

ADDENDUM #2

CONSTRUCTION MANAGEMENT PACKAGE - Bidding Requirements & General Conditions

BID PROPOSAL DEADLINE: WEDNESDAY, FEBRUARY 24, 2016 @ 11:00 A.M. (local time)

A. Section 00100 - Instructions to Bidders

1. This addendum is being issued in conjunction with Wakely Associates, Inc. Addendum No. 2 dated February 17, 2016.
2. **The bids are due on WEDNESDAY, FEBRUARY 24, 2016 @ 11:00 A.M. (local time).**
3. Late bids will not be accepted.
4. Bidders may visit and walk the project site after 3:00 p.m. M-F, by checking in at the main office.
5. Bidders shall sign, notarize, and submit the Proposal Execution Form (Section 00400) as a part of their sealed bid.
6. All bids are to be accompanied by a Bid Security in the amount of five (5) percent of the amount of the bid as a guarantee that if the proposal is accepted, the bidder will execute the contract and file the required bonds within ten (10) days after notice of award of contract.
7. All bids are to be accompanied with a signed and notarized Affidavit of Compliance form for the Iran Economic Sanctions Act. This form is available in Section 00421 of the Bidding Requirements & General Conditions Manual.
8. Apparent low, qualified bidders will be contacted for a post bid interview. All post bid interviews will take place at the office of McCarthy & Smith.

B. Section 00300 – Bid Division Index, Descriptions and Proposal Pricing forms

1. **TO ALL BIDDERS:** Work platforms will be provided for all respective trades having overhead work in the Pool and Auditorium areas. In the pool area, the pool well itself will be infilled with scaffolding and a work platform that will be level with the surrounding pool deck. In the Auditorium area, a level working surface will be provided at the main floor area which will be level with the existing stage floor elevation. In the rear parts of the Auditorium seating area, a raised platform will be installed to provide a level work area. The work platforms at both areas will be designed to accommodate rolling scaffolds, provided by each individual trade, to perform overhead work. Platforms will not be constructed to support scissor lifts, oscillating of boom lifts, etc.
2. **Bid Division 103: Selective Demolition**
A. Under the **ALSO INCLUDED** section
Add:
 - Contractor shall review the composite reflected ceiling plan sheet legends and include price for removal of existing ceiling tiles and/or ceiling tile and grid as indicated.
3. **Bid Division 108: Carpentry / General Trades**
A. Under the **EXCLUDED** section
Add:
 - Locker Room Benches (by Bid Division 126).

B. Under the **ALSO INCLUDED** section

Add:

- Provide and install plywood at new catwalk in auditorium as shown
- Installation of hollow metal frames in all non-masonry openings

4. **Bid Division 114: Aluminum Windows; Entrances; Glass & Glazing**

A. Under the **ALSO INCLUDED** section

Add:

- Provide FRP panels within new door frames as indicated on sheet A7.1FH.

5. **Bid Division 126: Metal Lockers**

A. Under the **ALSO INCLUDED** section

Add:

- Provide all new maple locker room benches as detailed. This includes benches installed on top of new masonry bases.

6. **Bid Division 142: HVAC**

B. Under the **ALSO INCLUDED** section

Add:

- Specification Section 15914 Fuel Gas Piping
- Specification Section 15768 Console Style Unit Ventilators
- Specification Section 15769 Hydronic Radiant Heating Units
- Specification Section 15785 Air to Air Energy Recovery Equipment

END OF ADDENDUM

February 17, 2016

ADDENDUM NO. TWO to the plans and specifications for the FARMINGTON PUBLIC SCHOOLS, 2015 RENOVATIONS, HIGH SCHOOL RENOVATIONS, Farmington, MI, Architect's Project No. 151626C, dated February 1, 2016.

The above plans and specifications are modified, supplemented or augmented as follows, and this ADDENDUM NO. TWO, is hereby made a part of the contract documents.

Drawings F-WM01, F-WM02, G4.2, A1.4FH, A1.5FH, A1.6F, A1.7FH, A1.8FH, A1.9FH, A1.10FH, A1.11FH, A1.12FH, A1.13FH, A1.23FH, A1.24FH, A2.0FH, A2.13FH, A3.1FH, A5.1FH, A5.3FH, A5.4FH, A5.5FH, A5.6FH, A5.7FH, A5.8FH, A5.9FH, A5.10FH, A5.11FH, A5.12FH, A7.1FH, S0.1, S1.3, S5.2, M0.2, MD1.1C, MD1.1D, MD1.1M, MD1.2D, M2.1D, M3.1D, M8.7, E2.0, E2.1H, E2.1L, E3.1J, E3.1L, E3.1N and ET-3.1G, AV101, AV102, AV105, AV211 & TL211 and Specification Sections 15194, 15768, 15769, 15785 and Finish Hardware Sets are being issued with this Addendum.

CIVIL DRAWING ITEMS:

ITEM NO. C1: Refer to Drawings No. F-WM01 & F-WM02 (Issued):
a. Refer to added Standard Water Main Details from City of Farmington.

ARCHITECTURAL SPECIFICATION ITEMS:

ITEM NO. AS1: Refer to Specification Section 12610 Fixed Seating (not re-issued):
a. For Clarification for the High School Bleachers:
1. Provide 2 banks, 80'-6" long including the end rails.
2. Provide video platform on one side as specified.
3. Provide a net 1,342 seats between the 2 banks.
4. Provide back rails for the entire length of each bank of the bleachers along the top row of bleachers.
b. For Clarification for the East Middle School Bleachers:
1. Provide 2 banks, 39'-8" long including the end rails.
2. Provide a net 570 seats between the 2 banks.

ITEM NO. AS2: Refer to Specification Section 11062 Auditorium Acoustical Walls and Acoustical Clouds (not re-issued):
a. For Clarification: Add StageRight, Secoa and Kinetics as acceptable manufacturers.

ARCHITECTURAL DRAWING ITEMS:

- ITEM NO. A1:** Refer to Drawing No. G4.2 (re-issued):
- a. Refer to revised notes 43 and 45.
 - b. Refer to revised notes for wall type G and M.
- ITEM NO. A2:** Refer to Drawing No. A1.4FH (re-issued):
- a. Refer to revised detail markers.
 - b. Refer to revised detail 3 notes.
- ITEM NO. A3:** Refer to Drawing No. A1.5FH (re-issued):
- a. Refer to revised detail markers.
- ITEM NO. A4:** Refer to Drawing No. A1.6FH (re-issued):
- a. Refer to revised detail markers.
 - b. Refer to revised detail 2.
- ITEM NO. A5:** Refer to Drawing No. A1.7FH (re-issued):
- a. Refer to revised detail markers.
- ITEM NO. A6:** Refer to Drawing No. A1.8FH (re-issued):
- a. Refer to revised detail markers.
- ITEM NO. A7:** Refer to Drawing No. A1.9FH (re-issued):
- a. Refer to added Elevation 5.
- ITEM NO. A8:** Refer to Drawing No. A1.10FH (re-issued):
- a. Refer to deleted dimensions from windows.
- ITEM NO. A9:** Refer to Drawing No. A1.11FH (re-issued):
- a. Refer to revised detail markers.
- ITEM NO. A10:** Refer to Drawing No. A1.12FH (re-issued):
- a. Refer to revised details 3 and 4.
 - b. Refer to revised detail 7 notes.
- ITEM NO. A11:** Refer to Drawing No. A1.13FH (re-issued):
- a. Refer to revised detail markers.
 - b. Refer to revised enlarged detail.
- ITEM NO. A12:** Refer to Drawing No. A1.23FH (re-issued):
- a. Refer to revised detail markers.
- ITEM NO. A13:** Refer to Drawing No. A1.24FH (re-issued):
- a. Refer to revised detail markers and details.
 - b. Refer to revised notes on plan 1. And added elevation 6 and 7.
- ITEM NO. A14:** Refer to Drawing No. A2.0FH (re-issued):
- a. Refer to revised ceiling plans.

- ITEM NO. A15:** Refer to Drawing No. A2.13FH (re-issued):
a. Refer to revised detail markers.
- ITEM NO. A16:** Refer to Drawing No. A3.1FH (re-issued):
a. Refer to revised detail markers.
b. Refer to revised detail 4 notes.
- ITEM NO. A17:** Refer to Drawing No. A5.1FH (re-issued):
a. Refer to revised detail markers and revised detail 6.
- ITEM NO. A18:** Refer to Drawing No. A5.4FH (re-issued):
a. Refer to revised detail markers.
b. Refer to added wall tags to new work plans 2 and 5.
- ITEM NO. A19:** Refer to Drawing No. A5.5FH (re-issued):
a. Refer to revised J102 ceiling plan, door swings for J102A and J105A and revised wall tags.
b. Refer to revised detail 6 notes and added new detail 7.
- ITEM NO. A20:** Refer to Drawing No. A5.6FH (re-issued):
a. Refer to revised dimensions.
- ITEM NO. A21:** Refer to Drawing No. A5.7FH (re-issued):
a. Refer to revised dimensions.
- ITEM NO. A22:** Refer to Drawing No. A5.8FH (re-issued):
a. Refer to revised detail markers.
- ITEM NO. A23:** Refer to Drawing No. A5.9FH (re-issued):
a. Refer to revised detail markers.
b. Refer to revised notes on plan 2.
- ITEM NO. A24:** Refer to Drawing No. A5.10FH (re-issued):
a. Refer to revised detail markers.
b. Refer to added dimensions to plan 2.
- ITEM NO. A25:** Refer to Drawing No. A5.11FH (re-issued):
a. Refer to revised detail markers and revised details.
- ITEM NO. A26:** Refer to Drawing No. A5.12FH (re-issued):
a. Refer to revised detail markers.
b. Refer to added detail 1.
- ITEM NO. A27:** Refer to Drawing No. A7.1FH (re-issued):
a. Refer to added doors:

- ITEM NO. A28:** Refer to Drawing No. A5.3FH (re-issued):
- a. Refer to revised door markers.
 - b. Refer to revised notes on 7/A5.3FH
 - c. Refer to additional demo plan keynotes

- ITEM NO. A29:** Refer to Finish Hardware Sets (re-issued):
- a. Refer to added Hardware set.

STRUCTURAL DRAWING ITEMS:

- ITEM NO. S1:** Refer to Drawing S-0.1 (not re-issued):
- a. Refer to added concrete and masonry notes.

- ITEM NO. S2:** Refer to Drawing S-1.3 (not re-issued):
- a. Relocated beam at Third Level Demolition Plan.
 - b. Added note for beam to wall connection at relocated beam.
 - c. Added lintels and masonry reinforcing on Second Level Floor Plan – New Work
 - d. Indicated guardrail at Second Floor Plan.
 - e. Revised Sections H1 and H3.

- ITEM NO. S3:** Refer to Drawing S-5.2 (not re-issued):
- a. Added Lintel and Bearing Plate Schedules.
 - b. Added Detail H1- Masonry Wall Anchorage Details.

MECHANICAL SPECIFICATION ITEMS:

- ITEM NO. MS1:** Refer to mechanical specification 15194 “FUEL GAS PIPING” (Issued).
- a. Add mechanical specification section 15194 “FUEL GAS PIPING” as indicated.

- ITEM NO. MS2:** Refer to mechanical specification 15768 “CONSOLE STYLE UNIT VENTILATORS” (Issued).
- a. Add mechanical specification section 15768 “CONSOLE STYLE UNIT VENTILATORS” as indicated.

- ITEM NO. MS3:** Refer to mechanical specification 15769 “HYDRONIC RADIANT HEATING UNITS” (Issued).
- a. Add mechanical specification section 15769 “HYDRONIC RADIANT HEATING UNITS” as indicated.

- ITEM NO. MS4:** Refer to mechanical specification 15785 “AIR TO AIR ENERGY RECOVERY EQUIPMENT” (re-issued).
- a. Revised mechanical specification section 15785 “AIR TO AIR ENERGY RECOVERY EQUIPMENT” as indicated.

MECHANICAL DRAWING ITEMS:

- ITEM NO. M1:** Refer to drawing No. M0.2 (re-issued).
a. Revised fire protection as indicated.
- ITEM NO. M2:** Refer to drawing No. MD1.1C (re-issued).
a. Added demolition note AM as indicated.
- ITEM NO. M3:** Refer to drawing No. MD1.1D (re-issued).
a. Added demolition note AM as indicated.
b. Revised demolition of underground piping as indicated.
- ITEM NO. M4:** Refer to drawing No. MD1.1M (re-issued).
a. Added demolition note AM as indicated.
- ITEM NO. M5:** Refer to drawing No. MD1.2D (re-issued).
a. Added demolition note AM as indicated.
- ITEM NO. M6:** Refer to drawing No. M2.1D(re-issued).
a. Revised CW, HW, and HWR piping as indicated.
- ITEM NO. M7:** Refer to drawing No. M3.1D (re-issued).
a. Revised HWHS and HWHR piping as indicated.
b. Added construction note 12 as indicated.
- ITEM NO. M8:** Refer to drawing No. M8.4 (not re-issued).
a. Changed reference from “Pressure Independent” to “Pressure Dependent” control valves.
- ITEM NO. M9:** Refer to drawing No. M8.6 (not re-issued).
a. Removed reference to solenoid valves in REMOTE PWH RM EMERGENCY SHUTDOWN WIRING sequence of operation.
- ITEM NO. M10:** Refer to drawing No. M8.7 (re-issued).
a. Added control details for Finned Tube Radiation in Greenhouse and Radiant Wall Panel in H144 Toilet Room.

ELECTRICAL DRAWING ITEMS:

- ITEM NO. E1:** Refer to drawing No. E2.0 (re-issued).
a. Revised Light fixture schedule as indicated.
- ITEM NO. E2:** Refer to drawing No. E2.1H (re-issued).
a. Revised Lighting as indicated.
- ITEM NO.E3:** Refer to drawing No. E2.1L (reissued).
a. Added emergency lighting to Existing Mechanical L124.
- ITEM NO. E4:** Refer to drawing No. E3.1J (re-issued).
a. Added Construction Note 22 for Exhaust fan as indicated.
b. Added Construction Note 22 for CUH as indicated.

- ITEM NO. E5:** Refer to drawing No. E3.1L (re-issued).
- a. Added power for exhaust fan EF4 as indicated.
 - b. Added Construction Note 22 as indicated.

- ITEM NO. E6:** Refer to drawing No. E3.1N (re-issued).
- a. Added power for stage curtain as indicated.
 - b. Added Construction Note 23 for stage curtain and controls as indicated.

TECHNOLOGY DRAWING ITEM:

- ITEM NO. T1:** Refer to Drawing ET3.1G (re-issued):
- a. Wiremold (V4000) was added to Weight Training Room G144 to accommodate a new LCD display. A new wiremold (V4000) was added in the Weight Training Room Office G143 for the LCD display inputs.

AVL SPECIFICATION ITEMS:

- ITEM NO. AVLS1:** Refer to Section 260961.2.1.B.4.a (not re-issued):
- a. Change the quantity of distributed dimmers to (qty 4).
- ITEM NO. AVLS2:** Refer to Section 260961.2.1.M.7 (not re-issued):
- a. Change the quantity of Medium Oval Diffusers to (qty 25).
- ITEM NO. AVLS3:** Refer to Section 260961.2.1.M.8 (not re-issued):
- a. Change the quantity of Wide Oval Diffusers to (qty 25).
- ITEM NO. AVLS4:** Refer to Section 260961.2.1.M (not re-issued):
- a. Add the following accessory items: (2) Rosco RevoPRO Dual Programmable Rotator.
- ITEM NO. AVLS5:** Refer to Section 274116.C.29.a (not re-issued):
- a. Change the product to (1) QSC Core 500i, audio dsp
- ITEM NO. AVLS6:** Refer to Section 274116.C. (not re-issued):
- a. Add the following items:
 - 1. (4) Shure Beta58A handheld microphone
 - 2. (1) Package W7R rack mountable WAP

AVL DRAWING ITEMS:

- ITEM NO. AVL1:** Refer to drawing No. AV101 (not re-issued):
- a. Refer to added WAP.
- ITEM NO. AVL2:** Refer to drawing No. AV102 (not re-issued):
- a. Refer to added WAP.
- ITEM NO. AVL3:** Refer to drawing No. AV105 (not re-issued):
- a. Refer to added AER-2 - WAP.

ITEM NO. AVL4: Refer to drawing No. AV211 (not re-issued):
a. Refer to updated Control Booth layout, detail 2.

ITEM NO. AVL5: Refer to drawing No. TL211 (not re-issued):
a. Refer to relocated BPS-1 in Control Booth.

END OF ADDENDUM NO. 2

Cc: Doug Underwood, McCarthy & Smith

SECTION 15194 - FUEL GAS PIPING

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections include the following:
 - 1. Division 15 Section "Mechanical General Requirements."
 - 2. Division 15 Section "Basic Mechanical Materials and Methods."

1.2 SUMMARY

- A. This Section includes facility fuel gas piping.

1.3 DEFINITIONS

- A. Gas Main: Utility's natural gas piping.
- B. Gas Distribution: Piping from gas main to individual service-meter assemblies.
- C. Fuel Gas Piping: Piping that conveys fuel gas from point of delivery to fuel gas utilization devices inside the building.
- D. PE: Polyethylene.

1.4 PERFORMANCE REQUIREMENTS

- A. Minimum Operating-Pressure Ratings:
 - 1. Piping and Valves: Performance requirements are scheduled on the Drawings.
 - 2. Exception: Fuel Gas Piping Installed within Ceilings Used as Plenums: 150 psig.

1.5 SYSTEMS DESCRIPTIONS

- A. Fuel gas piping system materials are scheduled on the Drawing.

1.6 SUBMITTALS

- A. Product Data: For the following:
 - 1. Specialty valves. Include pressure rating, capacity, settings, and electrical connection data of selected models.
 - 2. Pressure regulators. Include pressure rating, capacity, and settings of selected models.
- B. Coordination Drawings: Plans and details, drawn to scale, on which natural-gas piping is shown and coordinated with other installations, using input from installers of the items involved.
- C. Welding certificates.
- D. Field quality-control test reports.

- E. Operation and Maintenance Data: For natural gas specialties and accessories to include in operation and maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
- B. Electrical Components and Devices: Listed and labeled as defined in NFPA 70, Article 100, by an NRTL acceptable to authorities having jurisdiction, and marked for intended use.
- C. NFPA Standard: Comply with NFPA 54, "National Fuel Gas Code."

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Handling Flammable Liquids: Remove and legally dispose of liquids from drips in existing gas piping. Handle cautiously to avoid spillage and ignition. Notify fuel gas supplier. Handle flammable liquids used by Installer with proper precautions and do not leave on premises from end of one day to beginning of next day.
- B. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.
- C. Store and handle pipes and tubes having factory-applied protective coatings to avoid damaging coating, and protect from direct sunlight.
- D. Protect stored PE pipes and valves from direct sunlight.

1.9 PROJECT CONDITIONS

- A. Perform site survey, research public utility records, and verify existing utility locations. Contact utility-locating service for area where Project is located.
- B. Gas System Pressure: Not more than 5.0 psig.

C. Design values of fuel gas supplied for these systems are as follows:

1. Nominal Heating Value: 1000 Btu/cu. ft.
2. Nominal Specific Gravity: 0.6.

1.10 COORDINATION

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Architect not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.

B. Coordinate requirements for access panels and doors for valves installed concealed behind finished surfaces. Comply with requirements in Division 08 Section "Access Doors and Frames."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 BLACK STEEL PIPE AND FITTINGS

A. Black Steel Pipe: ASTM A 53/A 53M; Type E or S; Grade B; Schedule 40. Wall thickness of wrought-steel pipe shall comply with ASME B36.10M.

1. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern, with threaded ends according to ASME B1.20.1.
2. Steel Threaded Fittings: ASME B16.11, forged steel with threaded ends according to ASME B1.20.1.
3. Steel Welding Fittings: ASME B16.9, wrought steel or ASME B16.11, forged steel.

4. Unions: ASME B16.39, Class 150, malleable iron with brass-to-iron seat, ground joint, and threaded ends according to ASME B1.20.1.
5. Cast-Iron Flanges and Flanged Fittings: ASME B16.1, Class 125.
6. Joint Compound and Tape: Suitable for natural gas.
7. Steel Flanges and Flanged Fittings: ASME B16.5.
8. Gasket Material: Thickness, material, and type suitable for natural gas.

2.3 PIPING SPECIALTIES

- A. Flexible Connectors: ANSI Z21.24, copper alloy.
- B. Quick-Disconnect Devices: ANSI Z21.41, convenience outlets and matching plug connector.
- C. Y-Pattern Strainers:
 1. Body: ASTM A 126, Class B, cast iron with bolted cover and bottom drain connection.
 2. End Connections: Threaded ends for NPS 2 and smaller; flanged ends for NPS 2-1/2 and larger.
 3. Strainer Screen: 40-mesh startup strainer, and perforated stainless-steel basket with 50 percent free area.
 4. CWP Rating: 125 psig.
- D. Weatherproof Vent Cap: Cast- or malleable-iron increaser fitting with corrosion-resistant wire screen, with free area at least equal to cross-sectional area of connecting pipe and threaded-end connection.

2.4 JOINING MATERIALS

- A. Refer to Division 15 Section "Basic Mechanical Materials and Methods."

2.5 SPECIALTY VALVES

- A. Valves, NPS 3 and Smaller: Threaded ends according to ASME B1.20.1 for pipe threads.
- B. Valves, NPS 4 and Larger: Flanged ends according to ASME B16.5 for steel flanges.
- C. Gas Valves, NPS 3 and Smaller: Bronze or brass body with AGA or CSA stamp, UL listed or FM approved for service,

ball type with chrome-plated brass ball and lever handle, or butterfly valve with stainless-steel disc and fluorocarbon elastomer seal and lever handle; 125-psig minimum pressure rating.

