL, AND MANUFACTURER.
ROUGH-IN: 2" WASTE, 2" VENT, 1/2" HOT AND COLD WATER. REFER TO ARCHITECTURAL DRAWINGS FOR HEIGHT REQUIREMENTS.

TYPE: EDF-1 (T.A.S. COMPLIANT)
DESCRIPTION: WALL HUNG, BARRIER FREE, SELF-CONTAINED, SPLIT-LEVEL ELECTRIC DRINKING FOUNTAIN WITH BOTTLE FILLING STATION & BI-LEVEL ADA COOLER REFRIGERATED ULTRA-CAPACITY LEAD REDUCTION. CHILLING CAPACITY OF 8.0 GPH (GALLONS PER HOUR) OF 50 ▫ F DRINKING WATER, BASED ON 80 ▫ F INLET WATER AND 90 ▫ F AMBIENT, PER ASHRAE 18 TESTING. FEATURES SHALL INCLUDE ANTIMICROBIAL*, AUTOMATIC FILTER STATUS RESET, ENERGY SAVINGS, FILTERED, GREEN TICKER™, HANDS FREE, LAMINAR FLOW, REAL DRAIN, VISUAL FILTER MONITOR, ALCOVE LIGHT, PRO FILTRATION SYSTEM, TOP MOUNT QUICK FILTER CHANGE, STAINLESS STEEL ALCOVE, AUTOMATIC FILTER FLUSH. FURNISHED WITH FLEXI-GUARD ® SAFETY BUBBLER. ELECTRONIC BOTTLE FILLER SENSOR WITH ELECTRONIC FRONT AND SIDE BUBBLER PUSHBAR ACTIVATION WITH A CLEAR KNEE SPACE GREATER THAN 27" HIGH. NOTE: UNIT SHOULD BE ABLE TO DISPENSE UNCHILLED WATER DURING A POWER OUTAGE.
P-TRAP: ELKAY LZSTLSWSBPRO WITH APRON 98324C. 1-1/4" CHROME PLATED CAST BRASS TRAP WITH CLEANOUT AND EXTENSION TO WALL WITH ESCUTCHEON. MCGUIRE 8872.
SUPPLIES: 1/2" I.P.S. X 3/8" O.D. CHROME PLATED LOOSE KEY STOP VALVE WITH ESCUTCHEON AND 3/8" CHROME PLATED FLEXIBLE RISER. MCGUIRE 2165LK.
CARRIER: RECTANGULAR STEEL TUBING UPRIGHTS WITH WELDED 3" X 4-1/2" BASE ANCHORED TO CONCRETE SLAB WITH (4) 1/2" BOLTS. ADJUSTABLE SLEEVE FOR CONNECTION TO HANGER PLATE PROVIDED BY FIXTURE MANUFACTURER. WADE 403-BL-BFS
ROUGH-IN: 2" WASTE, 2" VENT, 1/2" COLD WATER. REFER TO ARCHITECTURAL DRAWINGS FOR HEIGHT REQUIREMENTS.

TYPE: EDF-X1 (T.A.S. COMPLIANT)
DESCRIPTION: WALL HUNG, BARRIER FREE, SELF-CONTAINED, SPLIT-LEVEL ELECTRIC DRINKING FOUNTAIN WITH BOTTLE FILLING STATION & BI-LEVEL ADA COOLER REFRIGERATED ULTRA-CAPACITY LEAD REDUCTION. CHILLING CAPACITY OF 8.0 GPH (GALLONS PER HOUR) OF 50 ▫ F DRINKING WATER, BASED ON 80 ▫ F INLET WATER AND 90 ▫ F AMBIENT, PER ASHRAE 18 TESTING. FEATURES SHALL INCLUDE ANTIMICROBIAL*, AUTOMATIC FILTER STATUS RESET, ENERGY SAVINGS, FILTERED, GREEN TICKER™, HANDS FREE, LAMINAR FLOW, REAL DRAIN, VISUAL FILTER MONITOR, ALCOVE LIGHT, PRO FILTRATION SYSTEM, TOP MOUNT QUICK FILTER CHANGE, STAINLESS STEEL ALCOVE, AUTOMATIC FILTER FLUSH. FURNISHED WITH FLEXI-GUARD ® SAFETY BUBBLER. ELECTRONIC BOTTLE FILLER SENSOR WITH ELECTRONIC FRONT AND SIDE BUBBLER PUSHBAR ACTIVATION WITH A CLEAR KNEE SPACE GREATER THAN 27" HIGH. NOTE: UNIT SHOULD BE ABLE TO DISPENSE UNCHILLED WATER DURING A POWER OUTAGE.
P-TRAP: ELKAY LZSTLSWSBPRO WITH APRON 98324C. 1-1/4" CHROME PLATED CAST BRASS TRAP WITH CLEANOUT AND EXTENSION TO WALL WITH ESCUTCHEON. MCGUIRE 8872.
SUPPLIES: 1/2" I.P.S. X 3/8" O.D. CHROME PLATED LOOSE KEY STOP VALVE WITH ESCUTCHEON AND 3/8" CHROME PLATED FLEXIBLE RISER. MCGUIRE 2165LK.
CARRIER: RECTANGULAR STEEL TUBING UPRIGHTS WITH WELDED 3" X 4-1/2" BASE ANCHORED TO CONCRETE SLAB WITH (4) 1/2" BOLTS. ADJUSTABLE SLEEVE FOR CONNECTION TO HANGER PLATE PROVIDED BY FIXTURE MANUFACTURER. WADE 403-BL-BFS
ROUGH-IN: 2" WASTE, 2" VENT, 1/2" COLD WATER. REFER TO ARCHITECTURAL DRAWINGS FOR HEIGHT REQUIREMENTS.

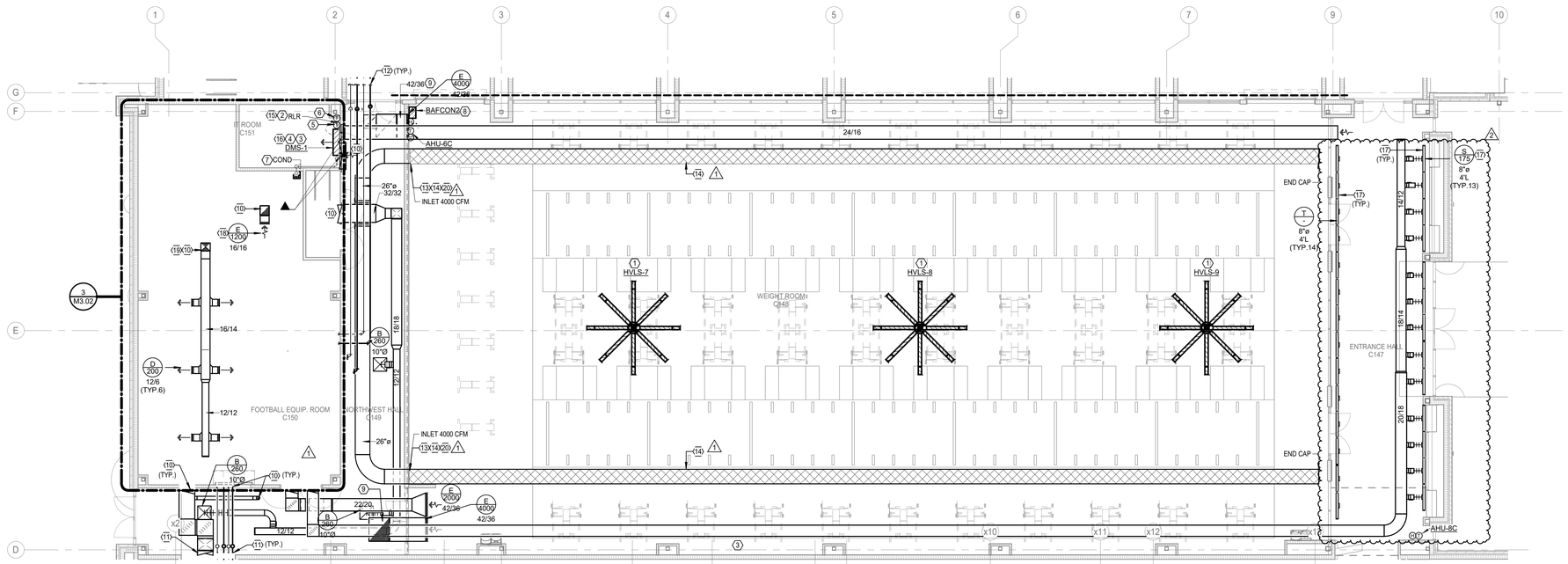
TYPE: HB-1 - COLD WATER
DESCRIPTION: HOSE BIBB. EXPOSED TYPE, MILD CLIMATE, WALL-MOUNTED FAUCET WITH 3/4" F.P.T. INLET, 3/4" MALE HOSE THREAD OUTLET AND SELF-DRAINING ANTI-SIPHON VACUUM BREAKER. CHROME PLATED BRASS FINISH WITH REMOVABLE TEE HANDLE. CHICAGO 952-XKCP.
ROUGH-IN: 3/4" COLD WATER. INSTALL W

MECHANICAL GENERAL NOTES

1	THESE CONSTRUCTION DRAWINGS ARE DIAGRAMMATIC, AND DO NOT NECESSARILY REFLECT ACTUAL DIMENSIONS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND COORDINATE PLACEMENT OF ALL EQUIPMENT AND ROUTING OF ALL PIPING AND/OR DUCT SYSTEMS.
2	ALL DUCT SIZES ARE INSIDE CLEAR, INCREASE ACCORDINGLY WHERE INTERIOR LINER IS SHOWN OR SPECIFIED.
3	MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR ALL ELECTRICAL POWER REQUIREMENTS.
4	COORDINATE IN THE FIELD THE EXACT LOCATION OF ALL CEILING MOUNTED GRILLES AND DIFFUSERS WITH LIGHT FIXTURES AND (ARCHITECT'S) REFLECTED CEILING PLAN.
5	THERMOSTATS SHALL BE MOUNTED AT +48" AFF (ABOVE FINISHED FLOOR), UNLESS OTHERWISE NOTED.

MECHANICAL KEYED NOTES

1	VERIFY SERVICE CLEARANCE AND COORDINATE WITH ALL TRADES NOT TO OBSTRUCT. INSTALL PER MANUFACTURER GUIDLINES.
2	RE: 1/M2.10 FOR CONTINUATION.
3	VERIFY SERVICE CLEARANCE FOR AIR FILTER, FAN SHAFT AND COIL REMOVAL WITH EQUIPMENT MANUFACTURER.
4	COORDINATE UNIT LOCATION WITH ALL TRADES NOT TO OBSTRUCT. BOTTOM OF HIGH WALL UNIT SHALL BE MOUNTED ABOVE 7'-3" A.F.F.
5	PROVIDE HARD WIRED THERMOSTAT.
6	PROVIDE THERMOSTAT FOR BMSC MONITOR.
7	ROUTE FULL SIZE CONDENSATE DRAIN LINE AS HIGH AS POSSIBLE AND GRAVITY DRAIN TO FLOOR DRAIN AS INDICATED. INSTALL TRAP AND PIPE SIZING PER MANUFACTURER. REFER TO PLUMBING DRAWINGS FOR EXACT LOCATION.
8	PROVIDE LABELS ON SWITCHES AND CONTROLLERS TO ASSOCIATED EQUIPMENT.
9	PROVIDE ACOUSTICALLY LINED RETURN AIR DUCT.
10	RE: 3/M3.02 FOR CONTINUATION.
11	RE: 1/M2.03A FOR CONTINUATION.
12	RE: 1/M2.08D FOR CONTINUATION.
13	TRANSITION FROM METAL DUCTWORK TO FABRIC DUCT AS INDICATED. REFER TO FABRIC DUCT SPECIFICATIONS AND MANUFACTURER FOR MORE INFORMATION.
14	PROVIDE FABRIC DUCT AND SUSPENSION SYSTEM AS SPECIFIED. REFER TO MANUFACTURER FOR FINAL SIZE, DISTRIBUTION AND INSTALLATION REQUIREMENTS.
15	ROUTE REFRIGERANT PIPING UP TO ASSOCIATED OUTDOOR UNIT ON ROOF. SIZE LINE AND INSTALL PER MANUFACTURER RECOMMENDATIONS. PIPING SHOWN SINGLE LINE FOR CLARITY. RE: M5.02 FOR DETAILS.
16	INSULATE ALL PIPING PER SPECIFICATIONS.
17	COORDINATE FINAL AIR DEVICE LOCATION AND FINISH COLOR WITH ARCHITECT.
18	ROUTE DUCTWORK FROM THE RETURN AIR GRILLE UP TO THE MEZZANINE TO CONNECT TO THE RETRUN AIR PLENUM BOX AT THE UNIT.
19	ROUTE DUCTWORK UP TO THE MEZZANINE TO CONNECT TO THE SUPPLY AIR MAIN DUCT.
20	COORDINATE FINAL DUCT ELEVATION AND FINISH COLOR WITH ARCHITECT.



N

1 **MECHANICAL FLOOR PLAN - LEVEL ONE - UNIT B**
Scale: 1/8" = 1'-0"

VLK

M.E.P. ENGINEER

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Salas O'Brien Project Number: 2550-01455-00

GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

BRADLEY KALMANS
80219
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
10.17.2025

ISSUED: OCTOBER 1, 2025

REVISIONS

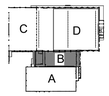
Revision No.	Revision Date
1 Addendum 1	10/08/2025
2 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