1. Manufacturers:
 - a. Conbraco Industries, Inc.
 - b. Crane Valves.
 - c. Jomar International Ltd.
 - d. Legend Valve and Fitting, Inc.
 - e. Milwaukee Valve Company.
 - f. NIBCO INC.
 - g. Watts Water Technologies, Inc.; Watts Regulator Co.
2. Tamperproof Feature: Include design for locking.

D. Cast-Iron, Lubricated Plug Valves: MSS SP-78.

1. Manufacturers:
 - a. Flowserve Nordstrom.
 - b. Homestead Valve; a division of Olson Technologies, Inc.
 - c. Milliken Valve Company.
 - d. R&M Energy Systems, A Unit of Robbins & Myers, Inc.; Resun.
2. Body: Cast iron, complying with ASTM A 126, Class B.
3. Plug: Bronze or nickel-plated cast iron.
4. Seat: Coated with thermoplastic.
5. Stem Seal: Compatible with natural gas.
6. Operator: Square head or lug type with tamperproof feature where indicated.
7. Wrench: For plug valves with square heads. Furnish Owner with 1 wrench for every 10 plug valves, for each size square plug head.
8. Pressure Class: 125 psig.

2.6 PRESSURE REGULATORS

- A. Description: Single stage and suitable for fuel gas service. Include steel jacket and corrosion-resistant components, elevation compensator, and atmospheric vent.

1. Manufacturers:
 - a. Line Pressure Regulators:
 - 1) American Meter Company.
 - 2) Fisher Controls International, Inc.; Division of Emerson.
 - 3) Itron Gas.

2. NPS 2 and Smaller: Threaded ends according to ASME B1.20.1 for pipe threads.
3. NPS 2-1/2 and Larger: Flanged ends according to ASME B16.5 for steel flanges.
4. Service Pressure Regulators: ANSI Z21.80. Include 100-psig- minimum inlet pressure rating.
5. Line Pressure Regulators: ANSI Z21.80, with inlet pressure rating as scheduled on the Drawings.
6. Appliance Pressure Regulators: ANSI Z21.18. Regulator may include vent limiting device, instead of vent connection, if approved by authorities having jurisdiction.

- B. Pressure Regulator Vents: Factory- or field-installed, corrosion-resistant screen in opening if not connected to vent piping.

PART 3 - EXECUTION

3.1 EXCAVATION

- A. Refer to Division 02 Section "Earthwork" for excavating, trenching, and backfilling.

3.2 EXAMINATION

- A. Examine roughing-in for fuel gas piping system to verify actual locations of piping connections before equipment installation.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 PREPARATION

- A. Close equipment shutoff valves before turning off natural gas to premises or piping section.
- B. Inspect natural-gas piping according to NFPA 54 and the International Fuel Gas Code to determine that natural-gas utilization devices are turned off in piping section affected.
- C. Comply with NFPA 54 and the International Fuel Gas Code requirements for prevention of accidental ignition.

3.4 PIPING SYSTEM INSTALLATION

- A. Comply with NFPA 54 and the International Fuel Gas Code for installation and purging of natural-gas piping.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- C. Basic piping installation requirements are specified in Division 15 Section "Basic Mechanical Materials and Methods."
- D. Conceal pipe installations in walls, pipe spaces, utility spaces, above ceilings, below grade or floors, and in floor channels, unless indicated to be exposed to view.
- E. Concealed Locations:
 - 1. Above Inaccessible Ceiling Locations: Gas piping with welded joints may be installed in inaccessible spaces, subject to approval of authorities having jurisdiction, whether or not such spaces are used as plenums. Do not locate valves or unions above inaccessible ceilings.
 - 2. Above Accessible Ceiling Locations: Gas piping with welded joints may be installed in accessible ceiling spaces, subject to approval of authorities having jurisdiction, whether or not such spaces are used as plenums. Do not locate valves or unions above ceilings used as plenums.
 - 3. In Floor Channels: Gas piping may be installed in floor channels, subject to approval of authorities having jurisdiction. Channels must have cover and be open to space above cover for ventilation.
 - 4. Underground Beneath Building: Gas piping may be installed in protective conduit in accordance with Chapter "Gas Piping Installations" in the International Fuel Gas Code.
 - 5. In Partitions: Do not install concealed piping in solid partitions, unless installed in a chase or casing.

- a. Exception: Piping passing through partitions or walls.
 - 6. In Walls: Gas piping with welded joints and protective wrapping specified in Part 2 "Protective Coating" Article may be installed in masonry walls, subject to approval of authorities having jurisdiction.
 - 7. Prohibited Locations: Do not install gas piping in or through circulating air ducts, clothes or trash chutes, chimneys or gas vents (flues), ventilating ducts, or dumbwaiter or elevator shafts.
- F. Drips and Sediment Traps: Install drips at points where condensate may collect. Include outlets of service meters. Locate where readily accessible for cleaning and emptying. Do not install where condensate would be subject to freezing.
- 1. Construct drips and sediment traps using tee fitting with bottom outlet plugged or capped. Use minimum-length nipple of 3 pipe diameters, but not less than 3 inches long, and same size as connected pipe. Install with space between bottom of drip and floor for removal of plug or cap.
- G. Install fuel gas piping at uniform grade of 0.1 percent slope upward toward risers.
- H. Use eccentric reducer fittings to make reductions in pipe sizes. Install fittings with level side down.
- I. Connect branch piping from top or side of horizontal piping.
- J. Install strainer on inlet of each automatic and electrically operated valve.
- K. Install pressure gage upstream and downstream from each line pressure regulator. Pressure gages are specified in Division 15 Section "Meters and Gages."
- L. Locate valves for easy access.
- M. Install unions in pipes NPS 2 and smaller, adjacent to each valve, at final connection to each piece of equipment, and elsewhere as indicated. Unions are not required on flanged devices.

- N. Install flanges when connecting to valves, specialties, and equipment having NPS 2-1/2 and larger connections.
- O. Install gas valve or plug valve and strainer upstream from each line pressure regulator or appliance pressure regulator.
- P. Install vent piping for gas pressure regulators and gas trains, extend outside building, and vent to atmosphere. Terminate vents with turned-down, reducing-elbow fittings with corrosion-resistant insect screens in large end.
- Q. Install containment conduits for gas piping below slabs, within building, in gastight conduits extending minimum of 4 inches outside building, and vented to atmosphere. Terminate vents with turned-down, reducing-elbow fittings with corrosion-resistant insect screens in large end. Prepare and paint outside of conduits with coal-tar, epoxy-polyamide paint according to SSPC-Paint 16.

3.5 JOINT CONSTRUCTION

- A. Basic piping joint construction is specified in Division 15 Section "Basic Mechanical Materials and Methods."
- B. Use materials suitable for fuel gas.
- C. Patch factory-applied protective coating as recommended by manufacturer at field welds and where damage to coating occurs during construction.

3.6 HANGER AND SUPPORT INSTALLATION

- A. Pipe hanger and support and equipment support materials and installation requirements are specified in Division 15 Section "Hangers and Supports."
- B. Install hangers for horizontal steel piping with the following maximum spacing and minimum rod sizes:
 - 1. NPS 1 and Smaller: Maximum span, 96 inches; minimum rod size, 3/8 inch.
 - 2. NPS 1-1/4: Maximum span, 108 inches; minimum rod size, 3/8 inch.
 - 3. NPS 1-1/2 and NPS 2: Maximum span, 108 inches; minimum rod size, 3/8 inch.
 - 4. NPS 2-1/2 to NPS 3-1/2: Maximum span, 10 feet; minimum rod size, 1/2 inch.

5. NPS 4 and Larger: Maximum span, 10 feet; minimum rod size, 5/8 inch.

- C. Support vertical steel pipe at each floor and at spacing not greater than 15 feet.

3.7 CONNECTIONS

- A. Drawings indicate general arrangement of fuel gas piping, fittings, and specialties.
- B. Install piping adjacent to appliances to allow service and maintenance.
- C. Connect piping to appliances using gas with shutoff valves and unions. Install valve upstream from and within 72 inches of each appliance. Install union downstream from valve.
- D. Sediment Traps: Install tee fitting with capped nipple in bottom to form drip, as close as practical to inlet of each appliance using gas.

3.8 LABELING AND IDENTIFYING

- A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each service meter, pressure regulator, and specialty valve.
 1. Text: In addition to name of identified unit, distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.
 2. Nameplates, pipe identification, and signs are specified in Division 15 Section "Mechanical Identification."
 3. Trace Wire: Yellow insulated, minimum 18 AWG wire, having copper or other approved conductor, with insulation suitable for direct burial, installed adjacent to underground nonmetallic piping, with aboveground access to tracer wire at each end of pipe.

3.9 PAINTING

- A. Use materials and procedures in Division 09 painting Sections.

- B. Paint exposed, exterior metal piping, valves, service regulators, service meters and meter bars, earthquake valves, and piping specialties, except components, with factory-applied paint or protective coating.

- 1. Alkyd System: MPI EXT 5.1D.

- a. Prime Coat: Alkyd anticorrosive metal primer.
- b. Intermediate Coat: Exterior alkyd enamel matching topcoat.
- c. Topcoat: Exterior alkyd enamel (flat).
- d. Color: Gray.

- C. Damage and Touchup: Repair marred and damaged factory-applied finishes with materials and by procedures to match original factory finish.

3.10 FIELD QUALITY CONTROL

- A. Perform tests and inspections.

- B. Tests and Inspections:

- 1. Test, inspect, and purge natural gas according to NFPA 54 and the International Fuel Gas Code and authorities having jurisdiction.

- C. Additional Testing: Subject welded fuel gas piping installed within ceiling spaces used as plenums to test pressure of 150 psig for a minimum of 2 hours.

- D. Natural-gas piping will be considered defective if it does not pass tests and inspections.

- E. Prepare test and inspection reports.

END OF SECTION 15194

SECTION 15768 - CONSOLE STYLE UNIT VENTILATORS

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections include the following:
 1. Division 15 Section "Mechanical General Requirements."
 2. Division 15 Section "Basic Mechanical Materials and Methods."
 3. Division 15 Section "Hydronic Piping."
 4. Division 15 Section "Refrigerant Piping."
 5. Division 15 Section "Vertical Unit Ventilators."

6. Division 15 Section "Water-to-Air Heat Pumps" for water-source heat-pump-type unit ventilators.

1.2 SUMMARY

- A. This Section includes vertical-discharge, floor-mounted console style unit ventilators and accessories with the following heating and cooling features:
 - 1. Hydronic heating coil.
 - 2. Hydronic cooling coil.

1.3 DEFINITIONS

- A. BAS: Building automation system.
- B. HGBP: Hot-gas bypass.

1.4 SUBMITTALS

- A. Product Data: Include rated capacities, operating characteristics, and furnished specialties and accessories for each unit type and configuration.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 1. Plans, elevations, sections, and details.
 - 2. Details of anchorages and attachments to structure and to supported equipment.
 - 3. Wiring Diagrams: Power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and Maintenance Data: For unit ventilators to include in operation and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - 1. Maintenance schedules and repair part lists for motors, coils, integral controls, and filters.

1.5 QUALITY ASSURANCE

- A. Comply with NFPA 70.

B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."

C. ASHRAE/IES 90.1 Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."

1.6 COORDINATION

A. Coordinate size and location of wall sleeves for outdoor-air intake and relief dampers.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Unit Ventilator Filters: Furnish spare filter for each filter installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Airedale North America, Inc.; a Modine Company.
2. Daikin Applied; a member of Daikin Industries, Ltd.; AAF-HermanNelson.
3. Trane; a brand of Ingersoll Rand.

2.2 MANUFACTURED UNITS

A. Factory-packaged and -tested vertical discharge, floor mounting units rated according to AHRI 840, ASHRAE 33, and UL 1995, including finished cabinet, filter, cooling coil, drain pan, supply-air fan and motor in blow- or draw-through configuration, heating coil, welded continuous bar type discharge grille with round edged steel bars and multiple direction discharge. Include 14 inch painted galvanized mesh located beneath discharge grille on blow-through units.

2.3 CABINETS

- A. Insulation: Minimum 1-inch- thick, coated glass fiber complying with ASTM C 1071 and attached with adhesive complying with ASTM C 916.
 - 1. Surface-Burning Characteristics: Insulation and adhesive shall have a combined maximum flame-spread index of 25 and smoke-developed index of 50 when tested according to ASTM E 84 by a qualified testing agency.
- B. Drain Pans: Insulated stainless steel or corrosion resistant material, formed to slope from all directions to the drain connection as required by ASHRAE 62.1.
- C. Cabinet Frame and Access Panels: Welded-steel frame with removable panels fastened with hex-head tamperproof fasteners.
 - 1. Steel components exposed to moisture shall be hot-dip galvanized after fabrication.
- D. Cabinet Finish: Powder coat or baked enamel, in manufacturer's standard [**custom**] paint color as selected by Architect.
- E. Indoor-Supply-Air Grille: Steel, double deflection, adjustable.
- F. Return-Air Inlet: Front toe space.
- G. End Pockets: For service access to controls, piping connections, and drain pan.
 - 1. Minimum 12 inches wide.
 - 2. Where scheduled on the Drawings furnish additional cabinet extensions or end-pockets.
- H. End Panels: Matching material and finish of unit ventilator.
- I. Outdoor-Air Wall Box: Minimum 0.1265-inch- thick, aluminum, rain-resistant louver and box with integral eliminators and bird screen.
 - 1. Louver Configuration: Horizontal, rain-resistant louver.
 - 2. Louver Material: Aluminum.
 - 3. Bird Screen: 1/2-inch mesh screen on interior side of louver.

4. Decorative Grille: On outside of intake.
5. Finish: Baked enamel, color as selected by Architect from manufacturer's standard colors.

2.4 INDOOR FAN

- A. Fan and Motor Board: Removable.
 1. Fan: Forward curved, double width, centrifugal; directly connected to motor. Thermoplastic or painted-steel wheels; and aluminum, painted-steel, or galvanized-steel fan scrolls.
 2. Fan Shaft and Bearings: Hollow steel shaft with permanently lubricated, resiliently mounted bearings.
 3. Motor: Permanently lubricated, multispeed, permanent split-capacitor type resiliently mounted on motor board. Comply with requirements in Division 15 Section "Motors."
 4. Wiring Termination: Connect motor to chassis wiring with plug connection.

2.5 DAMPERS

- A. Mixing Dampers: Galvanized-steel blades with edge and end seals and nylon bearings; with electric actuator.
- B. Outdoor-Air Dampers: Galvanized-steel blades with edge and end seals and nylon bearings; with electric actuator.

2.6 COILS

- A. Test and rate unit ventilator coils according to ASHRAE 33.
- B. Hydronic Coils: Copper tube, with mechanically bonded aluminum fins spaced no closer than 0.1 inch, rated for a minimum working pressure of 200 psig and a maximum entering-water temperature of 220 deg F. Include manual air vent and drain valve.

2.7 FACTORY HYDRONIC PIPING PACKAGE

- A. Piping: ASTM B 88, Type L copper tube with wrought-copper fittings and brazed joints. Label piping to indicate service, inlet, and outlet. Crossover piping, [NPS 1-1/2] [NPS 2] with shutoff valves.

B. Control Valves: As specified in Division 15 Section "Temperature Controls" and as indicated on Sequence of Operation Drawings.

C. Hose Kits: As specified in Division 15 Section "Hydronic Piping." Tag hose kits to equipment designations.

2.8 ACCESSORIES

A. Subbase: Sheet metal floor-mounting base with leveling screws and black enamel finish.

B. Insulated false back with gasket seals on wall and outdoor-air plenum.

1. Insulation: Minimum 1-inch- thick, coated glass fiber complying with ASTM C 1071 and attached with adhesive complying with ASTM C 916.

a. Surface-Burning Characteristics: Insulation and adhesive shall have a combined maximum flame-spread index of 25 and smoke-developed index of 50 when tested according to ASTM E 84 by a qualified testing agency.

C. Duct flanges for supply-, return-, and outdoor-air connections (where applicable, refer to schedules).

D. Filters: Minimum arrestance and a minimum efficiency reporting value (MERV) according to ASHRAE 52.2 and all addendums.

1. Glass Fiber Treated with Adhesive: 80 percent arrestance and MERV 5.

2.9 BASIC UNIT CONTROLS

A. Control devices and operational sequences are specified in Division 15 Section "Temperature Controls," and "Sequence of Operation" on the Drawings.

B. Electrical Connection: Factory wire motors and controls for a single electrical connection.

2.10 CAPACITIES AND CHARACTERISTICS

A. Refer to schedule on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive unit ventilators for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine roughing-in for piping and electrical connections to verify actual locations before unit ventilator installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install unit ventilators to comply with NFPA 90A.
- B. Verify location of thermostats, humidistats, and other exposed control sensors with Drawings and room details before installation. Install devices 48 inches above finished floor.

3.3 CONNECTIONS

- A. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of piping, fittings, and specialties. Specific connection requirements are as follows:
 - 1. Install piping adjacent to machine to allow service and maintenance.
 - 2. Connect piping to unit ventilator factory hydronic piping package. Install piping package if shipped loose.
 - 3. Connect condensate drain to indirect waste.
- B. Connect supply and return ducts to unit ventilators with flexible duct connectors specified in Division 15 Section "Duct Accessories." Comply with safety requirements in UL 1995 for duct connections.
- C. Ground equipment according to Division 16 Section "Grounding and Bonding."
- D. Connect wiring according to Division 16 Section "Conductors and Cables."

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.
- B. Perform the following field tests and inspections and prepare test reports:
 - 1. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 2. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.
- C. Remove and replace malfunctioning units and retest as specified above.

3.5 ADJUSTING

- A. Adjust initial temperature and humidity set points.
- B. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other than normal occupancy hours for this purpose.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain unit ventilators.

END OF SECTION 15768

SECTION 15769 HYDRONIC RADIANT HEATING UNITS

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections include the following:
 - 1. Division 15 Section "Mechanical General Requirements."
 - 2. Division 15 Section "Basic Mechanical Materials and Methods."

1.2 SUBMITTALS

- A. Product Data: Include rated capacities, specialties, and accessories for each product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Detail equipment assemblies and suspension and attachment. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
- C. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are

shown and coordinated with each other, based on input from installers of the items involved:

1. Suspended ceiling components.
2. Structural members to which heaters and suspension systems will be attached.
3. Size and location of initial access modules for acoustical tile.
4. Items penetrating finished ceiling, including the following:
 - a. Lighting fixtures.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Sprinklers.
 - e. Access panels.
5. Perimeter moldings.

D. Field quality-control test reports.

E. Operation and Maintenance Data: For electric radiant heaters and panels to include in operation and maintenance manuals.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a NRTL acceptable to authorities having jurisdiction, and marked for intended use.

1.4 COORDINATION

A. Coordinate layout and installation of radiant heaters and panels and suspension system components with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.1 HYDRONIC HEATING PANELS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Aero Tech Manufacturing; A subsidiary of Toromont Industries.
2. AIRTEX Radiant Systems; a division of Engineered Air Ltd.

3. Rittling; a Zehnder Group Company.
4. Steel Ceilings, Inc.; Airtite Radiant Ceiling Systems.
5. Sterling Hydronics; a Mestek Company.
6. Sun-El Corporation.
7. Twa Panel Systems Inc.

B. Description: Linear metal panel with serpentine water piping, suitable for installation flush with T-bar ceiling grid recessed mounting.

1. Panels: Fluted, extruded aluminum sheet.
2. Backing Insulation: Minimum 1-inch- thick, mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IA or Type IB with factory-applied jacket.
3. Nominal Panel Size: Refer to schedules.
4. Piping Inlet and Outlet: NPS 1/2.
5. Exposed-Side Panel Finish: Baked-enamel finish in manufacturer's standard paint color as selected by Architect.
6. Factory Piping: ASTM B 88, Type L copper tube with ASME B16.22 wrought-copper fittings and brazed joints. Piping shall be mechanically bonded to panel.
7. Accessories:
 - a. Matching inactive panels.
 - b. Panels with drape track recess.
 - c. Male bullnose panels.
 - d. Female bullnose panels.
 - e. Male corner panels.
 - f. Female corner panels.
 - g. Inside corner panel.
 - h. Filler panels.

C. Capacities and Characteristics: Refer to Schedules on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive radiant heating and cooling units for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine roughing-in for hydronic piping connections to verify actual locations before radiant heating and cooling unit installation.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install radiant heating units level and plumb.
- B. The installation of the radiant panel ceiling and matching non-radiant (inactive) panels shall be made by a single Radiant Ceiling Sub-Contractor experienced in this work. The subcontractor shall provide labor, materials, equipment, and supervision for a complete and operational system. Sub-Contractor shall submit certification of having a minimum of two (2) years previous experience in radiant ceiling installations.
 - 1. Contractor shall provide all necessary wall channels, angles and required support for radiant panel. Contractor shall provide tee sections between adjacent panels and at panel ends. Contractor shall verify ceiling openings are large enough to accommodate thermal expansion and contraction of ceiling panels. The ceiling contractor shall provide and install the tee between the acoustical ceiling and the radiant panel along the length of the panel.
- C. Radiant ceiling panel suspension shall be independent of the ceiling system.
- D. Hangers shall be installed as recommended by the manufacturer.
- E. Contractor shall integrate and coordinate radiant ceiling panel installation with ceiling grid installation (by others).
- F. The Radiant Ceiling Sub-Contractor shall cooperate with other trades working in the ceiling to achieve a neat, well coordinated, and properly sequenced overall installation.
- G. Work of Radiant Ceiling Sub-contractor shall terminate within three feet of the supply and return point of each panel circuit.
- H. The Radiant Ceiling Sub-Contractor shall furnish and install all necessary piping and bends required for the interconnection of the panel sections. The panel

interconnecting pipe and bends shall be furnished by the panel manufacturer and shall provide for necessary expansion and contraction as recommended by the manufacturer.

- I. All installation of linear panels, where made with mitered joints, shall be made so that the fluting on the abutting panel is aligned.
- J. Verify locations of thermostats with Drawings and room details before installation. Install devices 48 inches above finished floor.