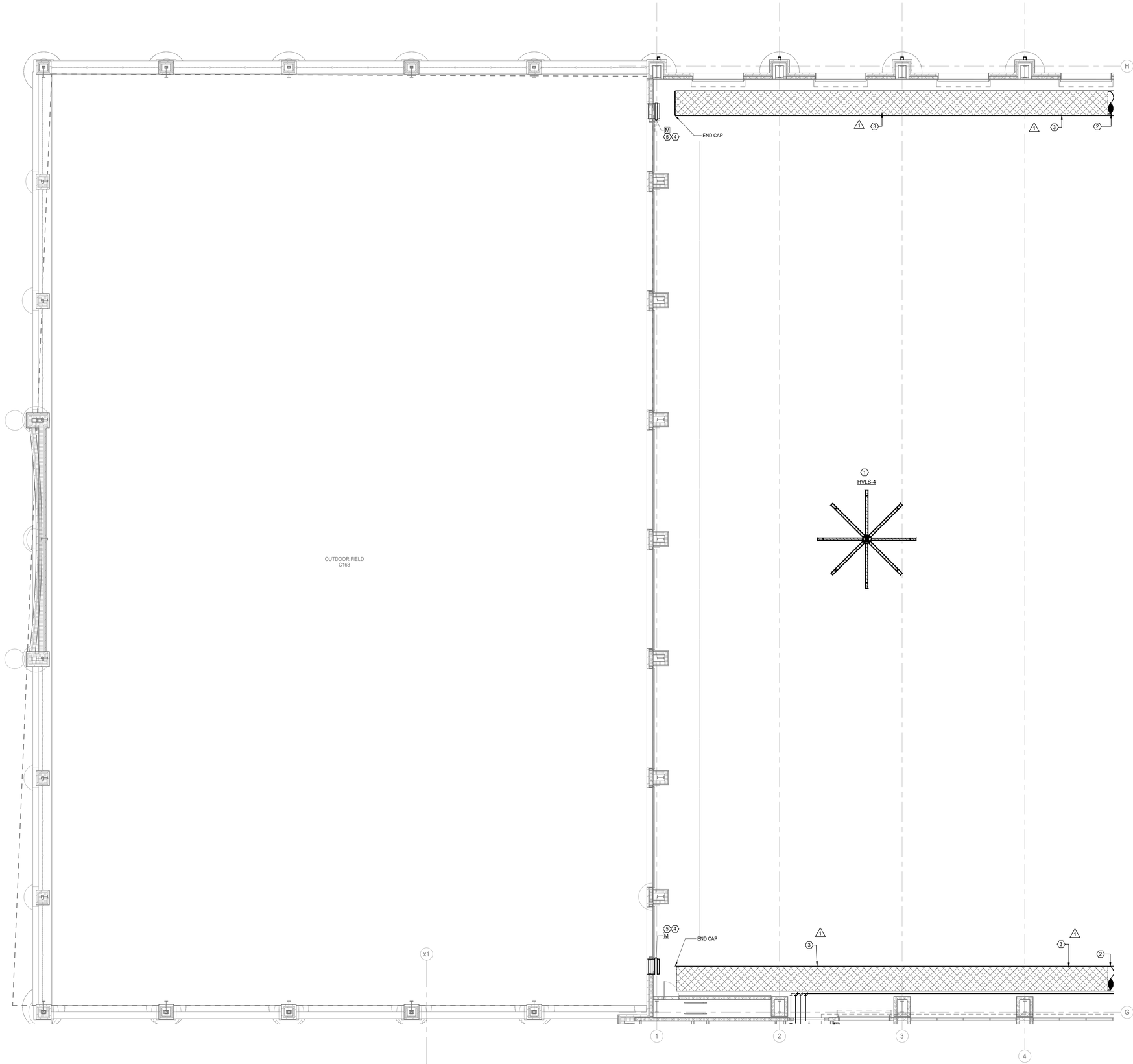
PROJECT NO.
25-0056.00

SHEET TITLE
MECHANICAL FLOOR PLAN - LEVEL ONE - UNIT B

SHEET NO.
M2.04B



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MECHANICAL GENERAL NOTES

1	THESE CONSTRUCTION DRAWINGS ARE DIAGRAMMATIC, AND DO NOT NECESSARILY REFLECT ACTUAL DIMENSIONS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND COORDINATE PLACEMENT OF ALL EQUIPMENT AND ROUTING OF ALL PIPING AND/OR DUCT SYSTEMS.
2	ALL DUCT SIZES ARE INSIDE CLEAR, INCREASE ACCORDINGLY WHERE INTERIOR LINER IS SHOWN OR SPECIFIED.
3	MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR ALL ELECTRICAL POWER REQUIREMENTS.
4	COORDINATE IN THE FIELD THE EXACT LOCATION OF ALL CEILING MOUNTED GRILLES AND DIFFUSERS WITH LIGHT FIXTURES AND (ARCHITECT'S) REFLECTED CEILING PLAN.
5	THERMOSTATS SHALL BE MOUNTED AT +48" AFF (ABOVE FINISHED FLOOR), UNLESS OTHERWISE NOTED.

MECHANICAL KEYED NOTES

1	VERIFY SERVICE CLEARANCE AND COORDINATE WITH ALL TRADES NOT TO OBSTRUCT. INSTALL PER MANUFACTURER GUIDLINES.
2	RE: 1/M2.08D FOR CONTINUATION.
3	PROVIDE FABRIC DUCT AND SUSPENSION SYSTEM AS SPECIFIED. REFER TO MANUFACTURER FOR FINAL SIZE, DISTRIBUTION AND INSTALLATION REQUIREMENTS.
4	PROVIDE TWO RELIEF LOUVERS STACKED IN VERTICAL, 36" W X 60"H PER LOUVER, RUSKIN MODEL HZ700 OR APPROVED EQUAL WITH MINIMUM FREE AREA OF 7.95 SQ. FEET. PROVIDE WITH BIRD SCREEN, BACKDRAFT DAMPER, AND PAINT TO MATCH WALL OR AS SPECIFIED BY ARCHITECT. COORDINATE FINAL LOCATION WITH ARCHITECT. RE: 5/M5.03 FOR DETAIL.
5	MOTORIZED DAMPER TO BE INTERLOCKED WITH OAU-4C. INTERLOCK SHALL OPERATE AS FOLLOWS: WHEN OAU-4C IS ENERGIZED, THE DAMPER SHALL OPEN.WHEN OAU-4C IS DE-ENERGIZED, THE DAMPER SHALL CLOSE.

1 MECHANICAL FLOOR PLAN - LEVEL ONE - UNIT C
Scale: 1/8" = 1'-0"

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Salas O'Brien Project Number: 2550-01455-00

GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

BRADLEY KALMANS
80219
LICENSED
PROFESSIONAL ENGINEER
10.17.2025

ISSUED: OCTOBER 1, 2025

REVISIONS

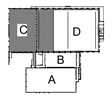
Revision No.		Revision Date
1	Addendum 1	10/08/2025
2	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
MECHANICAL FLOOR PLAN - LEVEL ONE - UNIT C

SHEET NO.
M2.06C



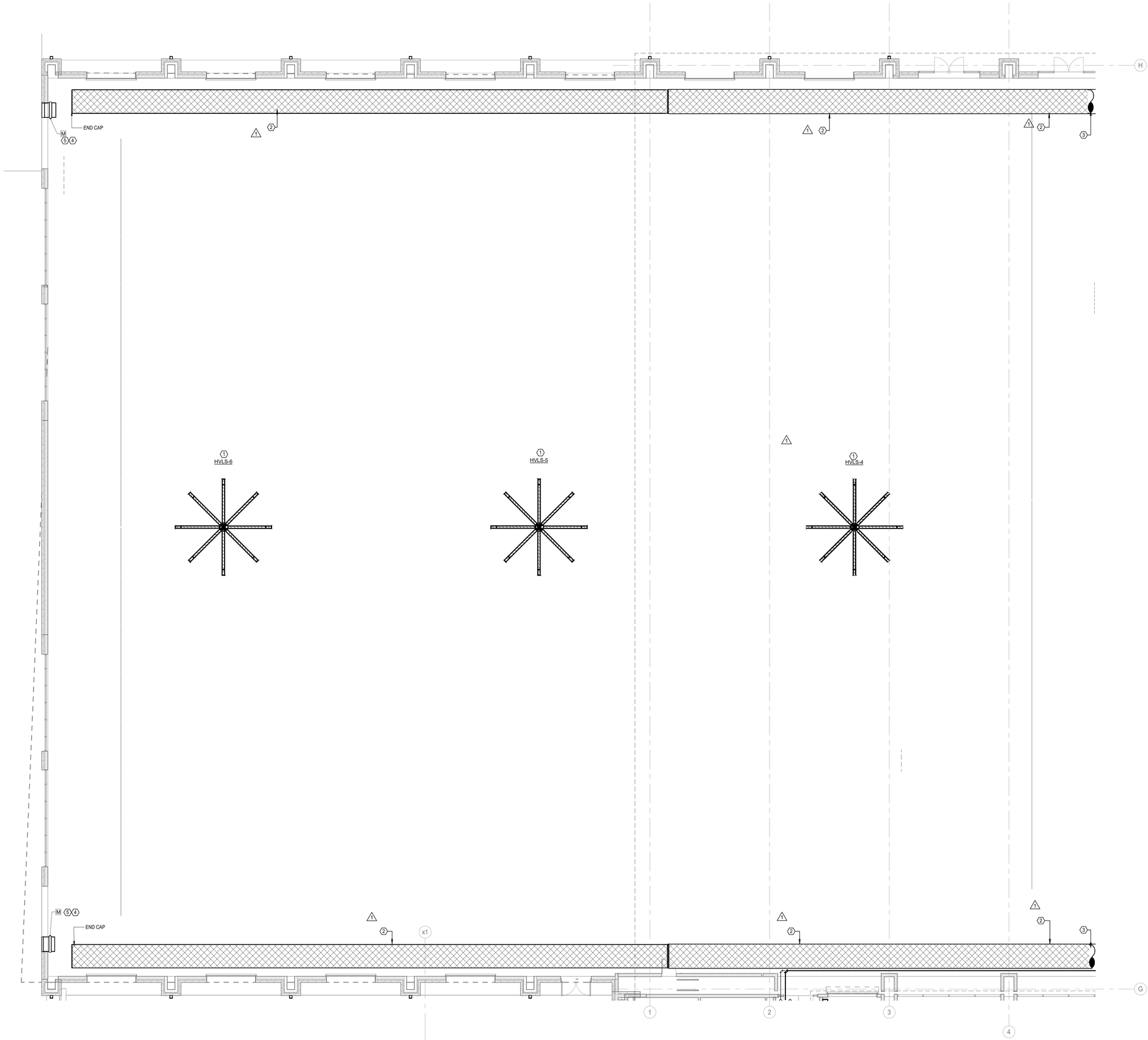
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MECHANICAL GENERAL NOTES

1	THESE CONSTRUCTION DRAWINGS ARE DIAGRAMMATIC, AND DO NOT NECESSARILY REFLECT ACTUAL DIMENSIONS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND COORDINATE PLACEMENT OF ALL EQUIPMENT AND ROUTING OF ALL PIPING AND/OR DUCT SYSTEMS.
2	ALL DUCT SIZES ARE INSIDE CLEAR, INCREASE ACCORDINGLY WHERE INTERIOR LINER IS SHOWN OR SPECIFIED.
3	MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR ALL ELECTRICAL POWER REQUIREMENTS.
4	COORDINATE IN THE FIELD THE EXACT LOCATION OF ALL CEILING MOUNTED GRILLES AND DIFFUSERS WITH LIGHT FIXTURES AND (ARCHITECT'S) REFLECTED CEILING PLAN.
5	THERMOSTATS SHALL BE MOUNTED AT +48" AFF (ABOVE FINISHED FLOOR), UNLESS OTHERWISE NOTED.

MECHANICAL KEYED NOTES

1	VERIFY SERVICE CLEARANCE AND COORDINATE WITH ALL TRADES NOT TO OBSTRUCT. INSTALL PER MANUFACTURER GUIDLINES.
2	PROVIDE FABRIC DUCT AND SUSPENSION SYSTEM AS SPECIFIED. REFER TO MANUFACTURER FOR FINAL SIZE, DISTRIBUTION AND INSTALLATION REQUIREMENTS.
3	RE: 1/M2.08D FOR CONTINUATION
4	PROVIDE TWO RELIEF LOUVERS STACKED IN VERTICAL, 36" W X 60"H PER LOUVER, RUSKIN MODEL HZ700 OR APPROVED EQUAL WITH MINIMUM FREE AREA OF 7.95 SQ. FEET. PROVIDE WITH BIRD SCREEN, BACKDRAFT DAMPER, AND PAINT TO MATCH WALL OR AS SPECIFIED BY ARCHITECT. COORDINATE FINAL LOCATION WITH ARCHITECT. RE: S/M5.03 FOR DETAIL.
5	MOTORIZED DAMPER TO BE INTERLOCKED WITH OAU-4C. INTERLOCK SHALL OPERATE AS FOLLOWS: WHEN OAU-4C IS ENERGIZED, THE DAMPER SHALL OPEN.WHEN OAU-4C IS DE-ENERGIZED, THE DAMPER SHALL CLOSE.



N

1 MECHANICAL FLOOR PLAN - LEVEL ONE - UNIT C - ALTERNATE
Scale: 1/8" = 1'-0"

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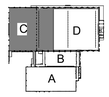
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1	Addendum 1	10/08/2025
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Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	Designer
Drawn By	Author

PROJECT NO.
25-0056.00

SHEET TITLE
MECHANICAL FLOOR PLAN - LEVEL ONE - UNIT C - ALTERNATE

SHEET NO.
M2.06C.1



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TECHNOLOGY LEGEND

SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
# ▼	WALL MOUNTED NETWORK OUTLET D#: NUMBER OF DATA DROPS IN OUTLET AP: WIRELESS ACCESS POINT	+18" AFF, UNLESS OTHERWISE NOTED	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	
V# ▽	COMMUNICATIONS OUTLET	FIELD COORDINATE	FIELD COORDINATE	
W ▼	WALL MOUNTED NETWORK OUTLET	+44" AFF	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	
B ▽	WALL MOUNTED BOX FOR FUTURE USE.	+18" AFF UNO	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	
D# ▼	FLOOR MOUNTED NETWORK OUTLET	N/A	COORDINATE WITH ELECTRICAL CONTRACTOR	FINISHED HARDWARE PROVIDED BY DIV 27
# ⌖	CEILING MOUNTED NETWORK OUTLET AP: WIRELESS ACCESS POINT D#: NETWORK OUTLET	ABOVE CEILING	CEILING BRACKET WITH BISCUIT BLOCK	

NOTES:
1. #-G INDICATES BACK BOX SIZE.
2. #-C INDICATES CONDUIT SIZE.
3. UNO: UNLESS NOTED OTHERWISE
4. CONDUIT STUB UP AND SLEEVES SHALL HAVE A SOLID UNCUT PLASTIC PROTECTIVE BUSHING.
5. NO CONDUITS SHALL EXCEED FOR 40% MAXIMUM FILL RATIO. CONTRACTOR TO PROVIDE ADDITIONAL CONDUITS REQUIRED.

ACCESS CONTROL LEGEND

SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
ACP	ACCESS CONTROL SYSTEM, CONTROL PANEL.	+60" AFF TO CENTER	AS REQUIRED	COORDINATE POWER. NOTE #4.
CR	ACCESS CONTROL CARD READER.	+42" A.F.F.	1-G, 3/4" C	
DS	2-WAY AUDIO/VIDEO INTERCOM DOOR STATION.	+42" AFF	*W: 1-G, 3/4" C *M: 3/4"C	COORDINATE POWER. NOTE #4.
MS	2-WAY AUDIO/VIDEO INTERCOM MASTER STATION.	DESK MOUNTED UNO		COORDINATE POWER. NOTE #4.
DR	DOOR RELEASE BUTTON	COORDINATE WITH GC	1-G, 3/4" C	
DC	DPDT MAGNETIC DOOR CONTACT/DOOR POSITION SENSOR.	FLUSH MOUNTED IN DOOR FRAME	N/A	PROVIDED BY ACS CONTRACTOR.

NOTES:
1. #-G INDICATES BACK BOX SIZE.
2. #-C INDICATES CONDUIT SIZE.
3. UNO: UNLESS NOTED OTHERWISE
4. PROVIDE AND INSTALL ONE (1) CATEGORY CABLE TO CONNECT DEVICE TO NETWORK

INTERCOM LEGEND

SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
ICS	INTERCOM COMMUNICATIONS SYSTEM HEAD END UNIT.	FLOOR MOUNTED	COORDINATE WITH EC	COORDINATE POWER WITH EC
S	CEILING MOUNTED INTERCOM SPEAKER. LAY-IN CEILING	CEILING	CONTRACTOR PROVIDED	
S2	CEILING MOUNTED INTERCOM SPEAKER. HARD CEILING.	CEILING	CONTRACTOR PROVIDED	
S3	WALL MOUNTED INTERIOR INTERCOM SPEAKER/HORN	+10' AFF UNO	CONTRACTOR PROVIDED	
S4	WALL MOUNTED EXTERIOR INTERCOM SPEAKER/HORN	+8' AFF UNO	CONTRACTOR PROVIDED	
VC	WALL MOUNTED VOLUME CONTROL	+48" AFF	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	
CB	INTERCOM CALL BUTTON	+48" AFF	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	
C	SINGLE FACE CLOCK	REFERENCE FLOOR PLANS	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	
C2	DOUBLE FACE CLOCK	REFERENCE FLOOR PLANS	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	
ACS	ADMINISTRATIVE CALL STATION.	DESK TOP	N/A	NOTE #5

NOTES:
1. #-G INDICATES BACK BOX SIZE.
2. #-C INDICATES CONDUIT SIZE.
3. UNO: UNLESS NOTED OTHERWISE
4. THE SYSTEM INTEGRATOR SHALL COORDINATE ALL BOX AND CONDUIT SIZE REQUIREMENTS PRIOR TO ROUGH-IN BY THE PROJECTS ELECTRICAL CONTRACTOR.
5. PROVIDE AND INSTALL ONE (1) CATEGORY CABLE TO CONNECT DEVICE TO NETWORK

VIDEO SURVEILLANCE LEGEND

SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
	WALL/CORNER MOUNT 4-SENSOR CAMERA	REFERENCE FLOOR PLANS	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	NOTE #5
	CEILING MOUNTED 4-SENSOR CAMERA	CEILING		NOTE #5
W W	2-SENSOR CAMERA W: INDICATES WALLMOUNTED CAMERA	REFERENCE FLOOR PLANS	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	NOTE #5
W	1-SENSOR CAMERA W: INDICATES WALLMOUNTED CAMERA	REFERENCE FLOOR PLANS	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	NOTE #5
VRS	VIDEO RECORDING SERVER			NOTE #5
#MU	VIDEO SURVEILLANCE MAIN UNIT	ABOVE CEILING		NOTE #5

NOTES:
1. #-G INDICATES BACK BOX SIZE.
2. #-C INDICATES CONDUIT SIZE.
3. UNO: UNLESS NOTED OTHERWISE
4. THE SYSTEM INTEGRATOR SHALL COORDINATE ALL BOX AND CONDUIT SIZE REQUIREMENTS PRIOR TO ROUGH-IN BY THE PROJECTS ELECTRICAL CONTRACTOR.
5. PROVIDE AND INSTALL ONE (1) CATEGORY CABLE TO CONNECT DEVICE TO NETWORK

AUDIO/VIDEO LEGEND

SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
AV-1 ▽	WALL MOUNTED AUDIO/VIDEO INPUT OUTLET	+18" AFF UNO	4 11/16"X4 11/16"X2-1/8" BACK BOX WITH DOUBLE GANG RING, TWO(2) 1.25"C	
FSD-1 ▽	WALL MOUNTED FLAT SCREEN DISPLAY AUDIO/VIDEO OUTPUT OUTLET	REFERENCE FLOOR PLAN	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	NOTE #6
FSD-2 ▽	WALL MOUNTED FLAT SCREEN DISPLAY AUDIO/VIDEO OUTPUT OUTLET ASSOCIATED WITH AV-1 INPUT OUTLET	REFERENCE FLOOR PLAN	4 11/16"X4 11/16"X2-1/8" BACK BOX WITH DOUBLE GANG RING, TWO(2) 1.25"C	NOTE #6
IVD ▽	INTERACTIVE VIDEO DISPLAY AUDIO/VIDEO OUTPUT OUTLET	REFERENCE FLOOR PLAN	4 11/16"X4 11/16"X2-1/8" BACK BOX WITH DOUBLE GANG RING, TWO(2) 1.25"C	NOTE #6
CP ▽	AV CONTROL PANEL	+48" AFF TO TOP	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	NOTE #5
PS	PARTITION SENSOR	CEILING	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	COORDINATE POWER WITH EC