3.3 CONNECTIONS

- A. Piping installation requirements are specified in Division 15 Section "Hydronic Piping." Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to unit to allow service and maintenance.
- C. Water Piping: Unless otherwise indicated:
 - 1. Install union and isolation valve on supply-water connection.
 - 2. Install union and calibrated balancing valve or PICCV as indicated on the Drawings on return-water connection.
 - 3. Hydronic specialties are specified in Division 15 Section "Hydronic Piping."

3.4 FIELD QUALITY CONTROL

- A. Testing: Perform the following field tests and inspections and prepare test reports:
 - 1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and units.
- B. Remove and replace malfunctioning units and retest as specified above.
- C. After installing panels, inspect unit cabinet for damage to finish. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.

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3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain radiant heaters and panels.

END OF SECTION 15769

SECTION 15785 - AIR-TO-AIR ENERGY RECOVERY EQUIPMENT

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Sections include the following:
 1. Division 07 Section "Roof Accessories" for roof curb installation.
 2. Division 15 Section "Mechanical General Requirements."
 3. Division 15 Section "Temperature Controls" for control wiring and control devices connected to energy recovery units.

1.2 SUBMITTALS

- A. Product Data: Include rated capacities, furnished specialties, and accessories.
- B. Shop Drawings:

1. Include plans, elevations, sections, details, and attachments to other Work. For installed products indicated to comply with design loads, include structural analysis data.
2. Design Calculations: Calculate requirements for selecting vibration isolators and for designing vibration isolation bases.
3. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include auxiliary motor slides and rails, and base weights.
4. Wiring Diagrams: Power, signal, and control wiring.

C. Field quality-control test reports.

1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain air-to-air energy recovery units through one source from a single manufacturer.
- B. Product Options: Drawings indicate size, profiles, and dimensional requirements of air-to-air energy recovery units and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by an NRTL acceptable to authorities having jurisdiction, and marked for intended use.
- D. ARI Compliance: Ratings for energy recovery devices shall comply with ARI 1060, "Rating Air-to-Air Heat Exchangers for Energy Recovery Ventilation Equipment."
- E. ASHRAE Compliance:
 1. Capacity ratings for air-to-air energy recovery equipment shall comply with ASHRAE 84, "Method of Testing Air-to-Air Heat Exchangers."
- F. NRCA Compliance: Roof curbs for roof-mounted equipment shall be constructed according to recommendations of NRCA.
- G. UL Compliance:
 1. Packaged heat recovery ventilators shall comply with requirements in UL 1812, "Ducted Heat Recovery

Ventilators"; or UL 1815, "Nonducted Heat Recovery Ventilators."

2. Electric coils shall comply with requirements in UL 1995, "Heating and Cooling Equipment."

1.4 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.
- B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 07 Section "Roof Accessories."

1.5 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Filters: Furnish one set of each type of filter specified.
 2. Fan Belts: Furnish one set of belts for each belt-driven fan in energy recovery units.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
 1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 FIXED-PLATE HEAT EXCHANGERS

- A. Manufacturers:
 1. Innovent Air Handling Equipment.
 2. Munters Corporation; Des Champs Products Division.
 3. Venmar CES Inc.
- B. Casing: Aluminum with duct collars.
 1. Insulation: 1-inch thick, foil-faced glass fiber.

2. Drain Pan: Same material as casing, with drain connections on exhaust and supply side.

C. Plates: Construct with plates evenly spaced and sealed and arranged for counter airflow.

1. Plate Material: Minimum 0.008-inch thick, 99.5 percent pure aluminum.

D. Bypass: Construct bypass plenum within casing, with gasketed face-and-bypass dampers having operating rods extended outside casing.

E. Accessories:

1. Filter: 2 inch thick, disposable.

2. Flexible Duct: UL 181, Class 1 insulated.

3. Weather hoods (wall caps) with 1/4-inch bird screen and insulated flexible duct termination.

2.3 PACKAGED ENERGY RECOVERY UNITS

A. Manufacturers:

~~1. Applied Air, Mestek, Inc.~~

~~2. Gouvernaire Corporation.~~

~~3. Greenheck.~~

4. Innovent Air Handling Equipment.

5. Munters Corporation; Des Champs Products Division.

~~6. SEMCO Incorporated.~~

~~7. United Air Specialists, Inc.~~

8. Venmar CES Inc.

B. General: Construct unit as specified. Single wall and 1-inch double wall casing are unacceptable. Fans and coils must be removable without dismantling the structural framing of the unit. Unit shall be suitable for indoor or outdoor installation as detailed on the plan drawings.

C. Base: Construct base of minimum 10 gage welded structural steel with cross supports integral lifting lugs. Base shall be insulated and provided with a minimum 22 gage galvanized G90 steel subfloor. Coat base with 2 part epoxy primer and urethane modified enamel top coat.

D. Flooring: Provide double wall floor construction. Walk on floor material shall be a minimum of 18 ga. galvanized G90

steel. Flooring sheets shall be sealed with a closed-cell neoprene gasket material to minimize sound transmission to spaces located below the unit. Subfloor shall be welded to the base frame.

- E. Framing: Frame is constructed of formed galvanized members designed to support flush-mounted double-wall panels. Framing must have gasketing between support members and panels. Casing must be thermal break construction.
- F. Panels: Unit shall have non-load bearing heavy gauge 2-inch double-wall panels. 22 gage galvanized perforated lining will be provided in the fan sections for additional sound attenuation.
- G. Casing Ratings: Maximum casing panel deflection shall not exceed $L/250$ at 8 inches w.c. TSP (where L is the longest panel span on the unit). Casing shall meet a SMANCA duct class leakage rating of 5 at 8 inches w.c. TSP. The panel insertion loss, per octave band, shall not be less than the following:

Frequency:	<u>100</u>	<u>125</u>	<u>250</u>	<u>500</u>	<u>1000</u>	<u>2000</u>	<u>4000</u>	<u>8000</u>
Insertion loss, dB:	24	16	30	32	33	34	63	60

- H. Insulation: All interior walls, floor, and roof shall be double wall and insulated. Walls and roof are insulated with 2 lb./cu. ft. polyurethane foam insulation having an average R-value of 6 per inch. Floors shall be insulated with 1.5 lb./cu. ft. fiberglass insulation to achieve minimum R16. No insulation shall be exposed to the air stream.
- I. Coatings: Exterior casing shall be coated with 2 part epoxy primer with urethane modified enamel top coat. Interior casing shall be galvanized G90 steel and coated with air-dried phenolic where specified for corrosive environment.
- J. Access Doors: Provide double wall doors insulated with 2 lb./cu. ft. polyurethane foam. Doors shall be full height with stainless steel piano hinges, Allegis corrosion resistant compression latches (tool lockable in fan sections), and minimum 24-inch clear opening width at all walk-in sections. Supply and exhaust air streams shall not be covered by a single door. Provide doors for access to any area requiring routine maintenance. Access panels in lieu of access door are unacceptable.

K. Door Accessories:

1. Access doors shall be provided with stainless steel door tie backs.
2. Door shall be thermal break design.

L. Weather hoods (for outdoor units): Provide weather hoods and bird screens over all exposed inlets and outlets. Ship hoods loose for installation in the field.

M. Roof (for outdoor units): Provide roof with standing seam construction. Pitch roof with sufficient slope to ensure water drainage. Roof overhang to be provided around complete perimeter of the unit.

N. Heat Recovery Device: Fixed-plate heat exchanger.

O. Supply and Exhaust Blower: 12 blade aluminum airfoil plenum fan with minimum L₁₀ 200,000 hour rated bearings. Plenum fans with less than 12 blades are not acceptable due to increased noise levels. Non-airfoil blades are not acceptable due to decreased efficiency of the fan. Hi-Pro Polyester urethane powder coating or equivalent air-dried Heresite coating for corrosive environments.

P. Refer to Division 15 Section "Motors" for general requirements.

Q. Drives: Adjustable for 10 hp motors and smaller, fixed for 15 hp motors and larger. Drives shall be minimum 2-groove with 2 belts and minimum 1.2 service factor. Refer to Division 15 Section "Common Work Results for HVAC" for additional requirements.

R. Isolation: Refer to Division 15 Section "Mechanical Vibration Controls."

S. Accessories:

1. Lube Lines: Provide extended lube lines for fans/motors. Terminate lube lines inside nearest access door.
2. Belt guards / fan outlet safety cages for plenum fans / inlet screens shall be provided.

T. Dampers: Motorized dampers shall be low leakage type with aluminum construction, airfoil blades, vinyl edge seals, metal jamb seals, and synthetic bearings. Gravity dampers

shall have aluminum frame, aluminum blades, extruded vinyl edge seals, and synthetic bearings.

1. Provide the following dampers:

- a. Outside air heat exchanger face sequencing dampers, parallel blade type, two-position actuators. A minimum of 5 dampers are provided across the face of the HX to allow defrost operation without affecting performance.
- b. Exhaust gravity damper.

U. Filters:

1. Mixed Air Filter: Provide 2-inch thick, MERV 8 filter bank downstream of the heat exchanger. Mount in galvanized steel side access slide rack and size for 500 fpm maximum face velocity.
2. Aluminum Outside Air Filter: Provide 2-inch thick, washable aluminum filter bank in the location shown on unit drawing. Mount in galvanized steel front access rack and size for 650 fpm maximum face velocity.

V. Electrical:

1. Wire units according to NEC and ETL list the entire unit. ETL listing of electrical panel only is unacceptable. All major electrical components shall be UL listed. Factory wire unit for single point power connection. Enclose all power wiring in liquid tight conduit.
2. Provide non-fused disconnect, fan motor starters/protectors, contactors, control transformer, control circuit fusing, service switch, and terminal block. Units supplied with VFCs shall have individual branch fusing per drive. A motor protector shall be provided if equipment manufacturer's manual bypass is required.
3. Provide NEMA 3R electrical/control panel.
4. Factory test wiring and controls before shipment.
5. A phase/voltage protection relay shall be provided for each unit. Upon sensing a loss of phase or voltage the unit shall be de-energized.
6. A door safety kill switch shall be provided on all blower section access doors. The door safety kill switch shall de-energize the blower motor if the access door is opened. The kill switch shall prevent motor startup if the blower section access door is open.

7. Lights: Provide vapor proof marine lights in all access sections. Wire lights to a single light switch. Mount light switch near the electrical panel and wire switch to a terminal strip in the electrical panel. Separate 120V power must be provided to the switch. A transformer will be provided to provide power to the lighting circuit.
8. Convenience Receptacles: Provide a GFCI duplex receptacle mounted near the electrical panel and wire receptacle to a terminal strip in the electrical panel. Separate 120V power must be provided to the receptacle. A transformer will be provided to provide power to the circuit.
9. Dirty filter indicators: Provide differential pressure switches across all filter racks. Wire pressure switches to terminal block in main electrical panel.

W. DDC System:

1. Manufacturer must provide a stand-alone programmable digital control system to provide a standard sequence of operation for defrost control strategy, refrigeration system safeties, and head pressure control.
2. All other controls shall be provided and installed in the field by the Temperature Controls contractor.

2.4 DEHUMIDIFICATION UNITS

A. Manufacturers:

1. Innovent Air Handling Equipment.

- B. General: Construct unit as specified. Single wall and 1-inch double wall casing are unacceptable. Fans and coils must be removable without dismantling the structural framing of the unit. Unit shall be suitable for indoor or outdoor installation as detailed on the plan drawings.
- C. Base: Construct base of minimum 10 gage welded structural steel with cross supports integral lifting lugs. Bolted bases are unacceptable. Base shall be insulated and provided with a minimum 22 gage galvanized G90 steel subfloor. Coat base with 2 part epoxy primer and urethane modified enamel top coat.
- D. Flooring: Provide double wall floor construction. Walk on floor material shall be a minimum of 0.072-inch aluminum tread plate. Flooring sheets shall be sealed with a closed-cell neoprene gasket material to minimize sound transmission to spaces located below the unit.

- E. **Framing:** Frame is constructed of aluminum members designed to support double-wall panels. Framing must have gasketing between support members and panels.
- F. **Panels:** Unit shall have non-load bearing heavy gauge 2-inch double-wall panels. Interior panels exposed to the pool air shall be constructed of aluminum or steel with a baked corrosion resistant coating.
- G. **Casing Ratings:** Maximum casing panel deflection shall not exceed $L/250$ at 8 inches w.c. TSP (where L is the longest panel span on the unit). Casing shall meet a SMANCA duct class leakage rating of 5 at 8 inches w.c. TSP. The panel insertion loss, per octave band, shall not be less than the following:
- | | | | | | | | | |
|---------------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|
| Frequency: | <u>100</u> | <u>125</u> | <u>250</u> | <u>500</u> | <u>1000</u> | <u>2000</u> | <u>4000</u> | <u>8000</u> |
| Insertion loss, dB: | 24 | 16 | 30 | 32 | 33 | 34 | 63 | 60 |
- H. **Insulation:** All interior walls, floor, and roof shall be double wall and insulated. Walls and roof are insulated with 2 lb./cu. ft. polyurethane foam insulation having an average R-value of 6 per inch. Floors shall be insulated with 1.5 lb./cu. ft. fiberglass insulation to achieve minimum R16. No insulation shall be exposed to the air stream.
- I. **Coatings:** Exterior casing shall be coated with 2 part epoxy primer with urethane modified enamel top coat. Galvanized exterior unacceptable if unit casing or framework is welded. Interior casing shall be aluminum or galvanized with a baked corrosion resistant coating. All steel parts exposed to the pool air shall be coated with air-dried phenolic.
- J. **Access Doors:** Provide double wall doors insulated with 2 lb./cu. ft. polyurethane foam. Doors shall be full height with stainless steel piano hinges, Allegis corrosion resistant compression latches (tool lockable in fan sections), and minimum 24-inch clear opening width at all walk-in sections. Supply and exhaust air streams shall not be covered by a single door. Provide doors for access to any area requiring routine maintenance. Access panels in lieu of access door are unacceptable.
- K. **Door Accessories:**

1. Access doors shall be provided with aluminum door tie backs.
- L. Weather hoods (for outdoor units): Provide weather hoods and bird screens over all exposed inlets and outlets. Ship hoods loose for installation in the field.
- M. Roof (for outdoor units): Provide roof with standing seam construction. Pitch roof with sufficient slope to ensure water drainage. Roof overhang to be provided around complete perimeter of the unit.
- N. Heat Recovery Device: Fixed-plate heat exchanger.
- O. Supply and Exhaust Blower: 12 blade aluminum airfoil plenum fan. Plenum fans with less than 12 blades are not acceptable due to increased noise levels. Non-airfoil blades are not acceptable due to decreased efficiency of the fan. Hi-Pro Polyester urethane powder coating or equivalent air-dried Heresite coating for corrosive environments.
- P. Refer to Division 15 Section "Motors" for general requirements.
- Q. Drives: Adjustable for 10 hp motors and smaller, fixed for 15 hp motors and larger. Refer to Division 23 Section "Common Work Results for HVAC" for additional requirements.
- R. Isolation: Refer to Division 15 Section "Mechanical Vibration Controls."
- S. Accessories:
 1. Variable Frequency Controllers: Provide variable frequency controller for the exhaust fan. VFC shall be factory provided and installed inside the unit behind an access door.
 - a. VFC Options Required: Manual bypass. Exhaust fan VFC shall be provided with building static pressure control (sensor shipped loose for field installation.
- T. Dampers: Motorized dampers shall be low leakage type with aluminum construction, airfoil blades, vinyl edge seals, metal jamb seals, and synthetic bearings. Gravity dampers shall have aluminum frame, aluminum blades, extruded vinyl edge seals, and synthetic bearings. All dampers exposed to

the pool air (exhaust damper & recirculation air damper) must be constructed of aluminum.

1. Provide the following dampers:

- a. Outside air damper.
- b. Outside air heat exchanger face sequencing dampers, parallel blade type, two-position actuators. A minimum of 5 dampers are provided across the face of the heat exchanger to allow defrost operation without affecting performance.
- c. Outside air heat exchanger bypass damper, parallel blade type, 2-position actuator.
- d. Exhaust gravity damper.
- e. Recirculation Damper.

U. Filters:

1. Aluminum Outside Air Filter: Provide 2-inch thick, washable aluminum filter bank in the location shown on unit drawing. Mount in galvanized steel front access rack and size for 500 fpm maximum face velocity.
2. Aluminum Return Air Filter: Provide 2-inch thick, washable aluminum filter bank in the location shown on unit drawing. Mount in galvanized steel front access rack and size for 650 fpm maximum face velocity.

V. Indirect Fired Duct Furnace: Indirect fired duct furnace provided with performance as specified in the schedule. Furnace shall be ETL listed using ANSI Z83.8 standards. Furnace shall have a tubular heat exchanger constructed of Type 409 stainless steel. Tubes shall have integral formed dimples to maximize heat transfer and condensate drainage. Burner assembly shall include inshot type burners, electronic spark ignition system, high temperature safety control, air proving switch, and draft inducer.

1. Allowable Gas Inlet Pressure: 6 inches to 14 inches w.c.
2. Gas Valve: Minimum 4:1 turndown electronic modulating or turndown as scheduled, whichever is greater.
3. Vent Pipe For Indoor Unit: Furnished and installed by the Contractor.

W. Direct Expansion Refrigerant Coils:

1. Performance Ratings: Tested and rated according to ARI 410 and ASHRAE 33.
 2. Minimum Working-Pressure Rating: 300 psig.
 3. Source Quality Control: Factory tested to 450 psig.
 4. Tubes: ASTM B 743 copper, minimum 0.020 inch wall thickness, and minimum 0.50 inch diameter.
 5. Fins: Aluminum, minimum 0.010 inch thick.
 6. Suction and Distributor Piping: ASTM B 88, Type L copper tube with brazed joints.
 7. Frames: ASTM A 666, Type 304 stainless steel, minimum 0.0625 inch thick.
- X. Hot Gas Reheat Coil: Provide ARI rated coil with 0.016-inch thick copper tubes, stainless casing, and rippled aluminum plate fin secondary surface with a thickness of 0.0075-inch.
1. Coil: Dehydrated with 140 deg F DB/40 deg F dew point air before shipment.
 2. Source Quality Control: Tested with 315-psig air pressure under warm water and guaranteed for 250 psig working pressure.
 3. Provide coil with a three-way modulating control valve.
 4. Coils need to be epoxy coated for corrosion protection.
- Y. Integral Condensing Unit: Provide integral air cooled condensing system factory piped, wired, charged, and tested. Entire condensing section must be assembled by the unit manufacturer. Skid mounting another manufacturers condensing unit is not acceptable.
1. Provide hermetic scroll type compressors with suction and discharge service valves, reverse rotation protection, sight glass, oil level adjustment, oil filter, rotary dirt trap, non-short cycling control, and high and low pressure limits. Lead compressor shall be digital for capacity control.
 2. Provide condenser coils with galvanized casing, seamless copper tubes, and aluminum fins.

3. Condenser fans shall be direct drive with fan guards.
4. Independent circuits shall be provided completely tested, dehydrated, and fully charged with refrigerant and oil.
5. Drains must be provided in the base of each condensing section to eliminate standing water.

Z. Electrical:

1. Wire units according to NEC and ETL list the entire unit. ETL listing of electrical panel only is unacceptable. All major electrical components shall be UL listed. Factory wire unit for single point power connection. Enclose all power wiring in liquid tight conduit.
2. Provide fused disconnect, fan motor starters/protectors, contactors, control transformer, control circuit fusing, service switch, and terminal block. Units supplied with VFCs shall have individual branch fusing per drive. A motor protector shall be provided if equipment manufacturer's manual bypass is required.
3. Provide NEMA 3R electrical/control panel.
4. Factory test wiring and controls before shipment.
5. A phase/voltage protection relay shall be provided for each unit. Upon sensing a loss of phase or voltage the unit shall be de-energized.
6. A door safety kill switch shall be provided on all blower section access doors. The door safety kill switch shall de-energize the blower motor if the access door is opened. The kill switch shall prevent motor startup if the blower section access door is open.
7. Lights: Provide vapor proof marine lights in all access sections. Wire lights to a single light switch. Mount light switch near the electrical panel and wire switch to a terminal strip in the electrical panel. Separate 120V power must be provided to the switch. A transformer will be provided to provide power to the lighting circuit.
8. Convenience Receptacles: Provide a GFCI duplex receptacle mounted near the electrical panel and wire receptacle to a terminal strip in the electrical panel. Separate 120V

power must be provided to the receptacle. A transformer will be provided to provide power to the circuit.

9. Dirty filter indicators: Provide differential pressure switches across all filter racks. Wire pressure switches to terminal block in main electrical panel.

AA. Piping: Fabricate units with space within housing for piping.

BB. DDC System:

1. Manufacturer must provide a stand-alone programmable digital control system for complete temperature & humidity control of the delivered air. The manufacturer will provide a standard sequence of operation for the type of equipment provided per this specification. The controller will be programmed to control room temperature and humidity. The sequence of operation will include the following:
 - a. Temperature control for all heating & cooling devices.
 - b. Humidity control for all cooling devices.
 - c. Humidity control using the OA & RA dampers.
 - d. Economizer control for free cooling.
 - e. Defrost control for all energy recovery devices.
 - f. Pressure control for exhaust fan.
 - g. The controller will communicate with the BAS through a Bacnet IP.

CC. Special Construction and Coatings:

1. Interior casing exposed to the pool air shall be constructed of aluminum or steel with a baked corrosion resistant coating.
2. Blowers shall be completely coated with Hi-Pro Polyester..
3. Steel parts exposed to the pool air shall be coated with air-dried phenolic.
4. Coils exposed to the pool air shall be coated with baked phenolic.
5. Recirculation damper, exhaust damper, and backdraft damper must be constructed of aluminum.