NOTES:
1. #-G INDICATES BACK BOX SIZE.
2. #-C INDICATES CONDUIT SIZE.
3. UNO: UNLESS NOTED OTHERWISE
4. THE SYSTEM INTEGRATOR SHALL COORDINATE ALL BOX AND CONDUIT SIZE REQUIREMENTS PRIOR TO ROUGH-IN BY THE PROJECTS ELECTRICAL CONTRACTOR.
5. PROVIDE AND INSTALL ONE (1) CATEGORY CABLE TO CONNECT DEVICE TO NETWORK
6. PROVIDE AND INSTALL TWO (2) CATEGORY CABLE TO CONNECT DEVICE TO NETWORK

LOCAL SOUND SYSTEM LEGEND

SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
LS	LOCAL SOUND SYSTEM SPEAKER	CEILING MOUNT UNO	CONTRACTOR PROVIDED BACK BOX OR 4"X4"X2 1/8" J BOX WITH COVER, 1"C	
LSC	LOCAL SOUND SYSTEM CONTROL PLATE	+48" AFF TO TOP	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	
MI	MICROPHONE INPUT	+18" AFF UNO	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	
ABM	AUXILIARY INPUT AND BLUETOOTH MIXER	+48" AFF TO TOP	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	
RACK	VENUE SPECIFIC LOCAL SOUND SYSTEM HEAD END RACK	WALL MOUNT UNO	N/A	
WA	WIRELESS ANTENNA	WALL MOUNT UNO	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	
ALA	ASSISTED LISTENING ANTENNA	WALL MOUNT UNO	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	

NOTES:
1. #-G INDICATES BACK BOX SIZE.
2. #-C INDICATES CONDUIT SIZE.
3. UNO: UNLESS NOTED OTHERWISE
4. THE SYSTEM INTEGRATOR SHALL COORDINATE ALL BOX AND CONDUIT SIZE REQUIREMENTS PRIOR TO ROUGH-IN BY THE PROJECTS ELECTRICAL CONTRACTOR.
5. PROVIDE AND INSTALL ONE (1) CATEGORY CABLE TO CONNECT DEVICE TO NETWORK

INTRUSION LEGEND

SYMBOL	DESCRIPTION	ELEVATION	BACK BOX/RACEWAY	NOTES
IDP	INTRUSION DETECTION SYSTEM CONTROL PANEL	+60" AFF	TWO(2) - 1"C TO CONTRACTOR PROVIDED BACK BOX	COORDINATE POWER WITH EC. NOTE #5
KP	INTRUSION DETECTION SYSTEM KEYPAD.	+48" AFF TO TOP	4"X4"X2 1/8" BACK BOX WITH 1-G MUD RING, 1"C	
M	CEILING MOUNTED MOTION DETECTOR	CEILING		
M	WALL MOUNTED MOTION DETECTOR LR: LONG RANGE	REFERENCE FLOOR PLAN	N/A	
GB	CEILING MOUNTED GLASS BREAK DETECTOR	CEILING	N/A	
DC	DPDT MAGNETIC DOOR CONTACT/DOOR POSITION SENSOR.	FLUSH MOUNTED IN DOOR FRAME	N/A	DEVICE PROVIDED BY ACS CONTRACTOR.
SDC	SURFACE MOUNT MAGNETIC DOOR CONTACT.	SURFACE MOUNTED ON DOOR FRAME	N/A	
ODC	OVERHEAD DOOR MOUNT MAGNETIC DOOR CONTACT.	SURFACE MOUNTED ON DOOR FRAME	N/A	
DB	DURESS PANIC BUTTON	UNDER DESK UNO	N/A	

NOTES:
1. #-G INDICATES BACK BOX SIZE.
2. #-C INDICATES CONDUIT SIZE.
3. UNO: UNLESS NOTED OTHERWISE
4. REFERENCE DIVISION 28 SPECIFICATION FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
5. PROVIDE AND INSTALL ONE (1) CATEGORY CABLE TO CONNECT DEVICE TO NETWORK

FIRE ALARM

*EXISTING FIELD DEVICE LOCATIONS SHALL BE REUSED WHENEVER POSSIBLE.

LEGEND

SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL
FAA	FIRE ALARM ANNUNCIATOR PANEL

NOTES:
1. FIRE ALARM SYSTEM IS PERFORMANCE BASED PER SPECIFICATIONS. CONTRACTOR TO REFERENCE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. A LICENSED FIRE ALARM PLANNING SUPERINTENDENT CERTIFIED TO A MINIMUM LEVEL 3, IN THE SUBFIELD OF FIRE ALARM SYSTEMS THROUGH THE NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES (NICET), SHALL PROVIDE PLANS AND CALCULATIONS FOR A MANUAL AND AUTOMATIC FIRE DETECTION AND ALARM SYSTEM TO COMPLY WITH THE BUILDING SPACE LAYOUT, BUILDING OCCUPANCY, CURRENT NFPA 72, LOCAL AND STATE CODE REQUIREMENTS, AND THE FIRE ALARM AND DETECTION SYSTEM SPECIFICATIONS.
3. FIRE ALARM DEVICES ARE SHOWN FOR REFERENCE ONLY, FIRE ALARM CONTRACTOR IS RESPOSIBLE FOR VERIFYING EXISTING LOCATIONS AND PROVIDING A COMPLETE AND FUNCTIONING, CODE COMPLIANT SYSTEM.
4. FIRE ALARM SYSTEM SHALL BE OPERATIONAL DURING ALL PHASES OF CONSTRUCTION. FIRE WATCH SHALL BE PRESENT 100% OF THE TIME FIRE ALARM SYSTEM ISN'T OPERATIONAL.

SUBSCRIPTS AND ABBREVIATIONS

TEXT	DESCRIPTION
'WP'	DEVICE SHALL BE WEATHER PROOF AND RATED FOR EXTERIOR CONDITIONS
•	FIELD COORDINATE ELEVATION
AFF	ABOVE FINISHED FLOOR
'UC'	DEVICE IS TO BE MOUNTED ON THE UNDERSIDE OF THE ELEVATED CANOPY

SUBSCRIPTS LEGEND - EXISTING DEVICES

TEXT	DESCRIPTION
'E'	EXISTING TO REMAIN.
'D'	DEVICE IS EXISTING AND IS TO BE REMOVED. CONTRACTOR TO REMOVE THE DEVICE AND RETURN TO OWNER.
'RR'	REMOVE EXISTING DEVICE AND RELOCATE TO A LOCATION INDICATED ON THE DRAWINGS.

NOTES TO CONTRACTOR

1. EVERY SYMBOL SHOWN ON LEGEND MAY NOT APPEAR ON DRAWINGS.
2. SYSTEM INSTALLERS SHALL COORDINATE LOCATIONS AND CONNECTIONS WITH THE PROJECT'S ELECTRICAL CONTRACTOR.
3. CONTRACTOR TO PROVIDE PROPERLY GROUNDED LIGHTING PROTECTION ON ALL CABLING ENTERING AND EXITING THE BUILDING.

RESPONSIBILITY MATRIX

SCOPE ITEM	RESPONSIBILITY			NOTES
COMMUNICATIONS - DIVISION 27	OFCI	CFCI	OFCI	
CATEGORY 6/6A STRUCTURED CABLING SYSTEM		✓		
VIDEO DISTRIBUTION SYSTEM - SPECIAL SPACE		✓		
AUDIO DISTRIBUTION SYSTEM - SPECIAL SPACE		✓		
VIDEO DISTRIBUTION SYSTEM - INSTRUCTIONAL SPACE		✓		
AUDIO DISTRIBUTION SYSTEM - INSTRUCTIONAL SPACE		✓		
FLAT PANEL DISPLAYS			✓	
FLAT PANEL DISPLAY MOUNTS		✓		
INTERACTIVE DISPLAYS		✓		
INTERACTIVE DISPLAY MOUNTS		✓		
DIGITAL SIGNAGE	✓			
BUILDING INTERCOM/PA, BELL, AND CLOCK SYSTEM		✓		
NETWORK EQUIPMENT				
→ MDF/IDF NETWORK EQUIPMENT		✓		
→ VOIP TELEPHONES	✓			
→ WIRELESS ACCESS POINTS			✓	
→ UNINTERRUPTIBLE POWER SUPPLIES (UPS)			✓	
RACEWAY: CONDUIT, BACK BOXES, SLEEVES, ETC.		✓		SEE NOTE 4.
ELECTRICAL POWER		✓		SEE NOTE 4.
LIFE SAFETY AND SECURITY - DIVISION 28	OFCI	CFCI	OFCI	
ACCESS CONTROL SYSTEM(ACS)		✓		
INTRUSION DETECTION SYSTEM		✓		
DOOR ACCESS VIDEO INTERCOM SYSTEM		✓		
VIDEO SURVEILLANCE SYSTEM (VSS)				
→ VSS SERVERS				SEE NOTE 8.
→ VSS CAMERAS		✓		
→ VSS PROGRAMMING		✓		
→ VSS CABLING		✓		SEE NOTE 7.
FIRE ALARM SMOKE DETECTION WITH VOICE EVACUATION		✓		
RACEWAY: CONDUIT, BACK BOXES, SLEEVES, ETC.		✓		SEE NOTE 4.
ELECTRICAL POWER		✓		SEE NOTE 4.