6. **VFC must be provided for the exhaust fan to control space pressure.**

DD. Source Quality Control:

1. **Verification of Performance: Factory test and rate dehumidification units according to ARI 910.**
2. **Sound-Power-Level Ratings: Factory test and rate dehumidification units according to ARI 575.**

2.5 ROOF CURBS

- A. **Roof Curb: Manufacturer's 12-inch prefabricated insulated roof curb. Curb will be suitable for flat roof. Curb will be shipped disassembled.**
- B. **Isolation Curb: Where scheduled, refer to Division 15 Section "Mechanical Vibration Controls."**

PART 3 - EXECUTION

3.1 INSTALLATION

- A. **Install fixed-plate heat exchangers so supply and exhaust airstreams flow in opposite directions.**
 1. **Install duct access doors in both supply and exhaust ducts, both upstream and downstream, for access to heat exchanger. Access doors and panels are specified in Division 15 Section "Duct Accessories."**
- B. **Install heat wheels so supply and exhaust airstreams flow in opposite directions and rotation is from exhaust side to purge section to supply side.**
 1. **Install access doors in both supply and exhaust ducts, both upstream and downstream, for access to wheel surfaces, drive motor, and seals.**
 2. **Install removable panels or access doors between supply and exhaust ducts on building side for bypass during startup.**
 3. **Access doors and panels are specified in Division 15 Section "Duct Accessories."**

4. For outdoor units: Provide waterproof roof with standing seam construction and positive slope to ensure water drainage.
- C. Install heat-pipe heat exchangers so supply and exhaust airstreams flow in opposite directions. Install flexible connectors on ducts to enable tilt control; make connections airtight and with slack to compensate for full tilt.
1. Install heat exchanger with clearance space for heat-pipe coil removal.
 2. Install duct access doors in both supply and exhaust ducts, both upstream and downstream, for access to both sides of heat-pipe coil. Access doors and panels are specified in Division 15 Section "Duct Accessories."
 3. Install tilt-control components, including electronic controller, electric actuator and linkage, thermostats, and sensors.
- D. Install fixed-plate heat exchangers so supply and exhaust airstreams flow in opposite directions.
1. Install duct access doors in both supply and exhaust ducts, both upstream and downstream, for access to heat exchanger. Access doors and panels are specified in Division 15 Section "Duct Accessories."
- E. Install floor-mounted units on 4-inch- high concrete base.
- F. Support suspended units from structure; use threaded steel rods.
- G. Install units with clearances for service and maintenance.
- H. Install new filters at completion of equipment installation and before testing, adjusting, and balancing.
- I. Pipe condensate drains from heat exchanger units and drain pans to nearest floor drain or roof drain; use ASTM B 88, Type L, drawn-temper copper water tubing with soldered joints, same size as condensate drain connection. Provide electrical heat trace for condensate drains for roof mounted equipment.

3.2 CONNECTIONS

- A. **Piping installation requirements are specified in other Division 15 and 15 Sections. Drawings indicate general arrangement of piping, fittings, and specialties. Units shall be provided complete for single point connection to hydronic piping system.**
- B. **Install piping adjacent to machine to allow service and maintenance.**
- C. Duct and fan installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of ducts, fittings, and specialties.
- D. Ground equipment according to Division 16 Section "Grounding and Bonding."
- E. Connect wiring according to Division 16 Section "Conductors and Cables."
- F. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including piping and electrical connections. Report results in writing.
 - 1. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 2. Adjust seals and purge.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 4. Set initial temperature and humidity set points.
 - 5. Set field-adjustable switches and circuit-breaker trip ranges as indicated.
- B. Air-to-air energy recovery equipment will be considered defective if it does not pass tests and inspections.

- C. Remove malfunctioning units, replace with new units, and retest as specified above.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units. Refer to Division 15 Section "Mechanical General Requirements."

END OF SECTION 15785

HARDWARE SET NO. 46

(ADDED 02-12-16 FOR DOORS J153B, J161B & J161C)

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
2	EA	FIRE EXIT HARDWARE	9849-L-F-06-LBL	626	VON
2	EA	SFIC RIM HOUSING	80-129	626	SCH
2	EA	SURFACE CLOSER	4021	689	LCN
2	EA	MOUNTING PLATE	4020-18G	689	LCN
2	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
2	EA	WALL STOP	WS33	626	IVE
1	SET	SEALS	107NA	CL	NGP
1	SET	ASTRAGAL	115NA	CL	NGP
2	EA	DOOR BOTTOM	423N	AL	NGP
1	EA	THRESHOLD	411	AL	NGP

NOTES:

1. NOT ALL WALL TYPES ARE USED.
2. EXTEND WALLS UP FULL HEIGHT TO DECK ABOVE (U.N.O.)
3. DO NOT FASTEN VERTICAL STUDS TO TOP RUNNER TRACK @ SECOND FLOOR ASSEMBLIES TO ALLOW FOR DEFLECTION OF STRUCTURE WITHOUT COMPROMISING WALL INTEGRITY.

WALL TYPES:

- (A) NOMINAL 5", ACTUAL 4 3/8";
 3/4" HIMPACT GYP BD BOTH SIDES OF 3 3/8" 20 GA METAL STUDS AT 1'-4" OX MAX W SOUND ATTEN BLANKETS IN ALL VOIDS FULL HEIGHT
- (B) NOMINAL 8", ACTUAL 7 1/2";
 4" BRICK ON 4" CMU FULL HEIGHT TO DECK ABOVE.
- (C) NOMINAL 8", ACTUAL 7 3/8";
 8" CMU
- (D) NOMINAL 12", ACTUAL 11 1/2";
 12" CMU
- (E) NOMINAL 6", ACTUAL 5 5/8";
 12" CMU
- (F) SAME AS WALL TYPE 'A' BUT STOP AT UNDERSIDE OF FINISHED CEILING - SECURE TO CEILING CONSTRUCTION AS REQUIRED
- (G) NOMINAL 7";
 3/4" HIMPACT GYP BOARD BOTH SIDES OF 6"-20 GA METAL STUD AT 1'-4" OX MAX W SOUND ATTEN. BLANKETS IN ALL VOIDS FULL HT.
- (H) NOMINAL 5" (PARTIAL HEIGHT);
 3/4" HIMPACT GYP BOARD ON BOTH SIDES OF 20 GA METAL STUDS AT 1'-4" OX MAX. 3/4" HOWD CAP
- (J) 3/4" HIMPACT GYP BOARD LAMINATED TO EXIST MASONRY CONSTRUCTION - SEE SECTIONS & ELEVATIONS FOR HEIGHT INFO
- (K) 3/4" HARDWOOD VENEER PLYWOOD PANELS ON 3/4" FURRING - SEE INTERIOR ELEVATIONS & DETAILS FOR ADDITIONAL INFORMATION
- (L) 3/4" HIMPACT GYP BOARD ON 3 3/8" 20 GA METAL STUDS AT 1'-4" OX MAX - INFFILL FULL HEIGHT AT EXISTING FIRE CURTAIN POCKET
- (M) NOMINAL 4", ACTUAL 3 5/8";
 4" CMU

FIRE RATED WALL TYPES:

NOTE:

EXTEND WALLS UP FULL HEIGHT TO DECK ABOVE. FILL ALL VOIDS AT DECK FLUTES WITH SAFING MATERIAL AND APPROVED FIRE SPRAY SEALANTS ON BOTH SIDES AS SPECIFIED.

- 1 HOUR RATING (UL-1438)**
 NOMINAL 5", ACTUAL 4 1/8"
 3/8" TYPE 'X' FIRE RATED GYP SOUND BD BOTH SIDES OF 3 3/8" 20 GA METAL STUDS AT 14" O.C MAX W/ SOUND ATTEN BLANKETS IN ALL VOIDS FULL HT..
- 2 HOUR RATING - FIRE WALL (UL-xxx)**
 NOMINAL 8", ACTUAL 7 3/8"
 NEW 8" CMU TO DECK ABOVE
- 2 HOUR RATING - FIRE WALL (UL-xxx)**
 NOMINAL 12", ACTUAL 11 3/8"
- 1 HOUR RATING - FIRE WALL (UL-xxx)**
 NOMINAL 12"
 4" BRICK ON 8" CMU UP TO DECK ABOVE
- 2 HOUR RATING - FIRE WALL (UL-xxx)**
 NOMINAL 8" CMU, ACTUAL 7 3/8"
- 2 HOUR RATING - FIRE WALL (UL-xxx)**
 NOMINAL 12" CMU, ACTUAL 11 3/8"

NOTES:

1. NOT ALL NOTES ARE USED
2. REFER TO ROOM FINISH SCHEDULE FOR NEW CEILING LOCATIONS

REFLECTED CEILING PLAN KEY NOTES:

- | | |
|---|--|
| 1 | REWORK EXISTING AND/OR PROVIDE NEW LAY-IN CEILING SYSTEM AS REQ'D FOR NEW WALL CONSTRUCTION. ADD NEW TILES / GRID ETC TO CONTINUE EXISTING PATTERN AS REQUIRED (W/F) |
| 2 | NEW PAINTED SUSPENDED GYP BD CEILING SYSTEM |
| 3 | NEW LAY-IN CEILING SYSTEM SUSPENDED IN NEW METAL GRID. |
| 4 | NEW PAINTED GYP. BD. SOFFIT ON METAL FRAME @ 16" O.C. |
| 5 | EXIST GYP. BD. CLG / SOFFIT (PAINT) ON METAL FRAME TO REMAIN. |
| 6 | EXPOSED TO STRUCTURE ABOVE - PAINT EXPOSED SURFACES (E.G. STRUCTURE, CONDUITS, DUCTWORK, ETC). |
| 7 | REMOVE & REPLACE EXISTING CEILING TILE & GRID AS REQUIRED FOR INSTALLATION OF NEW RTU, FRAMING, DUCTWORK, ETC. |

FLOOR PLAN KEYNOTES (CONT'D):

- | | |
|-----|--|
| 100 | NEW SOAP DISPENSER AND 36"x36" MIRROR. |
| 100 | NEW URINAL SCREEN. |
| 100 | REMOVE EXISTING DRINKING FOUNTAIN - CAP UTILITIES BEHIND WALL - PATCH LEVEL. |
| 107 | SAWCUT/REMOVE CONCRETE FLOOR FOR NEW UNDERGROUND PLUMBING. COORDINATE LOCATIONS WITH MECHANICAL. PROVIDE NEW 4" CONCRETE ON COMPACTED FILL WHEN COMPLETE. |
| 108 | PROVIDE NEW ROLLED W4x13 TO SPAN BETWEEN EXISTING STEEL BEAMS FORMING VAULTED ROOF UNDER FOOTPRINT OF NEW EXHAUST FAN. (SEE MECHANICAL FOR COORDINATION OF ROOF OPENING SIZE AND LOCATION). REMOVE METAL ROOF DECK UNDER UNIT AFTER W4x13S ARE IN PLACE. PAINT BEAMS TO MATCH EXISTING (E.P.F.). |
| 109 | REMOVE EXISTING SLAT WALL FROM CMU WALL FULL HEIGHT AND WIDTH. PATCH WALL LEVEL FOR NEW PAINT. |
| 110 | SAWCUT FLOOR FOR NEW UNDERGROUND ELECTRICAL AND PLUMBING. PATCH WITH NEW 4" CONCRETE ON COMPACTED FILL. COORDINATE LOCATIONS WITH MECHANICAL, ELECTRICAL AND PLUMBING CONTRACTORS. |
| 111 | REMOVE EXISTING STEEL FRAMED CATWALK CONSTRUCTION COMPLETE INCLUDING HANGARS, BRACING, ETC. UP TO ROOF FRAMING. |
| 112 | FURNISH AND INSTALL NEW STEEL FRAMED CATWALK CONSTRUCTION COMPLETE INCLUDING HANGARS, BRACING, ETC. UP TO ROOF FRAMING - REFER TO STRUCTURAL DRAWINGS AND ARCHITECTURAL DETAILS. |
| 113 | REMOVE MASONRY WALL UP TO STEEL LINTEL - SEE SECTIONS AND DETAILS |
| 114 | REMOVE EXIST STEEL CATWALK CONSTRUCTION COMPLETE INCLUDING ALL FRAMING UP TO ROOF DECK ABOVE |
| 115 | EXISTING CATWALK CONSTRUCTION TO REMAIN |
| 116 | NEW CATWALK CONSTRUCTION - REFER TO STRUCTURAL DRAWINGS AND DETAILS |
| 117 | EXISTING PLASTER BULKHEAD AND FRAMING TO REMAIN |
| 118 | EXISTING STEEL TRUSS AND ROOF FRAMING TO REMAIN |
| 119 | REMOVE ACOUSTIC PANELS AND WOOD VERTICAL STRIPS FULL HEIGHT ON REAR WALL |
| 120 | REMOVE ACOUSTIC PANELS AND WOOD VERTICAL STRIPS FULL HEIGHT ALONG STAGE WALL - SEE DETAILS |
| 121 | PAINT ALL SIDE WALLS AND EXPOSED CONDUTITS ROOF DECK, ROOF FRAMING, DUCTWORK, PIPING, CATWALKS AND CATWALK FRAMING, ETC. ABOVE TOP LINE OF ACOUSTIC WALL PANELS |
| 122 | PAINT ALL WALLS AND EXPOSED CONDUTITS, PIPES, ROOF DECK, ROOF FRAMING, DUCTWORK, HANGARS, PIPING, STEEL SUPPORTS, CATWALKS AND CATWALK FRAMING, ETC. IN BACK STAGE AREA. FULL HEIGHT FROM STAGE FLOOR TO ROOF DECK. |
| 123 | SALVAGE EXISTING LOCKERS FROM HIGH SCHOOL LOCKER ROOMS AND REINSTALL IN MIDDLE SCHOOL LOCKER ROOMS ON NEW 4" CONCRETE BASES. SEE PLANS FOR ADDITIONAL INFORMATION. |

FLOOR PLAN KEYNOTES (CONT'D):

- | | |
|-----|--|
| 54 | REMOVE EXIST 8'-0" H FOLDING PARTITION, TRACK AND TRIM UP TO EXIST SOFFIT AS REQST TO INSTALL NEW GYP BD PARTITION TO UNDERSIDE OF EXIST SOFFIT. |
| 55 | INSTALL NEW FLOOR IN ENTIRE ROOM OR CORRIDOR, FLOOR TO CONTAIN UP TO THREE (3) DIFFERENT COLORS AND PATTERNS. EXACT COLORS AND PATTERNS TO BE DETERMINED. REFER TO ROOM FINISH SCHEDULE FOR MATERIAL. |
| 56 | INSTALL PATTERN IN NEW FLOOR AT THIS LOCATION AS SHOWN. PATTERN TO BE UP TO 25 SQUARE FEET IN SIZE AND CONTAIN UP TO FOUR (4) DIFFERENT COLORS. EXACT COLORS AND PATTERNS TO BE DETERMINED. REFERENCE TO ROOM FINISH SCHEDULE FOR MATERIAL. |
| 57 | EXISTING BASE & WALL CABINETS TO REMAIN |
| 58 | INFILL DOOR OPENING WITH GYP BD / STUDS WALL. |
| 59 | REMOVE GYP BD WALL CONSTRUCTION SHOWN DASHED & MODIFY TO CREATE 8'-0" (H) OPENING IN WALL. ADD NEW METAL STUD BOV HEADER TO SPAN TOP OF OPENING FROM JAMB TO JAMB. ADD METAL STUD JOCKERS ABOVE CEILING TO ROOF FRAMING ABOVE AT 2'-0" OC MAX. |
| 60 | PAINT WALL FULL WIDTH & FULL HEIGHT TO CEILING WITH MARKER BOARD PAINT. |
| 61 | REMOVE EXISTING WOOD STAIRS & RAISED WOOD FLOOR LANDING DOWN TO CONCRETE FLOOR. PATCH CONCRETE FLOOR LEVEL. |
| 62 | NEW WALL MOUNTED HAIR DRYER - SEE SPEC. |
| 63 | REMOVE EXISTING ROLL-DOWN GRILLE & COUNTER. INFILL OPENING W/ CMU TO MATCH EXISTING WALL THICKNESS & TOOTH-N-JAMBS TO MATCH COURSING. |
| 64 | SAW CUT / REMOVE MASONRY WALL BELOW DOOR OPENING TO PROVIDE TALLER MASONRY OPENING FOR NEW DOOR AND FRAME. PATCH FLOOR LEVEL AS REQUIRED. |
| 65 | REMOVE EXISTING ROLL-DOWN GRILLES (2) AND WINDOW FRAMES IN ENTIRE OPENING. PATCH AND REPAIR JAMBS TO RECEIVE NEW ROLL-DOWN COUNTER SHUTTER. |
| 66 | REMOVE EXISTING BUILT-IN CASEWORK AND PROVIDE NEW AS DETAILED. |
| 67 | REMOVE EXISTING STAIRS TO PROJECTION BOOTH ABOVE |
| 68 | REMOVE UPPER LEVEL CONCRETE FLOOR SLAB OF PROJECTION BOOTH ABOVE |
| 69 | EXISTING AHU & CONC CURB TO REMAIN |
| 70 | NEW GUARDRAIL - SEE SPEC |
| 71 | NEW WALL UP TO ROOF DECK - SEE PLAN FOR PARTITION TYPE |
| 72 | NEW 2'-0" DEEP PLAM COUNTERTOP |
| 73 | REMOVE PORTION OF MASONRY WALL TO WIDEN OPENING |
| 74 | REMOVE MARBLE PARTITIONS COMPLETE. PATCH FLOOR LEVEL. |
| 75 | REMOVE RAISED CURB CONSTRUCTION - PATCH FLOOR LEVEL. |
| 76 | INFILL PERIMETER TRENCH WITH CONCRETE AFTER PLUMBING IS CAPPED OFF. REFER TO MECHANICAL DRAWINGS |
| 77 | REMOVE EXISTING PEDESTAL BENCH COMPLETE. PATCH FLOOR LEVEL. |
| 78 | REMOVE EXISTING MARKER AND TACK BOARDS AND PROVIDE/INSTALL NEW MARKER AND TACK BOARDS IN SAME LOCATIONS ON WALL. SEE PLANS FOR SIZES |
| 79 | REMOVE VINYL WALL COVERING - SKIM COAT WALLS AND SAND AND PAINT (FULL HEIGHT AND WIDTH) |
| 80 | REMOVE EXISTING WOOD BENCH AND STEEL SUPPORTS. PATCH FLOOR LEVEL TO MATCH ADJOINING FLOOR SURFACES. |
| 81 | REMOVE MASONRY TO WIDEN OPENING. PATCH WALL TO MATCH EXISTING. |
| 82 | REMOVE GUTTER. FILL IN LEVEL WITH ADJACENT FLOOR. |
| 83 | LOCKERS TO REMAIN AND BE ELECTROSTATICALLY PAINTED. |
| 84 | NEW TOILET PARTITIONS. |
| 85 | REMOVE EXISTING TOILET PARTITIONS. PATCH FLOORS AND WALLS LEVEL. |
| 86 | REMOVE CMU KNEEWALL COMPLETE. PATCH FLOORS AND WALLS LEVEL TO MATCH. |
| 87 | REMOVE WASHER AND DRYER UNITS COMPLETE INCLUDING ALL PLUMBING, ELECTRICAL AND RAISED CONCRETE PAD. PATCH FLOOR LEVEL. |
| 88 | REMOVE RECESSED PIT PLUMBING AND STEEL GRATE. INFILL WITH CONCRETE LEVEL WITH ADJACENT FLOOR (V.I.F.). |
| 89 | REMOVE RAISED CURB. PATCH FLOOR LEVEL TO MATCH ADJOINING FLOOR SURFACES. |
| 90 | OWNER EQUIPMENT. |
| 91 | EXISTING DOOR AND FRAME TO BE REMOVED BY OTHERS. |
| 92 | STAGE FIRE CURTAIN TO BE REMOVED BY OTHERS. |
| 93 | FUTURE FURNITURE (NOT IN CONTRACT). |
| 94 | REMOVE WALL SAFE - TURN OVER TO OWNER. INFILL WITH CMU TO MATCH THICKNESS AND COURSING. |
| 95 | REMOVE WOOD SHELVING COMPLETE. INFILL WITH 6" CMU TO MATCH COURSING. |
| 96 | PROVIDE NEW CARPET ON STAIRS WITH RUBBER NOSINGS AND VISUAL WARNING STRIPS. |
| 97 | NEW RUBBER TREADS AND RISERS ON ALL STAIRS THIS AREA. |
| 98 | REMOVE CONCRETE FLOOR SLAB ABOVE, COMPLETE. |
| 99 | SAWCUT/REMOVE 6" CONCRETE FLOOR SLAB TO PROVIDE ACCESS FOR NEW UNDER FLOOR CONDUTS. PATCH FLOOR LEVEL WITH NEW 6" CONCRETE ON COMPACTED FILL UPON COMPLETION. (VERIFY WIDTH OF TRENCH WITH ELECTRICAL CONTRACTOR) |
| 100 | EXISTING RAISED FLOOR TO REMAIN - MODIFY AS REQUIRED FOR NEW WALL LOCATION. |
| 101 | PROVIDE NEW SLAT WALL FINISH OVER NEW CMU WALL FULL HEIGHT - MATCH COLOR OF EXISTING SLAT WALL IN ROOM (V.I.F.). |
| 102 | NEW WALL CONSTRUCTION TO 7'-0" ABOVE FINISHED FLOOR - COVER IN SLAT WALL TO MATCH EXISTING ROOM (V.I.F.) - INSTALL (8) 15"x15"x12" DEEP x 4" HIGH CONCRETE BASE. |
| 103 | REMOVE WALL SHELVING - PATCH HOLES. |

FLOOR PLAN KEY NOTES:

- | | |
|----|--|
| 1 | REMOVE EXISTING WINDOW TREATMENT COMPLETE AND INSTALL NEW WINDOW TREATMENT PER SPECIFICATIONS AT ALL EXTERIOR WINDOWS - VERIFY OPENING DIMENSIONS IN FIELD. |
| 2 | REMOVE EXISTING DOOR AND FRAME ASSEMBLY COMPLETE. |
| 3 | REMOVE EXISTING BUILT IN BASE AND/OR WALL CABINETS COMPLETE, INCLUDING PLUMBING FIXTURES IF APPLICABLE. CAP UTILITIES AS REQUIRED - REFER TO MECHANICAL DRAWINGS. |
| 4 | REMOVE EXISTING LAY-IN CEILING CONSTRUCTION COMPLETE, INCLUDING HANGERS, LIGHT FIXTURES, SPEAKERS, SPRINKLER ESCUTCHEONS, FIRE ALARM DEVICES, ETC. |
| 5 | REMOVE EXISTING FLOORING MATERIAL AND BASE MATERIAL COMPLETE. SCRAPE MASTIC FROM CONCRETE FLOORS CLEAN (DO NOT USE CHEMICAL REMOVAL TECHNIQUES). FILL AND LEVEL TO PREPARE FOR NEW FINISHES AS INDICATED ON DRAWINGS AND SCHEDULES. |
| 6 | NEW WALK-OFF MAT MATERIAL. |
| 7 | REMOVE EXIST HAND CEILING CONSTRUCTION COMPLETE INCLUDING ALL SUPPORT FRAMING - VERIFY HIEGT IN FIELD. |
| 8 | REMOVE PORTION OF EXISTING WALL FOR NEW DOOR OPENING. PROVIDE PRE-CAST MASONRY LINTEL TO SPAN OPENING. PATCH JAMBS WITH BULL NOSED MASONRY TO MATCH EXIST THICKNESS. PATCH FLOOR LEVEL AS REQ'D. |
| 9 | PATCH EXISTING VOID IN WALL W/ NEW MASONRY/SGFOT TO MATCH EXISTING. |
| 10 | REMOVE EXISTING HAND RAIL COMPLETE. PATCH HOLES IN FLOOR FLUSH AND LEVEL TO MATCH EXISTING (VIF). |
| 11 | REMOVE EXISTING INTERIOR GLAZING COMPLETE, INCLUDING FRAME. |
| 12 | REMOVE EXISTING SUSPENDED HARD SURFACE SOFFIT COMPLETE - INCLUDING ALL RELATED FRAMING. |
| 13 | REMOVE EXISTING DOOR, HINGES, AND HARDWARE. EXISTING FRAME TO REMAIN. |
| 14 | REMOVE EXISTING SECURITY GATE, CEILING, AND FRAME COMPLETE. PATCH AND REPAIR WALLS, TRACKS AND FLOORS AS NEEDED. FINISH SIMILAR TO ADJACENT MATERIALS. |
| 15 | REMOVE EXISTING TOILET PARTITIONS, PLUMBING FIXTURES AND ALL WALL MOUNTED ACCESSORIES IN ENTIRE ROOM. CUT AND CAP ALL PLUMBING FLUSH TO WALL OR FLOOR. REFER TO MECH DWGS. |
| 16 | REMOVE WINDOW ASSEMBLY COMPLETE INCLUDING GLASS AND FRAME. |
| 17 | REMOVE WOOD MALBOX SHELVING COMPLETE - INFILL WITH MASONRY TO MATCH COURSING. |
| 18 | REMOVE PORTION OF EXISTING WALL FOR NEW WINDOW AND FRAME. PROVIDE PRE-CAST MASONRY LINTEL TO SPAN OPENING. PATCH JOINTS TO MATCH EXIST FINISHES. PROVIDE GALVANIZED STEEL ANGLE TO SUPPORT BRICK VENEER. |
| 19 | REMOVE EXISTING STOREFRONT SYSTEM COMPLETE. PATCH ADJACENT WALL SURFACES TO REMAIN TO MATCH EXISTING FINISHES. PATCH FLOOR LEVEL AS REQ'D. |
| 20 | REMOVE EXISTING WALL CONSTRUCTION COMPLETE - SHOWN DASHED - UP TO ROOF DECK ABOVE, INCLUDING GLASS PANEL AND FRAMES IF APPLICABLE. PATCH ADJACENT WALL SURFACES TO REMAIN TO MATCH EXISTING FINISHES. PATCH FLOOR LEVEL AS REQUIRED TO RECEIVE NEW FLOOR FINISH. |
| 21 | REMOVE EXISTING DISPLAY CASE, GLASS, WOOD TRIM, SHELVES, AND ALL BRACKETS COMPLETE AS REQUIRED FOR NEW WORK. |
| 22 | EXISTING CASEWORK TO BE REMOVED AND RELOCATED AS DIRECTED IN FIELD BY ARCHITECT. |
| 23 | SAWCUT AND REMOVE EXISTING MASONRY WALL BELOW EXISTING BORROWED LITE TO BE REMOVED. PATCH JAMBS AS REQUIRED FOR NEW WORK. PATCH FLOOR LEVEL AS REQUIRED. |
| 24 | EXISTING COLUMN TO REMAIN. |
| 25 | REMOVE EXISTING WINDOW & FRAME COMPLETE AND INFILL WITH GYP. BD & STUDS TO MATCH EXISTING WALL. |
| 26 | INFILL DOOR OPENING W/ MASONRY TO MATCH EXISTING WALL THICKNESS AND TOOTH-HI JAMBS TO MATCH COURSING (VIF). |
| 27 | PATCH PREP. & PAINT HOLES IN EXISTING PAINTED CMU WALLS TO MATCH EXIST. PATCH. PREP. & PAINT EXIST CONCRETE FLOOR SLAB AS REQ'D TO PROVIDE NEW FLOOR FINISH AS SCHEDULED. |
| 28 | REMOVE EXISTING CERAMIC FLOOR TILE AND 4" CERAMIC COVE BASE AND 4" CERAMIC WALL TILE FULL HEIGHT TO CEILING AS REQUIRED FOR NEW CERAMIC FLOOR TILE AND CERAMIC TILE BASE. NEW CERAMIC WALL TILE - SEE SPECIFICATIONS |
| 29 | REMOVE & REINSTALL EXIST CEILING GRID SYSTEM AS REQ'D FOR NEW WORK. |
| 30 | REMOVE EXIST CONCRETE FLOOR SLAB AS REQUIRED FOR REPAIRS TO RINK BELOW. PROVIDE NEW 4" CONCRETE SLAB - REFER TO ROOM FINISH SCHEDULE FOR ADDITIONAL INFORMATION. |
| 31 | REMOVE EXIST METAL LOCKERS AND CONCRETE BASE COMPLETE - PATCH FLOOR LEVEL. |
| 32 | REMOVE AND REPLACE EXIST AUDITORIUM SEATING - SEE SPEC. |
| 33 | REMOVE AND REPLACE EXIST WOOD STAGE FLOOR - SEE SPEC. |
| 34 | REMOVE EXISTING GYPSUM BOARD OR PLASTER CEILING CONSTRUCTION COMPLETE - INCLUDING SUPPORT FRAMING. |
| 35 | REMOVE AND REPLACE EXISTING CURTAINS & RIGGING COMPLETE - SEE SPEC. |
| 36 | REMOVE EXISTING FULL HEIGHT CLOSET DOOR SYSTEM COMPLETE AND PLASTER WALL CLOSURE FROM TOP OF WALL UP TO ROOF DECK ABOVE - INCLUDING DOORS, TRACK SYSTEM, MOTOR, WIRING, ETC. |
| 37 | NEW PASTIC LAMINATE CEASING - SEE ELEVATIONS. |
| 38 | REMOVE FOLDING 2-SIDED BACKSTOP AND INSTALL NEW MOTORIZED FORWARD FOLD, 2-SIDED BACK STOP - SEE SPEC. |
| 39 | REMOVE EXISTING FIRE CURTIAN ASSEMBLY COMPLETE, INCLUDING MOTOR. |
| 40 | REMOVE EXISTING STAGE LIGHTING AND REPLACE WITH NEW. |
| 41 | REMOVE AND REINSTALL EXIST METAL LOCKERS ON EXIST SOFT BASE W/ NEW SLOPED TOP. PROVIDE WOOD BLOCKING AND DETAIL 2:9:1.5FH FOR ADDITIONAL INFORMATION. |
| 42 | NEW WALL MOUNTED HAND DRYER - SEE SPEC. |
| 43 | NEW LOCKERS ON NEW CONC BASE - 7.8/AS.4FH |
| 44 | NEW ADA BENCH (24" W x 48" L x 17" H) - SEE DETAILS. |
| 45 | NEW WOOD BENCH - SEE DETAILS 5.6/AS.4FH |
| 46 | NEW STAINLESS STEEL SHELF - 1" DOEP AT 34" ABOVE FINISHED FLOOR, ON WALL BRACKETS FASTENED TO CMU WALL. |
| 47 | NEW TOILET PARTITIONS & TOILET ACCESSORIES - SEE ELEVATIONS. |
| 48 | REMOVE EXISTING WOOD GYMNASIUM BLEACHERS AND PROVIDE NEW BLEACHER SYSTEM - SEE SPEC. |
| 49 | REMOVE EXIST GLASS BLOCK CERESTORY WINDOWS AND METAL FRAME AND PROVIDE NEW INSULATED TRANSLUCENT WALL SYSTEM - SEE SPEC AND DETAILS. |
| 50 | INFILL EXISTING AIR SHFT WITH NEW CONCRETE FLOOR SLAB AND STEEL FRAMING AS REQUIRED FOR NEW WORK. SEE DETAILS. |
| 51 | REMOVE & REPLACE EXIST CRACKED CMU WALL - PROVIDE TUCKPOINTING AND NEW EXPANSION JOINT COVER AT EXTERIOR VERT. |
| 52 | REMOVE GLASS TRANSOM ABOVE CMU WALL AND INSTALL NEW WALL CONSTRUCTION - SEE DETAILS. |

FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

DEMO PLAN KEY NOTES
FLOOR PLAN KEY NOTES
REFL CLG PLAN KEY NOTES
WALL TYPES

PRELIMINARY	<input type="checkbox"/>
DESIGN DEVELOPMENT	<input type="checkbox"/>
CONSTRUCTION	<input checked="" type="checkbox"/>
FINAL RECORD	<input type="checkbox"/>

DRAWN BY JMS, NJL

REVISIONS	
ADD NO 01	2-8-16
ADD NO 02	2-17-16

DATE: FEBRUARY 1, 2016
SHEET NO.

G4 2

04.2

JOB NO. 151626C

DESIGN CRITERIA			
Note:	The structure is designed for the following live loads, in addition to the lateral loads and super-imposed dead loads self-weight of the structure. Where applicable, the live loads are reduced in accordance with the provisions of the Building Code.		
		CODE REFERENCE	
RISK CATEGORY	II	MBC-Table 1604.5 ASCE Table 1.5-1	

FLOOR LIVE LOADS			
LIVE LOADS			
		CODE REFERENCE	
Mezzanine	X PSF	ASCE Table 4-1	
Catwalk	40 PSF	ASCE Table 4-1	

SNOW LOADS			
SNOW CRITERIA			
		CODE REFERENCE	
Ground Snow Load	Pg = 25 PSF	ASCE Fig. 7-1	
Flat Roof Snow Load	Pf = 25 PSF (Minimum)	ASCE Sec. 7.3	
Exposure Factor	Ce = 1.0	ASCE Table 7-2	
Importance Factor	Is = 1.0	ASCE Table 1.5-2	
Thermal Factor	Ct = 1.1	ASCE Table 7-3	
Note:	Snow loads adjacent to vertical projections, or on lower roofs adjacent to high roofs or sloped roofs are increased for the effect of drifting.		

WIND LOADS			
WIND CRITERIA			
Ultimate Design Wind Speed (3 sec. gust)	Vult = 120 mph	MBC Fig. 26.5-1A	
Nominal Design Wind Speed	Vasd = 93 mph	ASCE Sec. 1609.3.1	
Exposure Category	B	ASCE Sec. 26.7.3	
Internal Pressure Coefficient	+/- 0.18 (Enclosed)	ASCE Fig. 26.11-1	
Components and Cladding	Per Code Requirement based on above	ASCE Chapt. 30	
ROOF COMPONENTS			
	Zone 1	Zone 2	Zone 3
Support Beams (A > 100 SF)	-26 PSF	-45 PSF	-61 PSF
Roof Sheathing (A = 50 SF)	-31 PSF	-48 PSF	-65 PSF
Deck Fasteners (A < 10 SF)	-35 PSF	-55 PSF	-79 PSF
WALL COMPONENTS			
	Zone 4	Zone 5	CODE REFERENCE
A = 100 SF	± 21 PSF	± 33 PSF	ASCE Table 30.7-2
A = 50 SF	± 22 PSF	± 37 PSF	ASCE Table 30.7-2
A = 10 SF	± 24 PSF	± 43 PSF	ASCE Table 30.7-2
Note:	Refer to ASCE 7-10 for zone definitions. Calculate wind load for tributary area of design component. Wind loads shown include directionality factor Kd = 0.85, per ASCE Table 26.6-1.		

SEISMIC LOADS			
SEISMIC CRITERIA			
		CODE REFERENCE	
Seismic Importance Factor	Ie = 1.25	ASCE Table 1.5-2	
Short Period Mapped Spectral Response Acceleration Parameter (5% of Critical Damping)	Ss = 0.091g	ASCE Sec. 11.4.1	
1.0 sec Mapped Spectral Response Acceleration Parameter (5% of Critical Damping)	S1 = 0.0461g	ASCE Sec. 11.4.1	
Soil Site Class	D	ASCE Sec. 11.4.2	
Design Spectral Response Acceleration Parameter (for short period)	Sos = 0.097g	ASCE Sec. 11.4.4	
Design Spectral Response Acceleration Parameter (for 1 sec. period)	S01 = 0.074g	ASCE Sec. 11.4.4	
Seismic Design Category	B	ASCE Sec. 11.6	
Seismic Force-Resisting System	Steel not Specifically Detailed for Seismic	ASCE Table 12.2-1	
Response Modification Factor	R = 3.0	ASCE Table 12.2-1	
Analysis Procedure	Equivalent Lateral Force	ASCE Sec. 12.8	

EARTH PRESSURE LOADS			
LATERAL EARTH EQUIVALENT FLUID PRESSURE			
Walls Un-braced at Top	40 PCF		
Walls braced at Top	55 PCF		
Allowable soil bearing capacity	psf		
Notes:	1. Refer to geotechnical report for additional information. 2. Lateral earth pressure is based upon drained soil. Refer to drawings for foundation drainage.		

MECHANICAL/ELECTRICAL LOADS			
Typical Floors and Roof	10 PSF		
Penthouse Roof	25 PSF		

Note: The live load criteria, the wind load criteria and seismic criteria is noted on these drawings for the new construction and the existing building and its structural components. Limited modifications are being made to the structural system of the overall existing building, there the lateral force resisting system, and the basic building framing system for the overall building structure remains essentially unchanged.

GENERAL STRUCTURAL NOTES:

- The structural notes are intended to augment the drawings and specifications. Should conflicts exist between the Drawings, Specifications and the Structural notes, the strictest provision shall govern.
- The Structural drawings form an integral part of Contract Documents, which include Architectural, Structural, Mechanical, Electrical, Civil/Site drawings and Specifications. Coordinate the Structural drawings with the requirements shown in the other components of the Contract Documents.
- Typical details and other sections/details apply to conditions that are similar to the conditions described in the sections/details, even if they are not specifically referenced on the plans.
- The Contractor shall be responsible for means, methods, sequences and procedures of construction.
- Construction shall comply fully with the applicable provisions of OSHA and the local Governing Codes, current edition, and all requirements specified in the codes shall be adhered to as if they were called for or shown on the drawings. This shall not be construed to mean that requirements set forth on the drawing may be modified because they are more stringent than the code requirements or because they are not specifically required by code.
- Governing Building Code - Michigan (International) Building Code 2012. Standards listed in structural note sections refer to the version and effective date identified in the REFERENCED STANDARDS Chapter in the Governing Building Code.
- Work constructed per these drawings shall be inspected by an Independent Testing Agency retained to ensure compliance with the requirements shown on the Drawings. Special Inspections required by the Governing Building Code, local building department and the Contract Documents shall be performed by a qualified Special Inspector. Project site visits by the Engineer do not constitute or replace inspection.

SHOP DRAWINGS:

- Submit shop drawings for review as indicated in material section of general Structural notes.
- Use of Engineering Drawings as erection drawings by the Contractor is strictly prohibited.
- Allow in the schedule - detailing, fabrication and erection - a minimum of 10 working days for review of each shop drawing submittal by the Structural Engineer. The 10 working days stated herein, will be in addition to the review time required by other project team members. Submit a shop drawing submittal schedule prior to the first submittal.
- Review of shop drawings and other submittals by the Structural Engineer does not relieve the Contractor of the responsibility to check the shop drawings prior to submittal. Errors and omissions associated with the preparation of shop drawings not conforming to the Construction Documents are the responsibility of the shop drawing preparer.
- Shop drawings are an aid for field placement and are superseded by the Contract Documents. Contractor shall ensure that construction is in accordance with the latest Contract Documents. Shop drawing review is only for general compliance with the Contract Documents. Review of the shop drawings by the Structural Engineer does not guarantee that the shop drawings are correct nor infer that the shop drawings supersede the Contract Documents.
- Contractor shall provide two hard copies of shop drawing sets for review - one for record and one to be returned with review comments. Contractor shall provide a set of approved shop drawings bearing the review stamp of the Structural Engineer, to the local building department and to the project site.
- Notes on submittal shop drawings for work "by others" cannot be responsibly approved by Structural Engineer. Contractor shall coordinate responsibility for materials, connections, etc. prior to shop drawing submittal to the Structural Engineer.
- Contractor shall verify all relevant dimensions and elevations for equipment installations against purchased Manufacturer's certified equipment drawings. Contractor shall coordinate dimensions that depend upon specific equipment, such as elevator openings, mechanical equipment supports, etc., prior to submittal. Such dimensions shall be provided on the shop drawings prior to submittal to the Structural Engineer. Contractor's failure to provide such dimensions on submittal shop drawings will result in shop drawing return without review.

MECHANICAL & ELECTRICAL EQUIPMENT:

- Pipes of 3 inches or greater in diameter shall be suspended from steel members, using pipe hangers and clamps. Hangers and clamps shall be aligned with structural member centerlines. One sided beam connections, expansion anchors or other anchors to slabs are not allowed for pipes of 3 inches or greater in diameter. Submit details for pipe hangers and attachments for review by Architect/Structural Engineer.
- Mechanical and electrical equipment weights assumed for structural design are shown on the plans. If the equipment weight varies from that listed, consult with the Architect/Structural Engineer prior to steel shop drawing submittal.

EXISTING CONSTRUCTION:

- Contractor shall visit the site and become familiar with the existing conditions.
- Existing building dimensions and conditions shown are based upon original drawings or partial survey and have not been completely field verified. The Owner and Architect/Structural Engineer take no responsibility for the accuracy of existing dimensions shown. Contractor shall field measure existing dimensions prior to shop drawing preparation and fabrication.
- The analysis of the existing structure is based upon information shown on original drawings by Lynn Smith Demieme Kasprek Adams, Inc. Architects dated April 12, 1967, provided by Owner.
- Contractor shall verify conditions covering or affecting the structural work; obtain and verify all dimensions and elevations to ensure the proper strength, fit and location of the structural work; report to the Architect/Structural Engineer any and all conditions/discrepancies which may interfere with or otherwise affect or prevent the proper execution and completion of the new work in compliance with the Construction Documents. All discrepancies shall be fully resolved prior to commencing work.
- Existing construction not undergoing alteration is to remain undisturbed. Where such construction is disturbed as a result of the operations of this contract, Contractor shall repair or replace as required and to the satisfaction of the Architect/Structural Engineer and Owner's Representative.
- Contractor shall verify the existence, location and elevation of existing utilities, sewers, drains, etc. in demolition areas before proceeding with the work. All discrepancies shall be documented and reported to the Architect/Structural Engineer and Owner's Representative for resolution.
- Should uncharted piping or other utilities be encountered during excavation, Contractor shall consult the Architect/Structural Engineer and Owner's Representative for resolution.
- Contractor shall provide fire watch during field cutting and welding operations, meeting the Owner's requirements.
- Contractor shall provide temporary protection of existing equipment during execution of work, satisfying the Owner's requirements.
- Contractor shall provide temporary protection to prevent damage from the weather and vandalism.
- Contractor shall coordinate work with the Owner's personnel to avoid any interference in their operations.
- Refer to SHORING AND BRACING notes for additional requirements.

SHORING AND BRACING:

- Contractor shall provide temporary shoring and bracing of existing construction, new construction and underground utilities as follows:
 - Where shown or noted on the Drawings.
 - Where existing construction is to be altered or disturbed until permanent support is in place.
 - Where existing construction is not undergoing alteration and is to remain undisturbed but is disturbed as a result of the work of this contract.
 - As required for safe erection, installation of new construction, equipment, etc.
 - When needed for Contractor's "means and methods" of construction, and other safety related issues.
- Shoring and bracing shown on the Drawings is conceptual. Contractor shall be responsible for verifying existing conditions, shoring and bracing calculations, methods of installation, transfer of loads through to final load support, and work sequence phasing with new construction.
- Shoring and bracing shall be performed by a Contractor with minimum 5 years demonstrated experience in similar size and scope of shoring and bracing projects.
- Shoring and bracing shall be designed by a Professional Engineer registered in the State of the Project with minimum 5 years demonstrated experience in similar size and scope of shoring and bracing projects. Design loads and methods shall conform to applicable codes. Soil and material strengths shall be verified by tests, unless conservative estimates that do not affect deflections and deformations are approved by the Architect/Structural Engineer.
- Contractor shall submit drawings and calculations sealed and signed by the Contractor's Professional Engineer showing complete design including temporary conditions, final conditions and sequence of work.
- Before starting work, Contractor shall perform condition survey of the existing building structure, exterior facade and interior finishes, including photographic documentation and submit survey to the Owner for record.
- During the shoring and bracing operations, Contractor shall:
 - Keep the existing and new construction in a safe condition.
 - Monitor existing and new construction to detect any signs of distress or deformation.
 - Take immediate steps to prevent distress, deformation or damage.
- Contractor shall continuously monitor the shoring and bracing system. Contractor shall review and ascertain that all field connections are completed according to the Contractor's design and issue approval for inspection of the work by the Testing Agency.
- After completion of shoring and bracing and completion of work requiring shoring and bracing, Contractor shall repair any damage to the existing and new construction without any cost to the Owner, and to the satisfaction of the Owner and Architect/Structural Engineer.