OFOI - OWNER FURNISHED AND OWNER INSTALLED
CFCI - CONTRACTOR FURNISHED AND CONTRACTOR INSTALLED
OFCI - OWNER FURNISHED AND CONTRACTOR INSTALLED

RESPONSIBILITY MATRIX NOTES:
1. NONE IN PROJECT.
2. OWNER CONFIGURED, CONTRACTOR INSTALLED AND PATCHED.
3. OWNER CONFIGURED, CONTRACTOR INSTALLED AND PATCHED. CONTRACTOR TO PROVIDE AND INSTALL WALL MOUNT BRACKETS AND HIGH IMPACT ENCLOSURES.
4. BY DIVISION 26.
5. REFERENCE DIVISION 8 FOR DOOR HARDWARE.
6. BY DIVISION 11.
7. BY DIVISION 27.
8. EXISTING TO REMAIN

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ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	MA
Drawn By	AY

PROJECT NO.
25-0056.00

SHEET TITLE
TECHNOLOGY NOTES AND LEGENDS

SHEET NO.
T0.00

North Shore Multi-Use Indoor Facility

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TECHNOLOGY KEYED NOTES

1. PROVIDE ONE (1) CATEGORY 6 DATA CIRCUIT FOR THE BUILDING MANAGEMENT CONTROL SYSTEM. COORDINATE WITH THE CONTRACTOR FOR EXACT LOCATION AND TERMINATION TYPE.
2. DOOR SHALL BE INTEGRATED WITH 2-WAY VIDEO INTERCOM SYSTEM TO BE RELEASED VIA INTERCOM MASTER STATION AT COACHES OFFICE OR HEAD COACH. PROVIDE ALL ACCESSORIES REQUIRED FOR A FULLY FUNCTIONAL SYSTEM. COORDINATE WITH DIVISION 08.
3. COORDINATE BACK BOX REQUIREMENTS FOR ALL DEVICES INSTALLED ON PRE-FABRICATED WALL WITH WALL VENDOR PRIOR TO CONSTRUCTION.

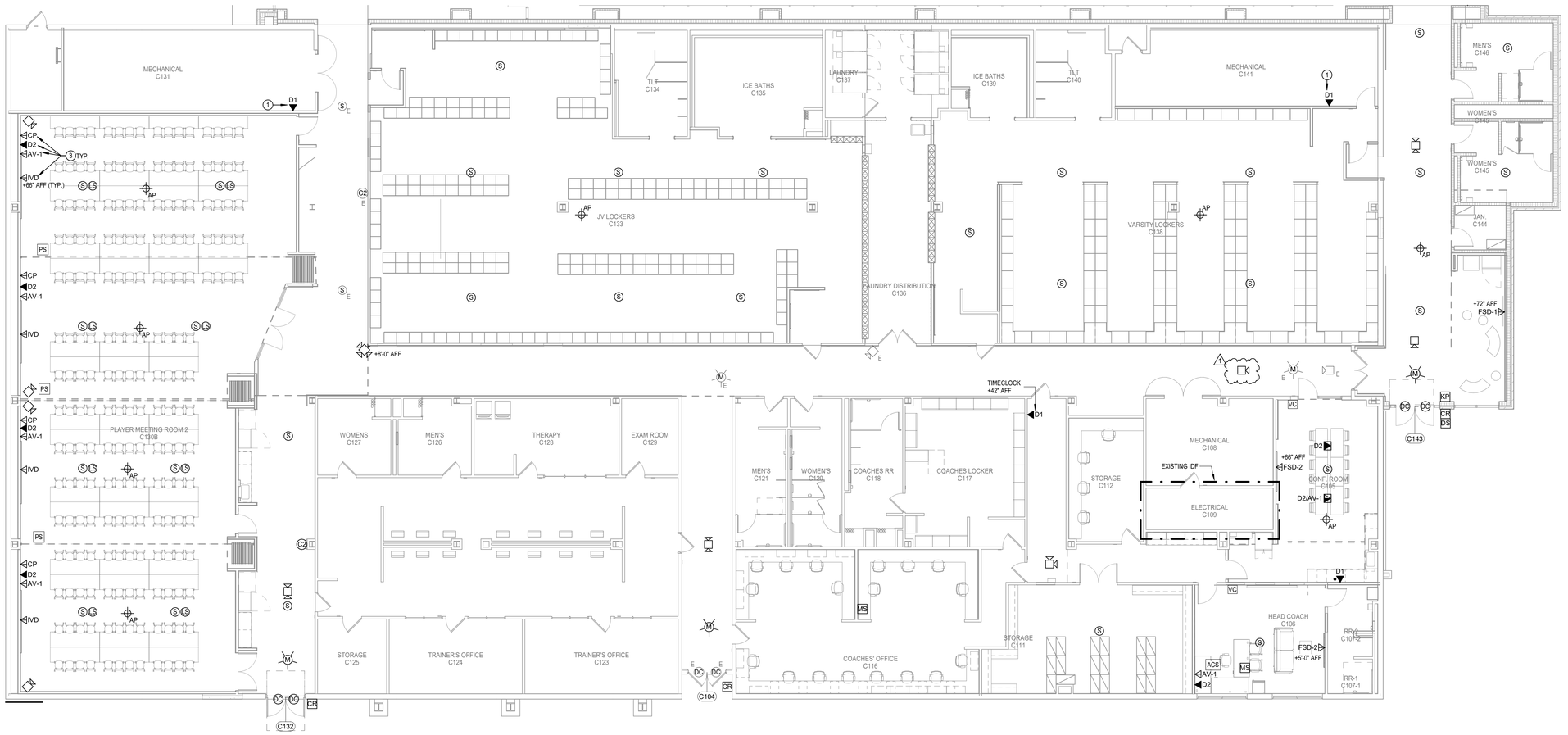
FIRE ALARM GENERAL NOTES

A. FIRE ALARM SYSTEM IS PERFORMANCE BASED PER SPECIFICATIONS. CONTRACTOR TO REFERENCE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

B. A LICENSED FIRE ALARM PLANNING SUPERINTENDENT CERTIFIED TO A MINIMUM LEVEL 3, IN THE SUBFIELD OF FIRE ALARM SYSTEMS THROUGH THE NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES (NICET), SHALL PROVIDE PLANS AND CALCULATIONS FOR A MANUAL AND AUTOMATIC FIRE DETECTION AND ALARM SYSTEM TO COMPLY WITH THE BUILDING SPACE LAYOUT, BUILDING OCCUPANCY, CURRENT NFPA 72, LOCAL AND STATE CODE REQUIREMENTS, AND THE FIRE ALARM AND DETECTION SYSTEM SPECIFICATIONS.

C. FIRE ALARM DEVICES ARE SHOWN FOR REFERENCE ONLY, FIRE ALARM CONTRACTOR IS RESPOSIBLE FOR VERIFYING EXISTING LOCATIONS AND PROVIDING A COMPLETE AND FUNCTIONING, CODE COMPLIANT SYSTEM.

D. FIRE ALARM SYSTEM SHALL BE OPERATIONAL DURING ALL PHASES OF CONSTRUCTION. FIRE WATCH SHALL BE PRESENT 100% OF THE DURATION THE FIRE ALARM SYSTEM ISN'T OPERATIONAL AT ALL BUILDINGS AND AREAS THE FIRE ALARM CONTROL PANEL SUPPORTS.



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1 **TECHNOLOGY FLOOR PLAN - LEVEL ONE - UNIT A**
Scale: 1/8" = 1'-0"

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BRADLEY KALMANS — STATE OF TEXAS — 80219 — LICENSED — 10.17.2025

ISSUED: OCTOBER 1, 2025

REVISIONS

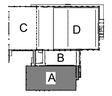
Revision No.	Revision Date
1 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	MA
Drawn By	AY

PROJECT NO.
25-0056.00

SHEET TITLE
TECHNOLOGY FLOOR PLAN - LEVEL ONE - UNIT A

SHEET NO.
T2.02A



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TECHNOLOGY KEYED NOTES

1. PROVIDE ONE (1) CATEGORY 6 DATA CIRCUIT FOR THE BUILDING MANAGEMENT CONTROL SYSTEM. COORDINATE WITH THE CONTRACTOR FOR EXACT LOCATION AND TERMINATION TYPE.

2. CAMERA HOUSING AND MOUNT SHALL BE PAINTED BLACK. FOLLOW MANUFACTURER REPAINTING GUIDE TO ENSURE WARRANTY IS NOT VOIDED.

3. COORDINATE EXACT HEIGHT WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN TO CONCEAL OUTLET BEHIND DISPLAY.

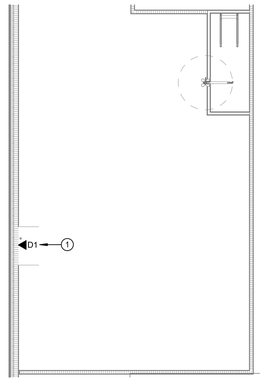
FIRE ALARM GENERAL NOTES

A. FIRE ALARM SYSTEM IS PERFORMANCE BASED PER SPECIFICATIONS. CONTRACTOR TO REFERENCE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

B. A LICENSED FIRE ALARM PLANNING SUPERINTENDENT CERTIFIED TO A MINIMUM LEVEL 3, IN THE SUBFIELD OF FIRE ALARM SYSTEMS THROUGH THE NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES (NICET), SHALL PROVIDE PLANS AND CALCULATIONS FOR A MANUAL AND AUTOMATIC FIRE DETECTION AND ALARM SYSTEM TO COMPLY WITH THE BUILDING SPACE LAYOUT, BUILDING OCCUPANCY, CURRENT NFPA 72, LOCAL AND STATE CODE REQUIREMENTS, AND THE FIRE ALARM AND DETECTION SYSTEM SPECIFICATIONS.

C. FIRE ALARM DEVICES ARE SHOWN FOR REFERENCE ONLY. FIRE ALARM CONTRACTOR IS RESPOSIBLE FOR VERIFYING EXISTING LOCATIONS AND PROVIDING A COMPLETE AND FUNCTIONING, CODE COMPLIANT SYSTEM.

D. FIRE ALARM SYSTEM SHALL BE OPERATIONAL DURING ALL PHASES OF CONSTRUCTION. FIRE WATCH SHALL BE PRESENT 100% OF THE DURATION THE FIRE ALARM SYSTEM ISNT OPERATIONAL AT ALL BUILDINGS AND AREAS THE FIRE ALARM CONTROL PANEL SUPPORTS.



N

2 TECHNOLOGY ENLARGED PLAN - MECHANICAL MEZZANINE - UNIT B

Scale: 1/8" = 1'-0"

N

1 TECHNOLOGY FLOOR PLAN - LEVEL ONE - UNIT B

Scale: 1/8" = 1'-0"

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Salas O'Brien Project Number: 2550-01455-00

GALENA PARK ISD
HOUSTON, TEXAS

North Shore Multi-Use Indoor Facility

BRADLEY KALMANS
80219
LICENSED
PROFESSIONAL ENGINEER

10.17.2025

ISSUED: OCTOBER 1, 2025

REVISIONS

Revision No.	Revision Date
1 Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	MA
Drawn By	AY

PROJECT NO.

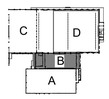
25-0056.00

SHEET TITLE

TECHNOLOGY FLOOR PLAN - LEVEL ONE - UNIT B

SHEET NO.

T2.03B



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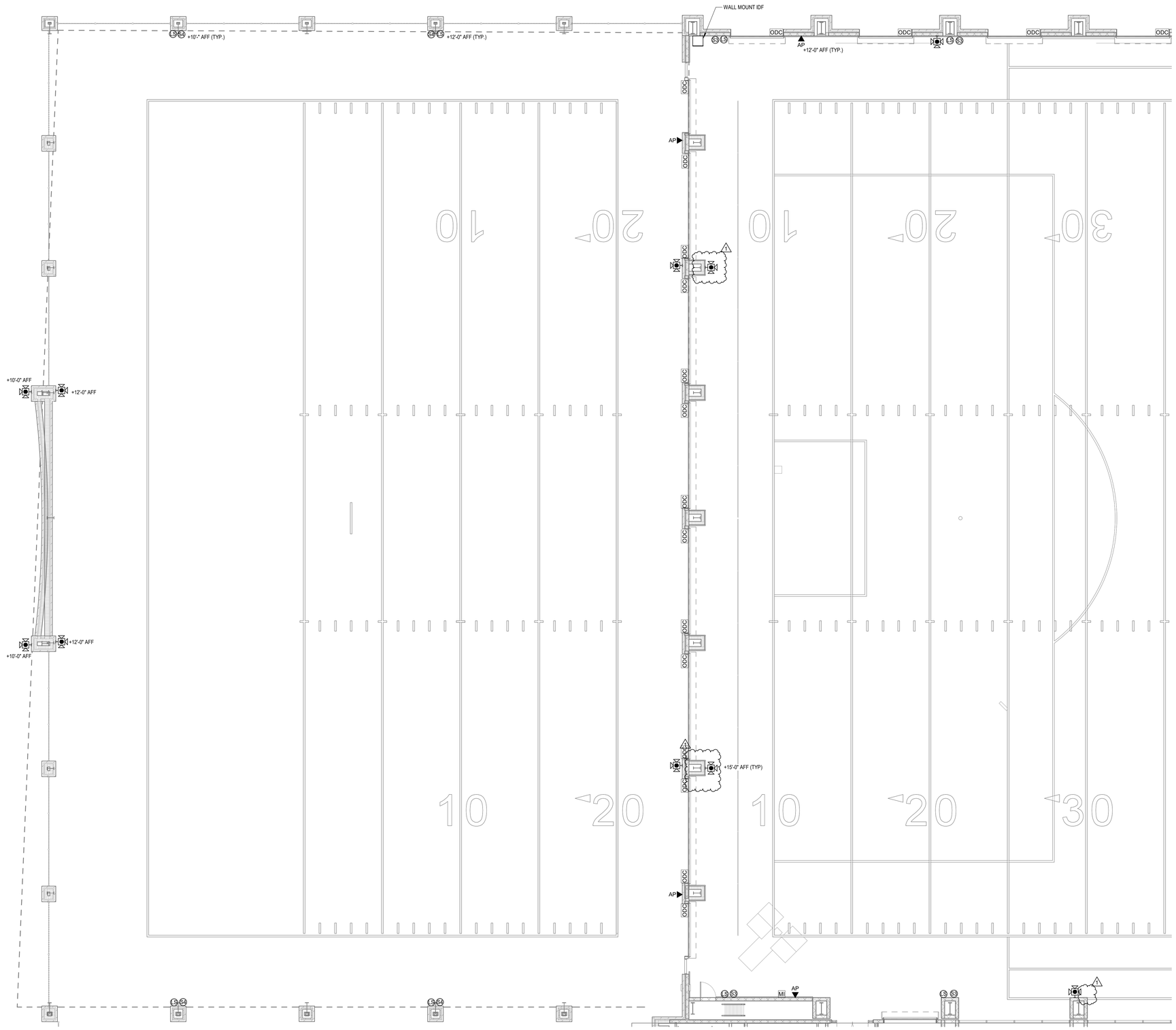
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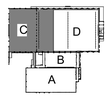
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D. FIRE ALARM SYSTEM SHALL BE OPERATIONAL DURING ALL PHASES OF CONSTRUCTION. FIRE WATCH SHALL BE PRESENT 100% OF THE DURATION THE FIRE ALARM SYSTEM ISN'T OPERATIONAL AT ALL BUILDINGS AND AREAS THE FIRE ALARM CONTROL PANEL SUPPORTS.