CAST-IN-PLACE CONCRETE

- Concrete structural framing has been designed by the Ultimate Strength Method per ACI 318 "Building Code Requirements for Structural Concrete".
- Concrete work shall conform to the requirements of ACI 301, "Specifications for Structural Concrete of Buildings", and ACI 318 "Building Code Requirements for Structural Concrete" except as modified by Structural requirements noted on the Drawings.
- Cement shall conform to ASTM C150 "Specification for Portland Cement" type I or III.
- Concrete aggregates shall conform to ASTM C33 "Specification for Concrete Aggregates".
- Reinforcing steel conform to ASTM A615 grade 60.
- Reinforcement shall be fabricated and erected according to the ACI standards: "Details and Detailing of Concrete Reinforcement", ACI 315 and "Manual of Engineering and Placing Drawings for Reinforced Concrete Structures", ACI 315R.
- Welded Wire Fabric shall be furnished in flat sheets (rolls not permitted) and shall conform to ASTM A185 and have minimum size and end lap of 8 inches.
- Welding of reinforcing steel is prohibited unless specifically detailed. Welding where detailed shall conform to AWS D14 specification.
- Concrete shall have a minimum 28-day compressive strength as follows:
Foundations: 4,000 psi
Slab-on-grade: 3,000 psi
Exterior concrete: 4,000 psi
- Exterior concrete, and interior concrete subjected to freeze/thaw cycles, salt, etc., including walls, shall be air-entrained 6% +/- 1%.
- Concrete shall be normal weight, unless indicated otherwise.
- Contractor shall submit the concrete mix designs for review by the Structural Engineer. Proportion mix designs and provide proof of mix design strength as defined in ACI 301. The submittal shall include cement type and source, cement cube strength, aggregate gradations, water tests, admixture catalog information and cylinder strength test results from 30 tests, on specimens with identical mix design, for each concrete mix, or other proof of strength per ACI 301.
- Use of calcium chloride, chloride ions, or other salts in concrete is not permitted.
- Samples for strength tests of each class of concrete placed each day shall be taken by the Testing Agency not less than once per day, nor less than once for each 100 cubic yards of concrete. Sample concrete in accordance with ASTM C172. Perform the following tests in accordance with the indicated standard:
 - Slump: ASTM C143
 - Air content: ASTM C173
 - Compressive strength: ASTM C39 *

* With 1 cylinder at 7-days, 2 cylinders at 28-days, and one specimen held in reserve.

CAST-IN-PLACE CONCRETE - CONT.

- Contractor shall prepare and submit reinforcement shop drawings to the Structural Engineer for review prior to fabrication. The shop drawings shall clearly show reinforcement lengths and bends, locations of bars, methods of support, details of placement and placement coordination with formwork, embedments, concrete vibration and construction joints. The drawings shall also indicate openings, sleeves, curbs and concrete dimensions in accordance with ACI 315. Provide, at minimum wall, column and beam elevations; wall, column and beam sections, material schedules, bar lap schedules and locations.
- Contractor shall tie reinforcing steel securely in place prior to placing concrete and provide sufficient supports to maintain the position of reinforcing within specified tolerances during all construction activities. Inserting dowels into wet concrete is not permitted.
- Horizontal wall reinforcement shall be continuous with the minimum lap per ACI 318 unless detailed or noted otherwise. Corner bars shall be provided at changes in wall direction (however small) and shall be of the same size and spacing as the horizontal steel. Each corner bar leg to provide lap splice per ACI 318 unless detailed or noted otherwise. Extend horizontal wall reinforcing through piers.
- Hooked bars shall be standard 90 degree hooks per ACI unless noted otherwise on the Drawings.
- Minimum lap splice shall be Class B per ACI 318. Location of lap splices shall be as indicated on Construction Documents and/or as shown on the approved reinforcing steel shop drawings.
- Reinforcing steel shall not be cut, bent or straightened in the field unless approved by the Structural Engineer or as indicated on the Drawings.
- Reinforcing steel shall be placed with minimum concrete cover and tolerances as per requirements of ACI 318.
- No aluminum conduit or products containing aluminum or any other material injurious to the concrete shall be embedded in the concrete.
- Dowels into foundation shall match size and spacing of vertical reinforcement at all columns, piers and walls, unless otherwise noted.
- Provide two #5 bars (one each face) around unframed openings in slabs and walls. Place bars parallel to sides of openings and extend them 24 inches beyond corners, unless otherwise noted.
- Locate sleeves, openings, embeds, etc. as indicated on the drawings. The Concrete Contractor shall check with other trades to make sure the sleeves, openings and embeds that are to be provided and set by them are in place prior to placing of concrete in the area involved.
- Contractor shall obtain approval prior to placing openings or sleeves not shown on the Drawings, through any structural member.
- Contractor shall review Architectural, Mechanical and Electrical drawings for bases, openings, sleeves, anchors, inserts, conduits, recesses and other devices in concrete work before placing concrete.
- For control joints in slabs and walls, space joints at maximum 15'-0" on center unless otherwise noted on the Drawings.
- Construction joints shall be furnished with a full length keyway centered on members. Where the size of key is not shown on the Drawings, the key shall be 25% of the cross section dimension of the member and minimum 1-1/2 inches into the first pour of concrete.
- Provide 3/4" x 3/4" chamfer strip at all exposed corners of concrete members, unless noted otherwise.
- The Concrete Contractor shall be responsible for all pour sequences and construction procedures for all concrete work to account for temperature differentials and shrinkage occurring during the construction phase until the building is permanently in a mechanically controlled environment. The use of chlorides such as deicing salts is prohibited for melting ice prior to placement of concrete.
- Curing of concrete surfaces shall conform to ACI 308.1 "Standard Specification for Concrete Curing" and ACI 308R "Guide to Curing Concrete".
- Joints to be prepared and filled with joint sealant shall include, but are not limited to, construction joints, control joints, isolation joints, and all interface joints between similar and dissimilar members. Specific locations may be indicated on the Drawings, or may be required by approved shop drawings, or may occur due to the construction sequence selected by the Contractor.
- Prior to placing concrete adjacent to existing concrete, thoroughly clean, de-grease and mechanically roughen existing concrete surfaces. Apply bonding agent prior to placing fresh concrete. Bonding agent shall be "Sika Amstatc 110 EpoChem" by Sika Corporation, or approved equal. Follow all Manufacturer's instructions for surface preparation, mixing and application.
- Non-shrink grout shall conform to ASTM C1107. Grout shall be premixed, non-shrink, non-catalyzed natural aggregate grout with a minimum 7-day compressive strength of 7,000 psi plastic, 6,000 psi flowable, and 5,000 psi fluid consistency.
- Reinforcing steel, anchor rods and embed placement shall be inspected, prior to placement of concrete, in accordance with ACI-318 and code required special inspection by qualified Inspector prior. These inspections are not included in the basic services of the Structural Engineer of Record.

MASONRY NOTES:

- Concrete masonry has been designed in accordance with ACI 530, "Building Code Requirements for Masonry Structures" and shall be constructed in accordance with ACI 530.1, "Specifications for Masonry Structures".
- Concrete Masonry to have a minimum 28-day compressive strength f'm=1,500 psi unless noted otherwise.
- Concrete Masonry units (CMU) shall conform to the following standards:
 - Load-Bearing Units: ASTM C90
 - Medium Weight Units: 105 to 125 pcf
 - Normal Weight Units: greater than 125 pcf
- Load-bearing CMU shall be at minimum medium weight units, unless noted otherwise.
- Mortar for all masonry shall conform to ASTM C270 with minimum compressive strength of 1,800 psi. Mortar below grade shall be type M. Elsewhere mortar may be either type M or S unless specifically indicated otherwise. Use either Portland cement/lime or masonry cement for mortar.
- Grout shall conform to ASTM C476 with minimum 28-day compressive strength of 3,000 psi.
- Steel bar reinforcement shall conform to ASTM A615, grade 60. Horizontal joint reinforcement shall be "Ladder" type with W1.7 diameter longitudinal bars.
- Vertical cells containing reinforcing and grout shall form a continuous cavity, free of mortar droppings.
- Minimum vertical CMU wall reinforcing shall be continuous #5 bars at 48" on center, unless noted otherwise. Dowels to concrete foundation to match size and spacing of reinforcing unless noted otherwise. Reinforce CMU cure at corners, each side of control joints and each side of wall openings with additional (2) #5 continuous vertical reinforcing bars.
- Horizontal bond beam and vertical reinforcing shall be continuous unless noted otherwise. Lap splice reinforcing per the schedule below or use mechanical splices adequate for 125% of specified yield strength of the bar. Lap vertical reinforcement with minimum dowels of same size and spacing that have been previously installed in the foundations. Dowel embedment in concrete shall conform to the requirements of the CAST-IN-PLACE CONCRETE notes.

BAR SIZE	LAP SPLICE LENGTH
#4	24"
#5	30"
#6	48"
#7	Provide mechanical splice
Reinforcing bars shall be held in position by wire ties or other approved means to insure design location and lap. Place bars and lap prior to grouting.	
Grouting of masonry walls shall conform to recommended procedure for "low lift grouting" or "high lift grouting" as outlined in the NCMA TEK 3-2A - "Grouting Concrete Masonry Walls" and ACI 530.1/ASCE 6 "Specification for Masonry Structures". Grout lifts shall not exceed 5 feet without mechanically consolidated (vibrated) grout pours.	
Lifts of grout shall be keyed 4 inches into the previous course of masonry below.	
Masonry below grade shall be grouted solid.	
Sampling and Testing of mortar and grout shall be in accordance ASTM C780 and ASTM C1019, respectively. One test of each is required for each 5,000 square foot of wall.	
Construction and testing of masonry prisms shall be in accordance with the procedure outlined in the ASTM C1314.	
Special Inspection of masonry construction is required. Refer to project specifications and ACI 530 for quality assurance requirements. Special Inspection shall include at minimum: <ol style="list-style-type: none">Mortar and grout testing.Reinforcement placement and lap verification.Verification of clear grout space prior to grouting.Verification of proper grouting procedures (grout lift and consolidation).	
Contractor shall brace masonry walls to resist wind loads until floors and roofs are in place, and the masonry has reached 75% of the required strength f'm. Bracing shall be provided in accordance with OSHA - Construction Safety Standards for Masonry Wall Bracing and NCMA TEK 3-4B - "Bracing Concrete Masonry Walls During Construction".	
Contractor shall shore masonry walls above masonry bond beam lintels until the masonry is placed full height and has reached the required strength.	

POST INSTALLED ANCHORS:

- Post installed anchors include all mechanical and adhesive anchors noted on Construction Documents. All post installed anchors shall conform to AC193 for mechanical anchors and AC308 for adhesive anchors.
- Use only code approved anchors with valid ICC-ESR Evaluation Report for use in base material shown on the Construction Documents. Submit ICC-ESR Evaluation Report to Structural Engineer and Special Inspection Agent for approval.
- Installer of post installed anchors shall be trained by anchor Manufacturer.
- Clean existing concrete surface to solid structural concrete. Grind smooth for full steel contact and to prevent gaps between steel and concrete. Alternatively, provide non-shrink grout in all voids between steel and base material.
- Drill smaller diameter pilot hole in existing concrete and check for existing reinforcing. Do not cut or damage existing reinforcing.
- If existing reinforcing is found, shift hole to avoid existing reinforcing. Submit location of new hole to Structural Engineer for review.
- Install mechanical anchors and adhesive anchors in strict accordance with Manufacturer's written recommendations and procedure detailed in ICC-ESR Evaluation Report.
- Special Inspections are required for all mechanical and adhesive anchors. Inspect and test post installed anchors as specified in ICC-ESR Evaluation Report.
- The following anchors are approved. Submittals for alternative equal anchors will be reviewed by Structural Engineer and approved at their discretion.

Anchor Type	Approved Anchor	ICC-ESR Report No.	Base Material
Screw Anchors	Hilti Kwik HUS-EZ	ESR-3027	Concrete
Steel Drop-In Anchor	Hilti HDI/HD-L	(n/a)	Concrete
Expansion Anchors	Hilti Kwik Bolt TZ Hilti Kwik Bolt 3	ESR-1917 ESR-2302 (un-cracked only)	Concrete Concrete
Adhesive Anchors	Hilti HIT-HY200 SAFESET Hilti HIT-HY70 + HAS/REBAR Hilti HIT-HY70 + HAS/REBAR	ESR-3187 ESR-3342 ESR-2682	Concrete Grouted Masonry Hollow Masonry

Note: Refer to plan notes, details and/or schedules for diameter of anchor rods or size of rebar used and the embed depth required for post installed anchors.

STRUCTURAL STEEL:

- Design, fabrication and erection of structural steel shall be in accordance with the American Institute of Steel Construction (AISC) 360 Specification for Structural Steel Buildings and the Steel Construction Manual, Load and Resistance Factor Design LRFD.
- Structural steel shall conform to the following ASTM specifications and minimum yield strength:

W Shapes	A992 Gr. 50	Fy = 50 ksi
Miscellaneous shapes and plates	A36	Fy = 36 ksi
Pipe	A53 Grade B	Fy = 35 ksi
Square Tubes	A500 Grade B	Fy = 46 ksi
- Masonry and brick lintels shall be galvanized G90 per ASTM A123.
- Anchor rods shall conform to ASTM F1554 Grade 36, unless noted Grade 55 or other on Drawings.
- Structural steel bolting shall be ASTM A325 type N, 3/4" diameter snug tight unless noted otherwise.
- Welding shall be done with appropriate E70 series electrodes compatible with the new and existing steel. Welds and welding procedures shall conform to, and welders shall be qualified in accordance with, the "Structural Welding Code - Steel" of the American Welding Society, ANSI/AWS D1.1.
- Detailing shall be performed using rational engineering design and standard practice in accordance with the Contract Documents. The typical details shown are approximate only and do not indicate the required number of bolts or weld sizes, unless specifically noted.
- Contractor shall submit for review, engineered drawings showing shop fabrication details, field assembly details and erection diagrams for all structural steel. Show at minimum all details included in these Contract Documents with additional erection details as required to completely define the interconnection of structural steel pieces.
- Fabricator shall be AISC Certified or have an AISC equivalent Quality Assurance program as certified by a qualified independent testing agency. (NON CERTIFIED NEED TO COMPLY WITH ADDITIONAL SPECIAL INSPECTIONS PER CODE)
- Anchor rods, base plates and bearing plates shall be located and built into connecting work, pre-set by templates or similar method prior to concrete placement. Plates shall be set in full beds of non-shrink grout.
- Contractor shall reference Architectural drawings for miscellaneous shapes and plates not shown on structural drawings. These items shall be shop welded to the structural framing sections to minimize field welding.
- The length, dimension and connection detail from new structural member to existing structures shall be field verified before fabrication. Field modifications to the fabricated member or connection are not allowed without prior approval by the Structural Engineer. Contractor shall submit sketches or shop drawings detailing proposed modifications for approval.
- Floor openings, unless otherwise noted, are to be framed with W8x10. Roof openings, unless otherwise noted, to be framed with L5x3/4x1/4 LLV. Verify size and location of all openings with the trade involved.
- Non-composite beam connections shall be capable of supporting minimum 50% of the Maximum Total Uniform Load, AISC Steel Construction Manual, unless specifically noted on the Drawings.
- Beam connections shall be standard AISC approved connections. Extended shear plate connections protruding from column web only approved where beams/girders on either side of column web have equally loaded bays.
- Simple shear connections shall be capable of end rotation as per the requirements of the AISC Specification, Simple Connections, Specification Section J1.2 and Manual Part 10.
- Connections shall be shop welded in accordance with latest AWS Specifications for E70XX electrodes and field bolted with ASTM A325 or ASTM A490 bolts.
- Contractor shall install A325 and A490 bolts in accordance with the "Specification for Structural Joints Using ASTM A325 or A490 Bolts." Snug tight condition shall be achieved using an impact wrench, to bring the connection plates into firm contact, unless noted otherwise.
- Contractor shall provide 3/4" diameter shoulder bolts, double nuts or tack welded nuts finger tight to allow vertical movement with lock washers at sloped connections of wind columns or as noted.
- Where field welding to existing structural steel is indicated, contractor shall thoroughly clean all surfaces to receive weld, removing rust, paint, dirt and other foreign matter in area of work. Provide fire watch protection acceptable to the Owner.
- Beams shall be fabricated with the natural camber up. Provide cambers as indicated on the drawings.
- Stiffener plates and bearing stiffeners are to be provided in pairs.
- Clean steel per SSPC-SP3 and shall receive one shop coat of paint. Oil paint at structural steel to be fireproofed, encased or in contact with concrete, and on top flange of beams receiving shear connections.
- Steel above the roof and outside the building envelope (exposed to weather) shall be cleaned per SSPC-SP6 and hot dip galvanized.
- Contractor shall provide temporary bracing as required to ensure stability of the structure under full design loads until the permanent bracing is in place. Provide necessary shoring where required during construction.
- Shop and Field Testing of welds and/or bolts shall be as follows:
 - All welds shall be visually inspected; 15% at random shall be measured.
 - Filler welds for beam and girder shear connection plates (10% at random) shall be checked by magnetic particle (ASTM E709) for final pass only.
 - Visually inspect that all bolted connections are made with proper fastener components, are fabricated properly and the bolted joint is drawn into firm contact.
 - Inspect all expansion anchors and adhesive (epoxy) anchors according to manufacturer's recommendations. Pull test minimum 5% and minimum 2 of each application of location and anchor type.
- Welding shall be inspected by an AWS Certified Welding Inspector (CWI).
- Contractor shall schedule work to allow the above testing requirements to be completed.

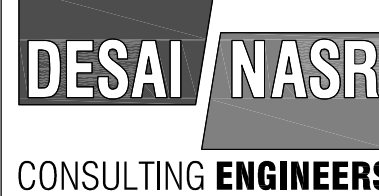
STEEL GRATING NOTES:

- SG-1: 1" welded/welded rectangular galvanized grating, type WB as manufactured by IKG industries or approved equivalent. Main bearing bars to be 1"x3/16" spaced at 1-3/16" on center. Cross bars to be of rectangular cross section, flush top and spaced at 4" on center max.
- SG-2: 1 1/4" welded/welded rectangular galvanized grating, type WB as manufactured by IKG industries or approved equivalent. Main bearing bars to be 1 1/4"x3/16" spaced at 1-3/16" on center. Cross bars to be of rectangular cross section, flush top and spaced at 4" on center max.
- All bearing bars of steel grating shall be banded at supports, cut-outs and openings.
- All gratings shall be tied down to supporting steel members with removable plate fasteners or weld according to the Manufacturer's instructions.
- Grating contractor shall coordinate overall dimensions, cut-outs and openings with all parties before grating layout is submitted to Architect/Engineer for approval.



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FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

FARMINGTON HIGH SCHOOL

GENERAL
STRUCTURAL NOTES

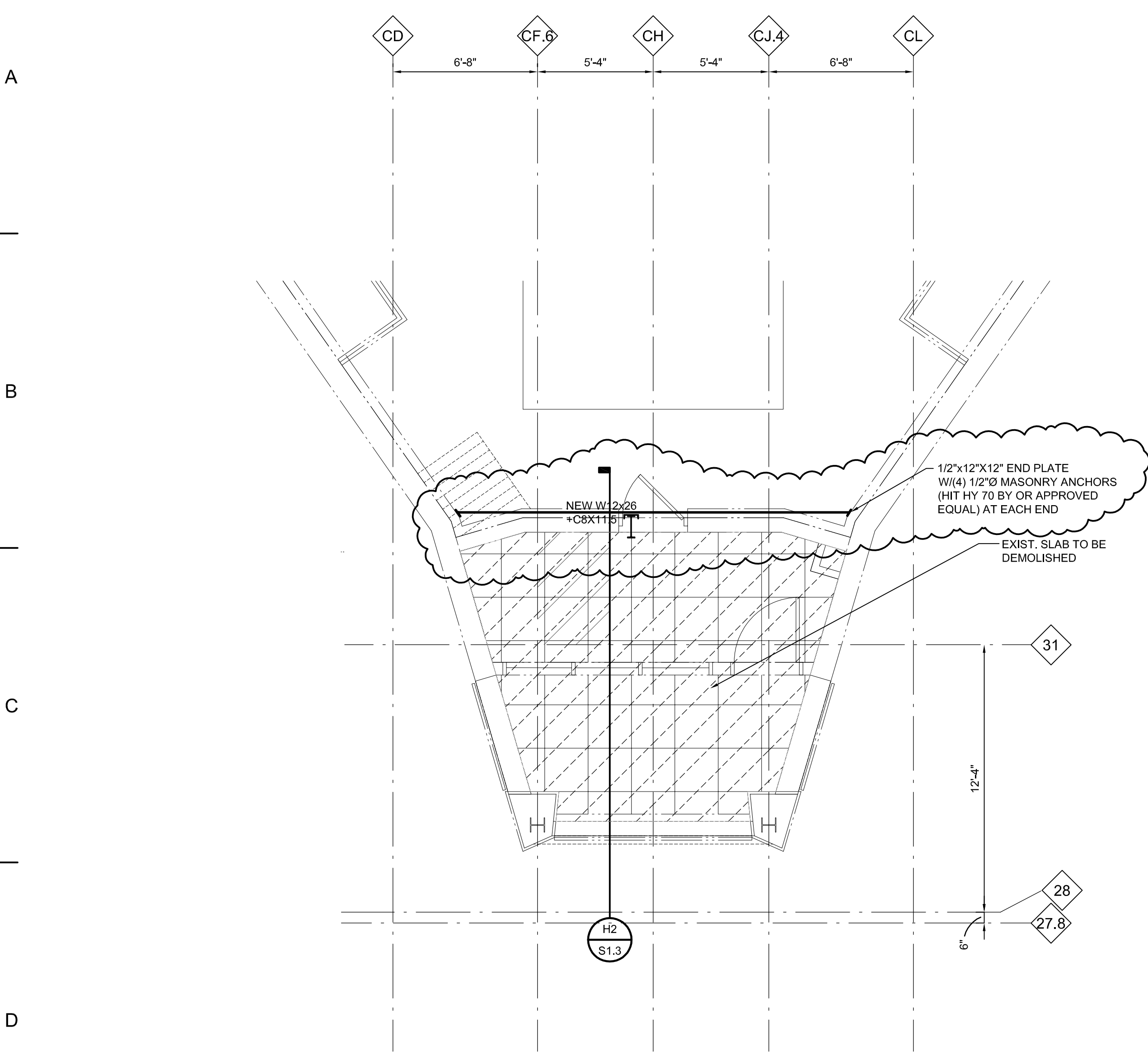
PRELIMINARY ☐
DESIGN DEVELOPMENT ☐
CONSTRUCTION ☒
FINAL RECORD ☐

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CHECKED BY: JM

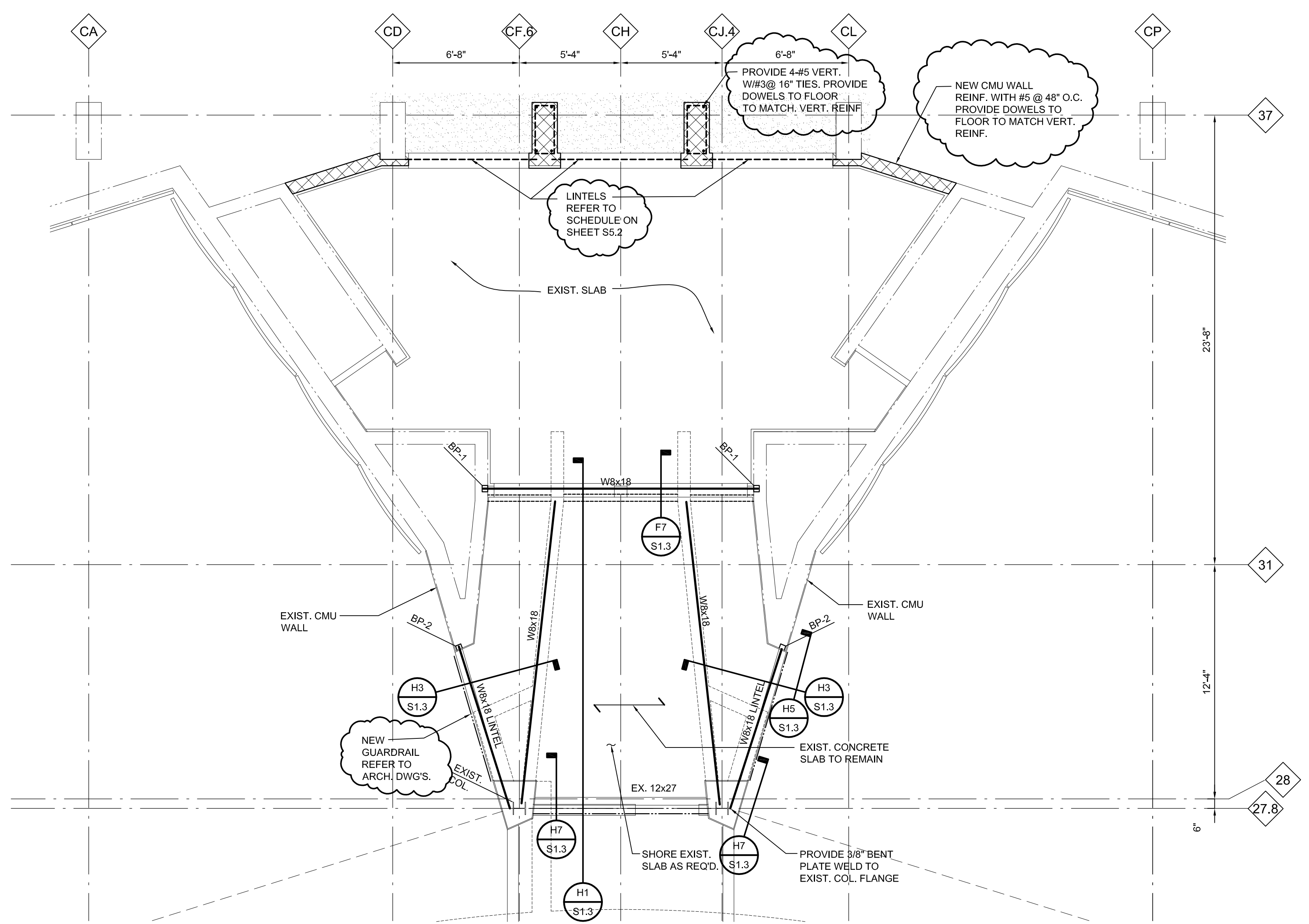
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ADD NO. 01 2-8-16
ADD NO. 02 2-17-16

DATE: FEBRUARY 1, 2016
SHEET NO.

S0.1
JOB NO. 151626C

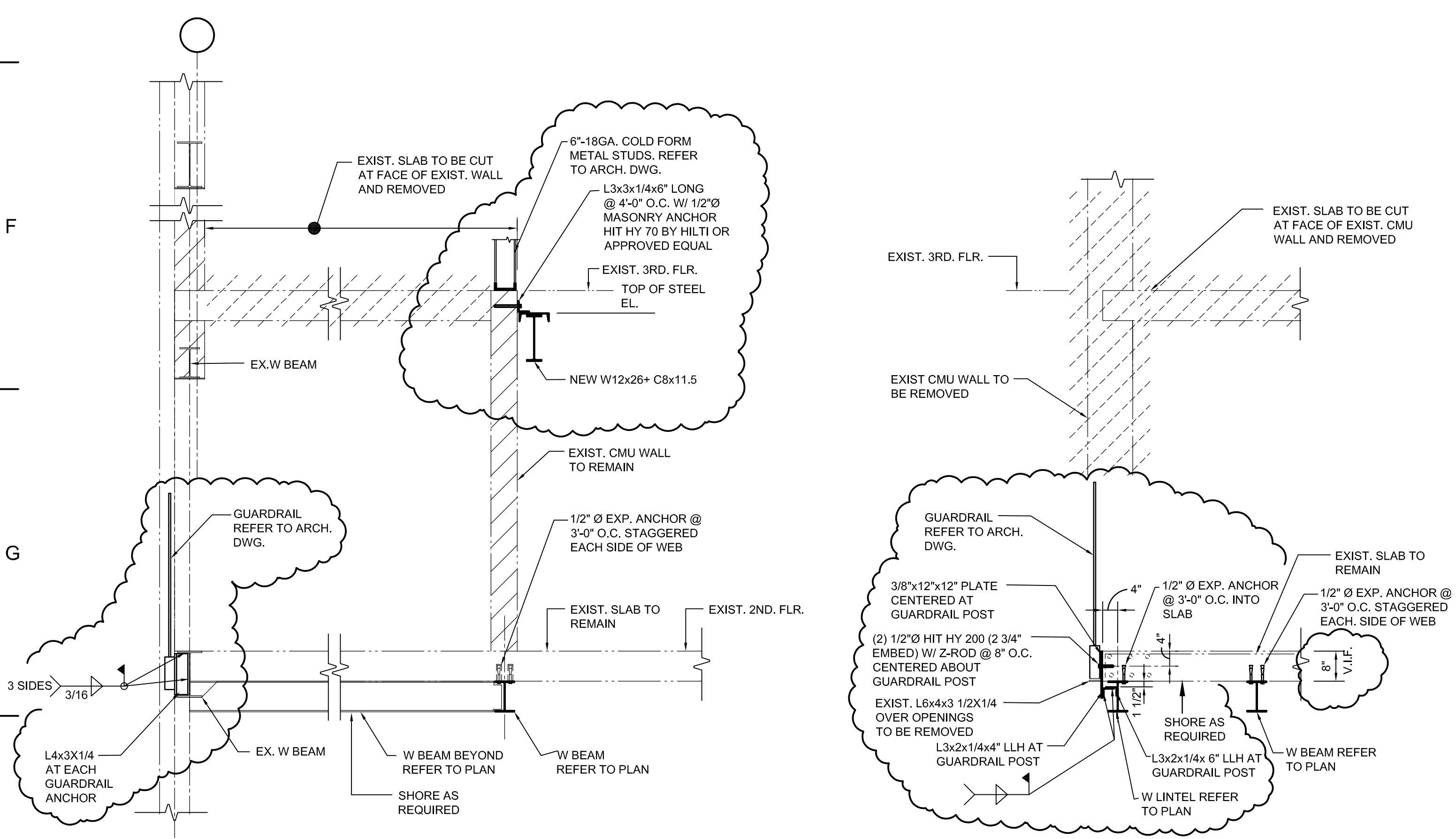


THIRD LEVEL PROJECTION ROOM SLAB - DEMOLITION
Scale 1/4" = 1'-0"



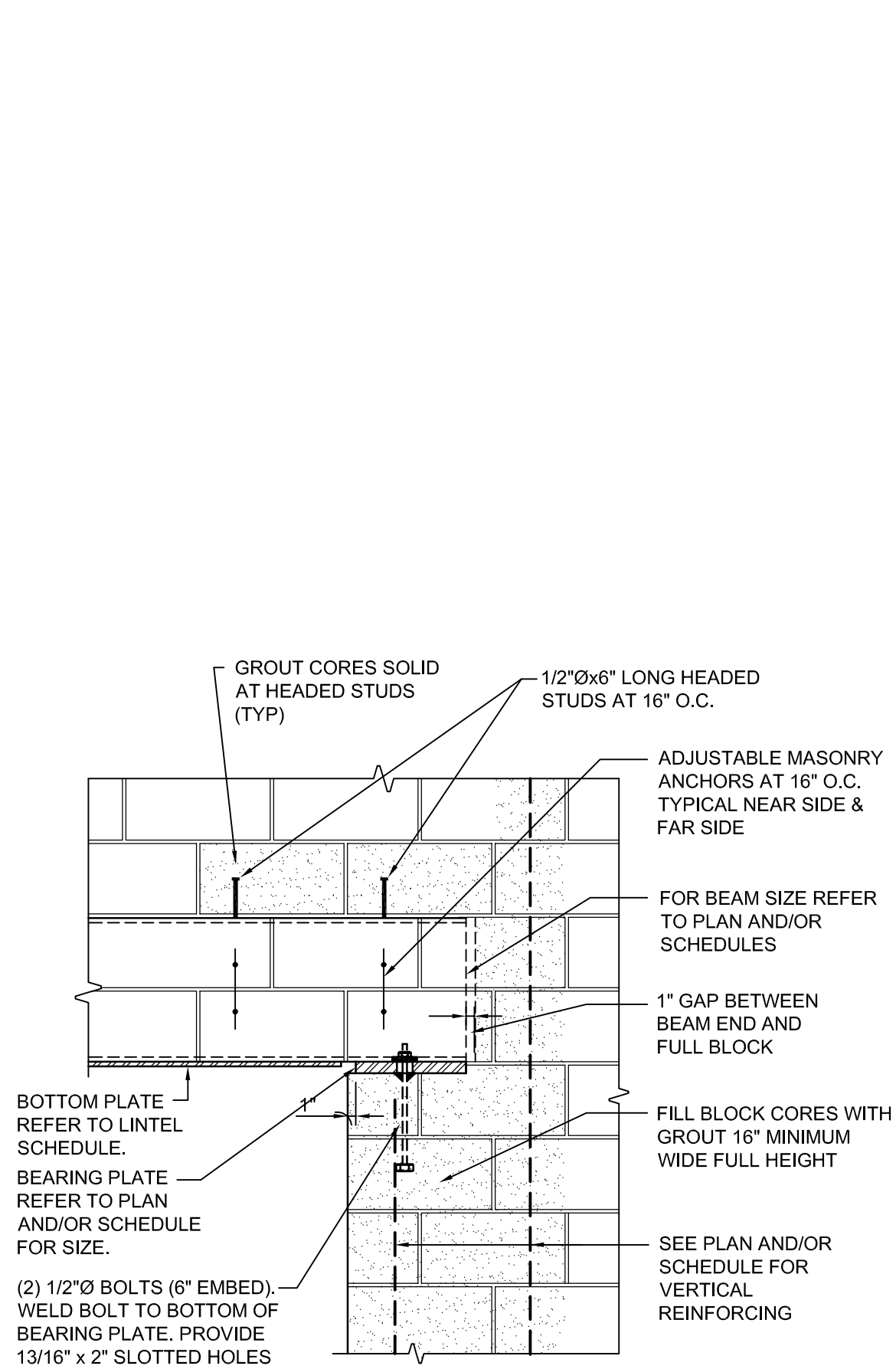
SECOND LEVEL FLOOR PLAN - NEW WORK
Scale 1/4" = 1'-0"

- NOTES:
- BP-1: 3/8" x 7" x 10" BEARING PLATE W/ (2)-1/2" x 6" LONG HEADED STUDS, REFER TO F9/S1.3
 - BP-2: 3/8" x 7" x 7" BEARING PLATE W/ (2)-1/2" x 6" LONG HEADED STUDS, REFER TO F9/S1.3

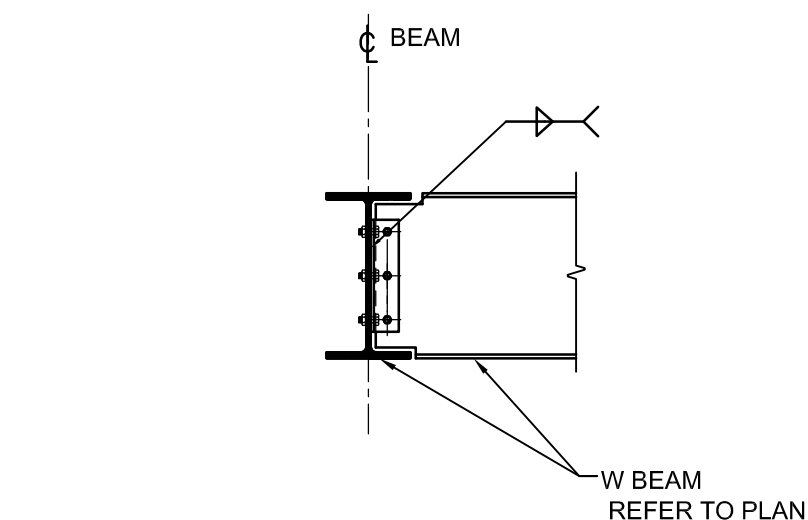


H1 SECTION
Scale: 1/2" = 1'-0"

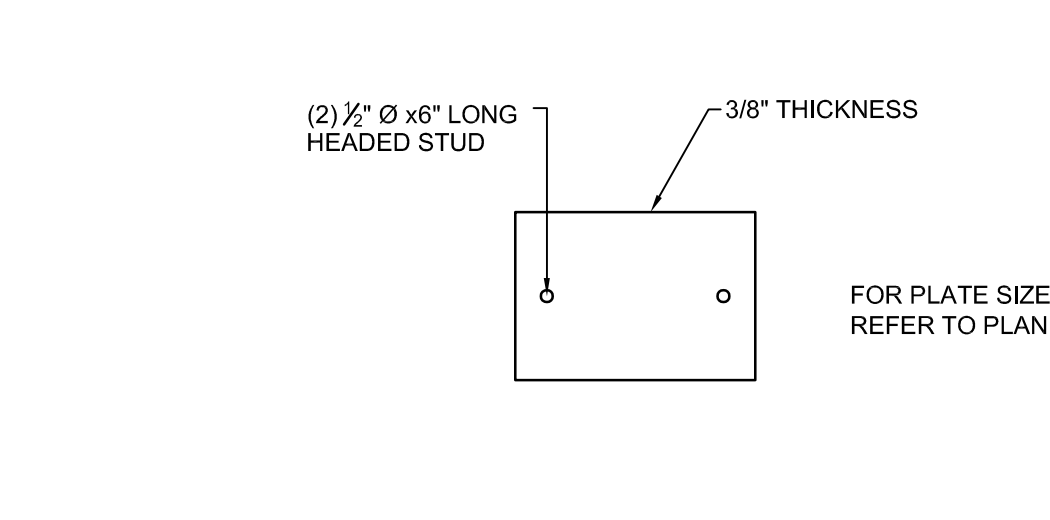
H3 SECTION
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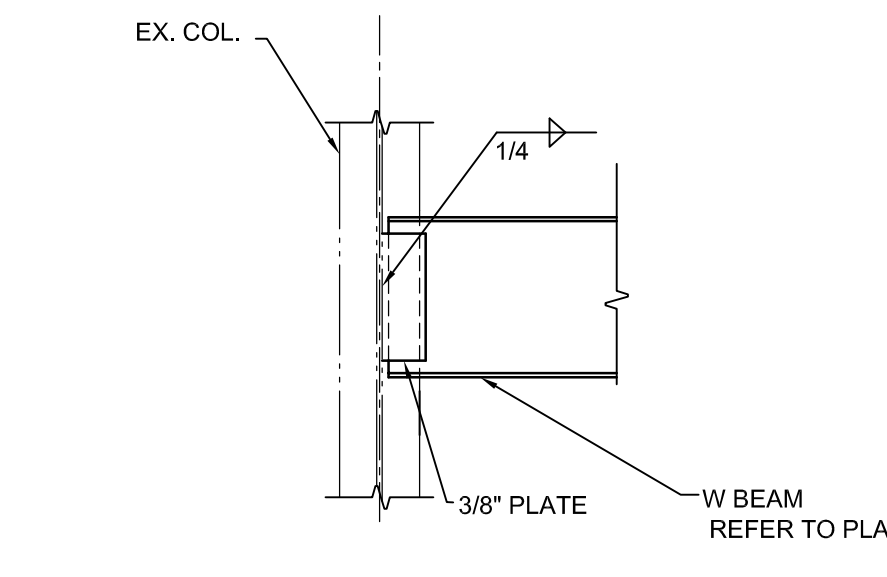
H5 LINTEL BEARING DETAIL
Scale: 3/4" = 1'-0"



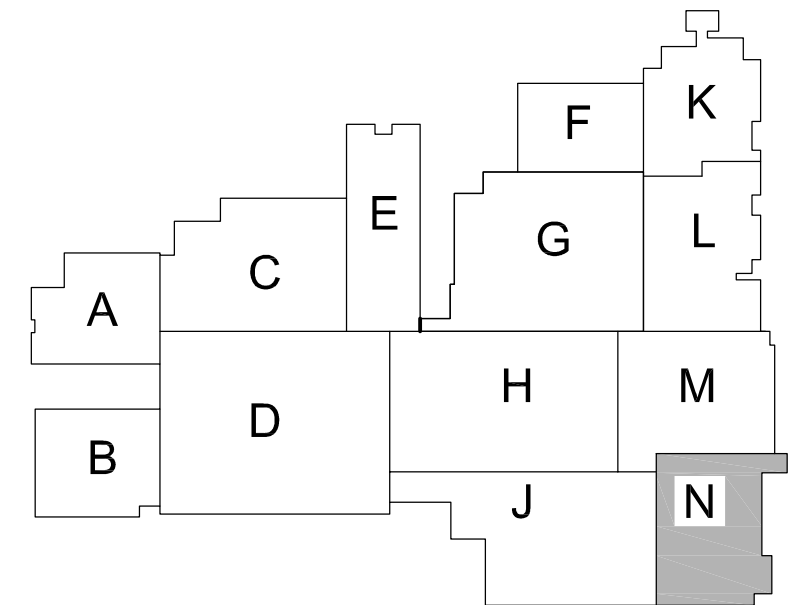
F7 BEAM TO BEAM CONN.
Scale: 1/2" = 1'-0"



F9 LINTEL AND BEAM BEARING PLATE DETAIL
Scale: 1/2" = 1'-0"



H7 BEAM TO COL. CONN.
Scale: 1/2" = 1'-0"



KEY PLAN
NOT TO SCALE

WA

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FARMINGTON HIGH SCHOOL

FARMINGTON HIGH SCHOOL
PARTIAL PLANS & DETAILS

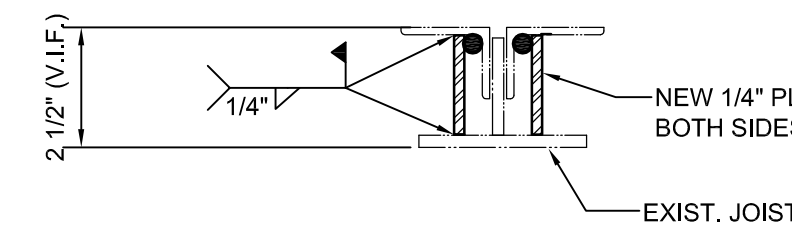
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DESIGN DEVELOPMENT ☐
CONSTRUCTION ☒
FINAL RECORD ☐

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ADD NO. 02 2-17-16

DATE: FEBRUARY 1, 2016
SHEET NO.

S1.3

JOB NO.
151626C



DETAIL @ EXIST. JOIST WEB
MEMBER REINFORCING

TYP. TOP & BOTT.CHORD
JOIST REINFORCING

EXIST. JOIST SEAT REINF.