1 **TECHNOLOGY FLOOR PLAN - LEVEL ONE - UNIT C**
Scale: 1/8" = 1'-0"



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ISSUED: OCTOBER 1, 2025

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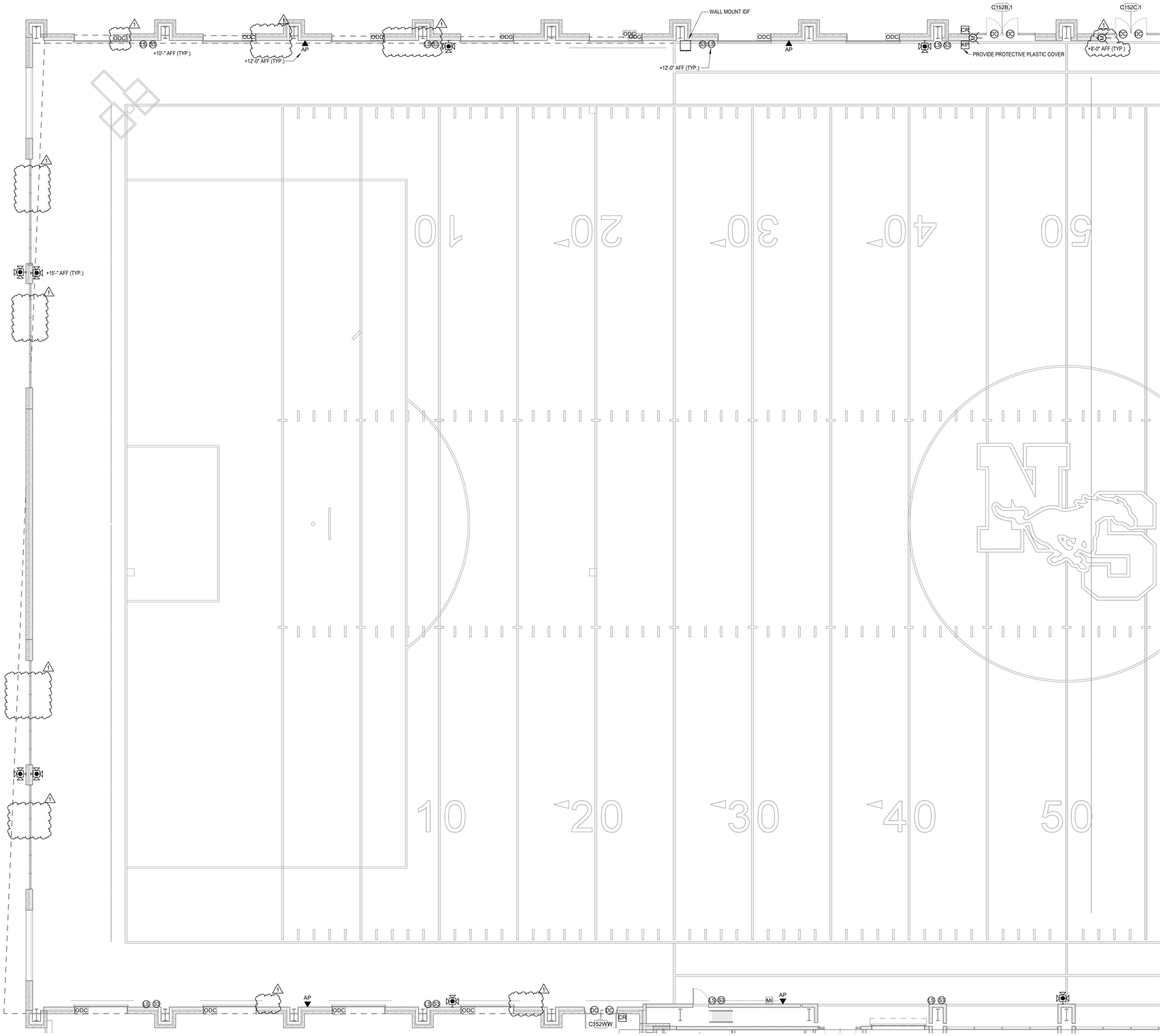
Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	MA
Drawn By	AY

PROJECT NO.
25-0056.00

SHEET TITLE
TECHNOLOGY FLOOR PLAN - LEVEL ONE - UNIT C

SHEET NO.
T2.04C

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1 **TECHNOLOGY FLOOR PLAN - LEVEL ONE - UNIT C - ALTERNATE**
Scale: 1/8" = 1'-0"

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10.17.2025

ISSUED: OCTOBER 1, 2025

REVISIONS

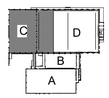
Revision No.		Revision Date
1	Addendum 3	10/17/2025

Director	Monika Castillo
Proj. Arch.	Tam Quang
Designer	MA
Drawn By	AY

PROJECT NO.
25-0056.00

SHEET TITLE
TECHNOLOGY FLOOR PLAN - LEVEL ONE - UNIT C - ALTERNATE

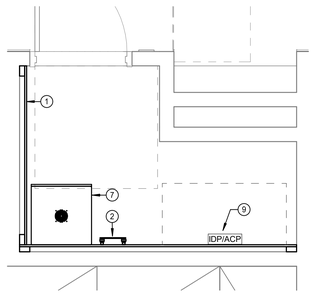
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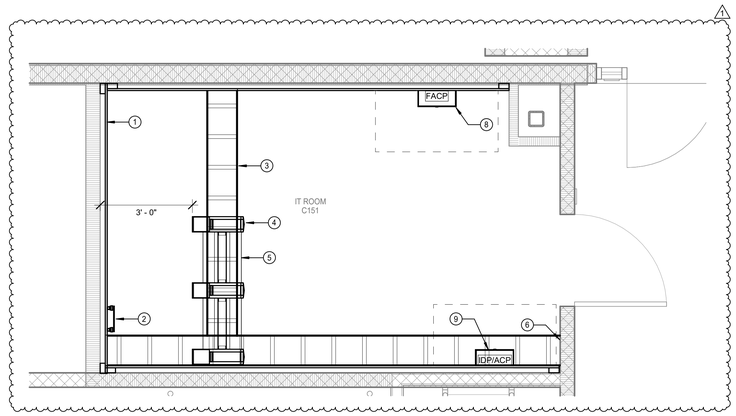
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TECHNOLOGY ENLARGED KEYED NOTES

1. INDICATES THE LOCATION OF A 8' TALL, 3/4" FIRE RATED PLYWOOD. CONTRACTOR TO PROVIDE AND INSTALL PLYWOOD AND ALL REQUIRED MOUNTING HARDWARE. PLYWOOD SHALL BE PAINTED WHITE WITH FIRE RATED PAINT. TYPICAL FOR ALL SHOWN ON DRAWING.
2. INDICATES THE LOCATION OF A NEW WALL MOUNTED TELECOMMUNICATION GROUND BUSBAR (TGBB). CABLING CONTRACTOR TO PROVIDE BUSBAR AND ALL REQUIRED MATERIAL TO MOUNT AT THE LOCATION SHOWN. TGBB TO BE MOUNTED AT +93" A.F.F.
3. PROVIDE AND INSTALL A 12" WIDE, UNIVERSAL LADDER TRAY AND ALL REQUIRED MOUNTING HARDWARE. LADDER TRAY SHALL BE BLACK IN COLOR. TYPICAL FOR ALL SHOWN ON ENTIRE PROJECT.
4. PROVIDE AND INSTALL ONE (1) 2-POST, FLOOR MOUNTED, 7' RELAY RACK (BLACK IN CONNECTED LOCATIONS OF THE RACK TO ENSURE THAT ALL PIECES OF THE RACK ARE COMPLETELY BONDED. SCRAPING PAINT FROM RACKS TO MAKE A BOND WILLNOT BE ACCEPTED.
5. PROVIDE AND INSTALL ONE (1) 7'X6", FRONT AND REAR MANAGED, VERTICAL CABLE MANAGER (BLACK IN COLOR).
6. PROVIDE AND INSTALL A MINIMUM OF THREE (3) EZ-PATH THRU-WALL PENETRATION SLEEVES WITH MULTI-GANG WALLPLATE BRACKET SYSTEM AT INDICATED LOCATION. PROVIDE ADDITIONAL AS REQUIRED TO MAINTAIN A MAXIMUM OF 40% FILL RATIO, PLUS ONE (1) ADDITIONAL FOR SPARE.
7. LOCATION OF WALL MOUNT CABINET. REFER TO SPECIFICATION FOR MORE INFORMATION.
8. LOCATION OF RELOCATED FIRE ALARM CONTROL PANEL AND ALL RELATED ACCESSORIES. PROVIDE (1) FIRE PULL STATION AT THIS LOCATION.
9. ALL EXISTING AND NEW INTRUSION DETECTION AND ACCESS CONTROL DEVICES AT THIS BUILDING SHALL BE CONNECTED TO NEW COMBINATION ACCESS CONTROL AND INTRUSION DETECTION PANELS.



N 2 **TECHNOLOGY ENLARGED PLAN - IDF C157**
Scale: 1/2" = 1'-0"



N 1 **TECHNOLOGY ENLARGED PLAN - AV/IT ROOM C151**
Scale: 1/2" = 1'-0"

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PROJECT NO.
25-0056.00

SHEET TITLE
TECHNOLOGY ENLARGED PLAN

SHEET NO.
T3.01

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