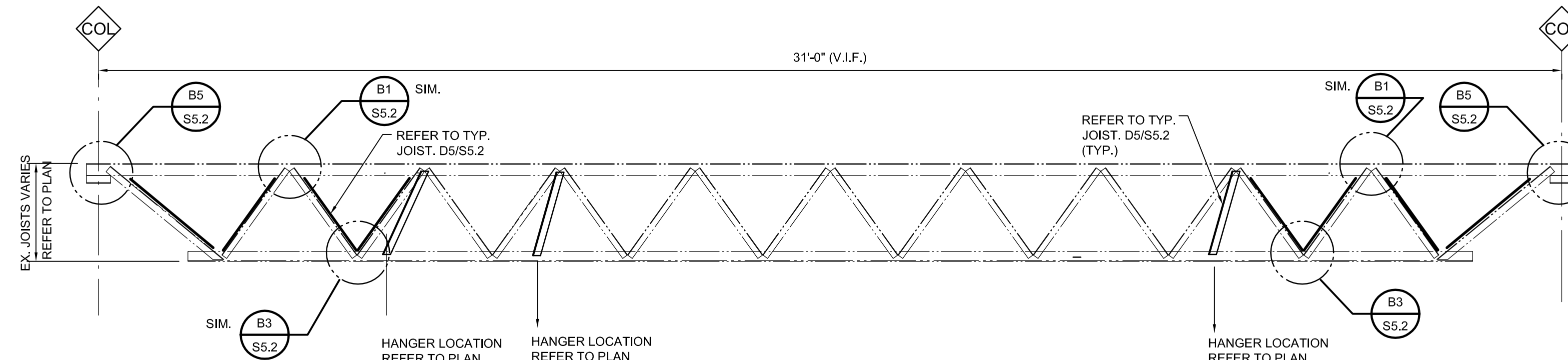
STEEL LINTEL SCHEDULE				
MARK	OPENING	SIZE	BEARING (MIN.)	REMARKS
L-1	15'-4"	W8x21 + PL 3/8" x 7"	8"	

1. PLACE LINTEL BEAMS CENTERED IN WALLS U.N.O.
2. LINTELS NOT SPECIFICALLY SIZED BY DRAWINGS AND DETAIL SECTIONS SHALL COMPLY WITH THE FOLLOWING:

c. ABOVE LINTELS TO HAVE 8" BEARING @ EACH END.

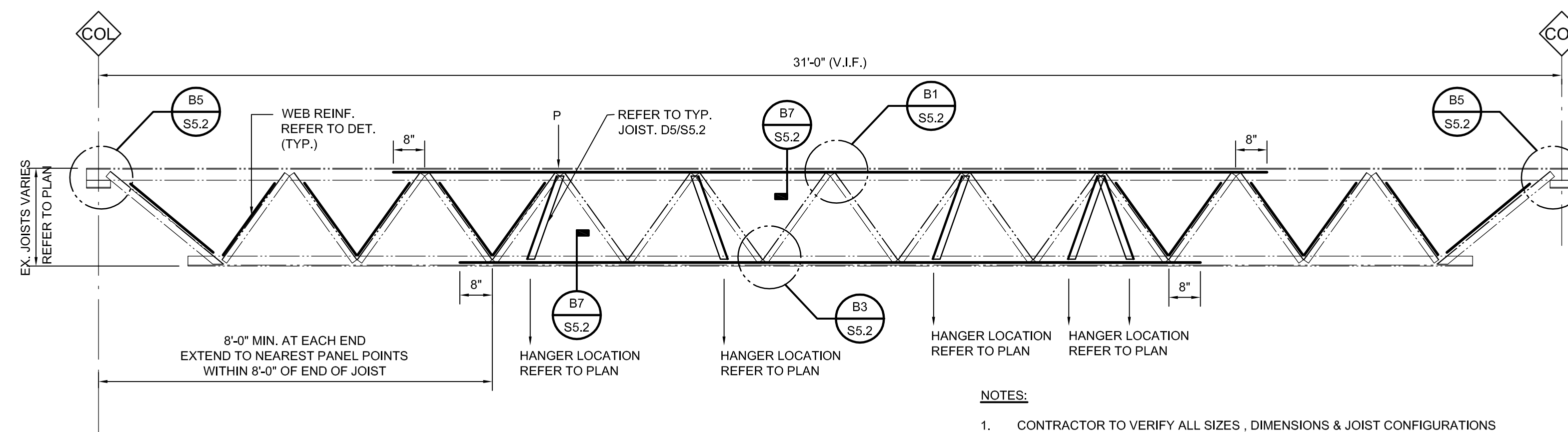


G1 **MASONRY WALL ANCHORAGE DETAILS**
S5.2 Scale: 3/4" = 1'-0"



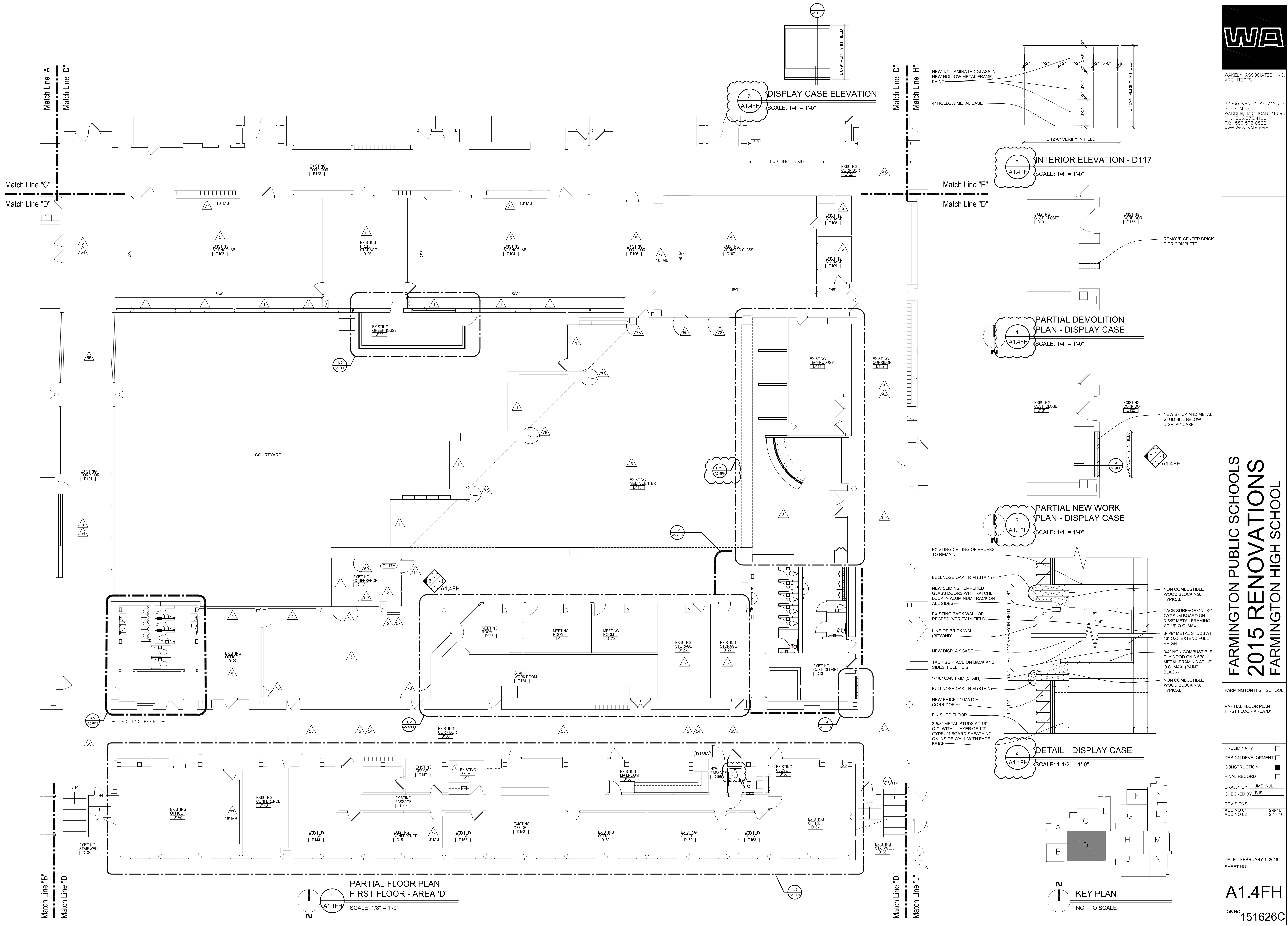
EXISTING JOIST REINF. ELEVATION- RJ-1

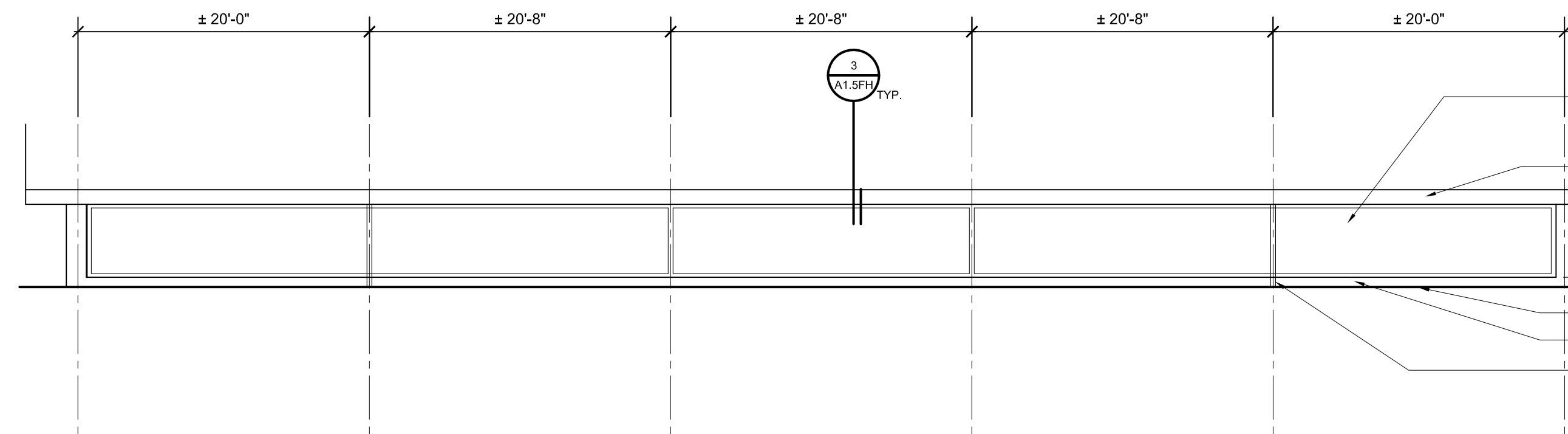
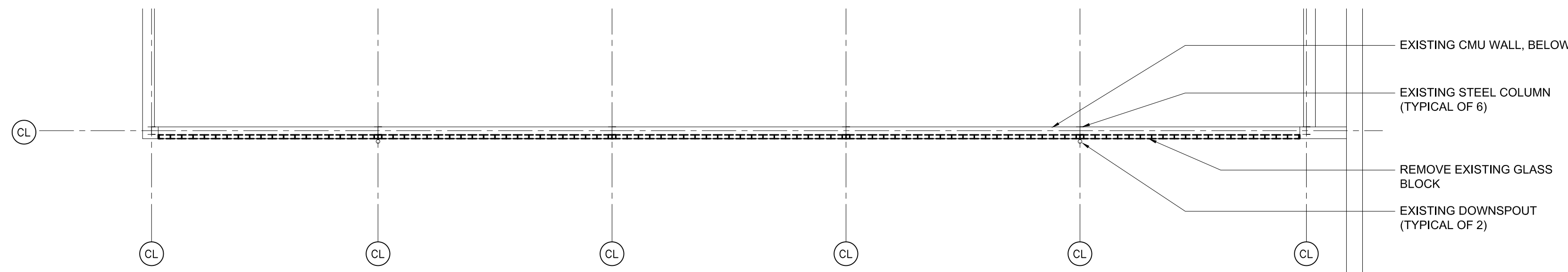
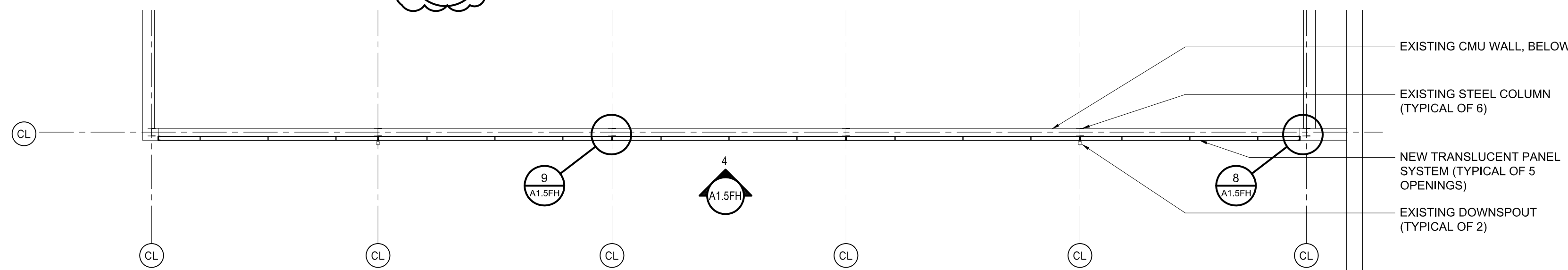
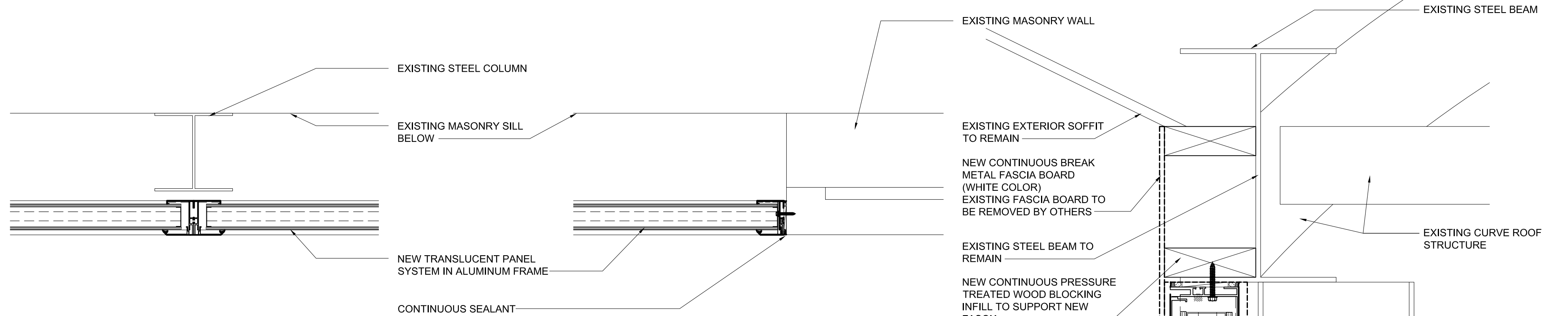
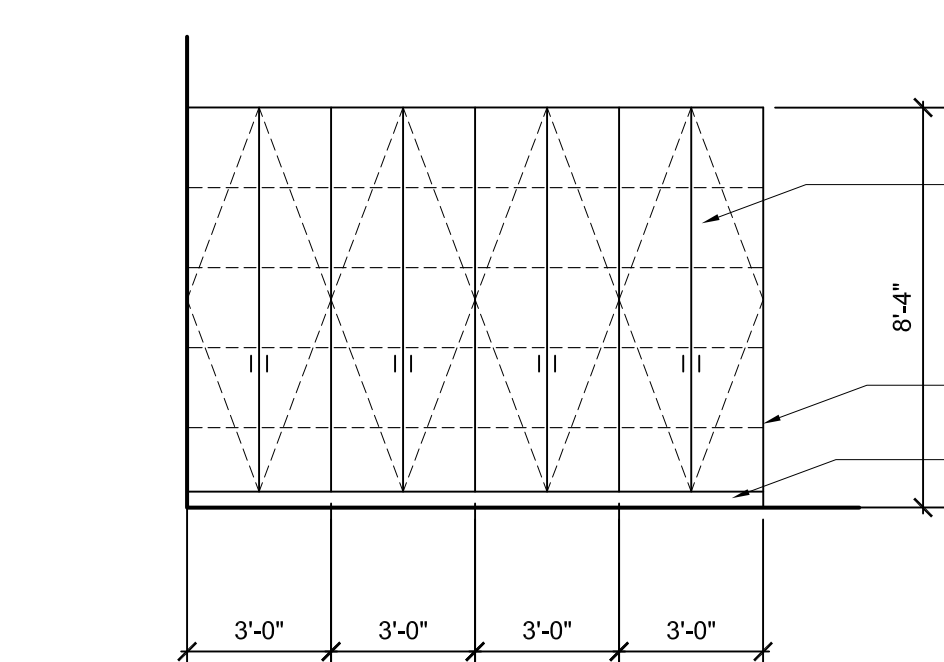
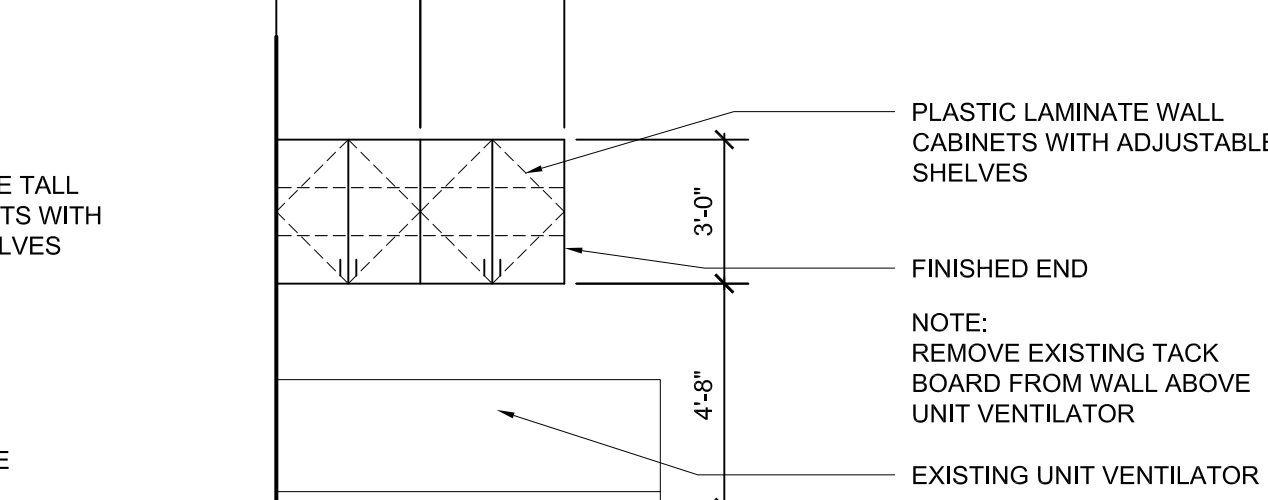
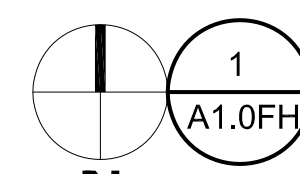
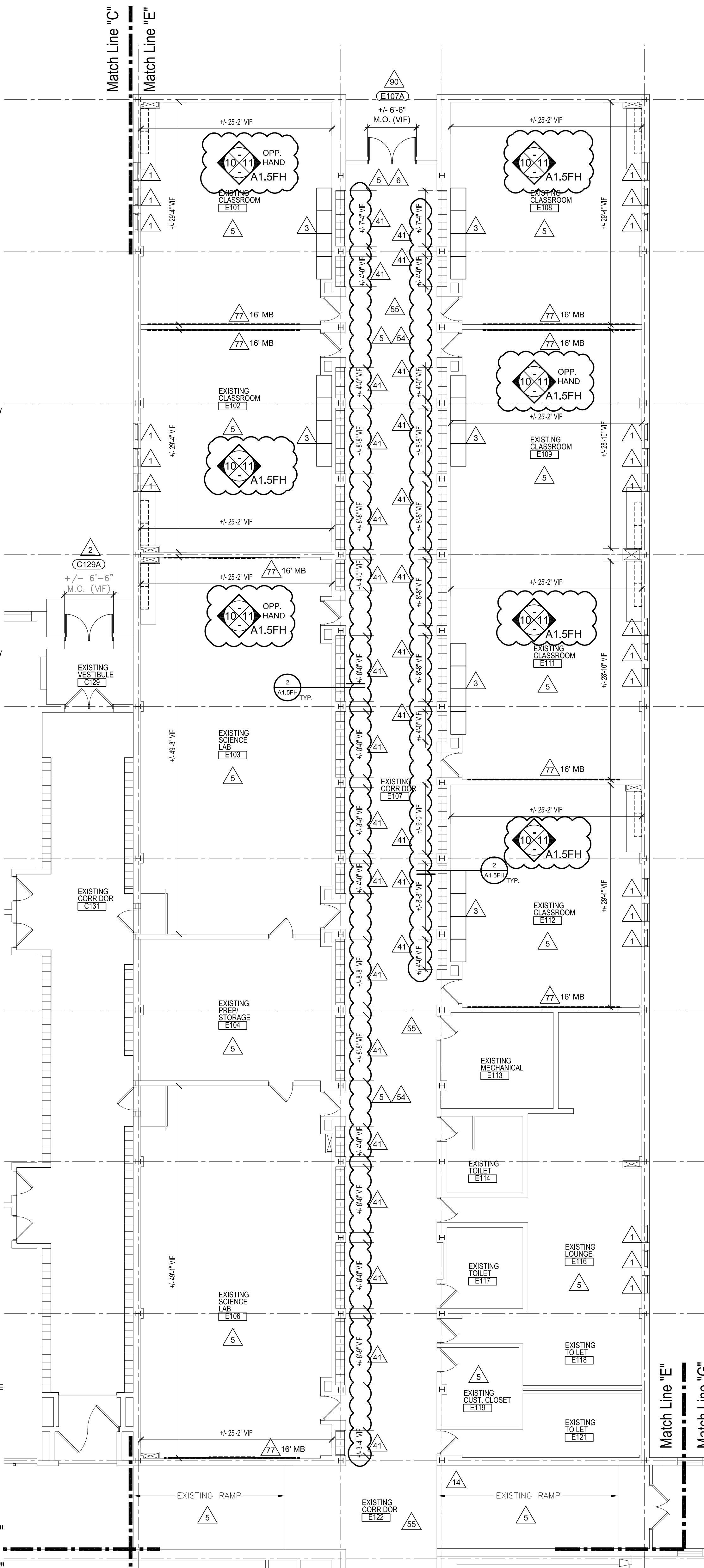
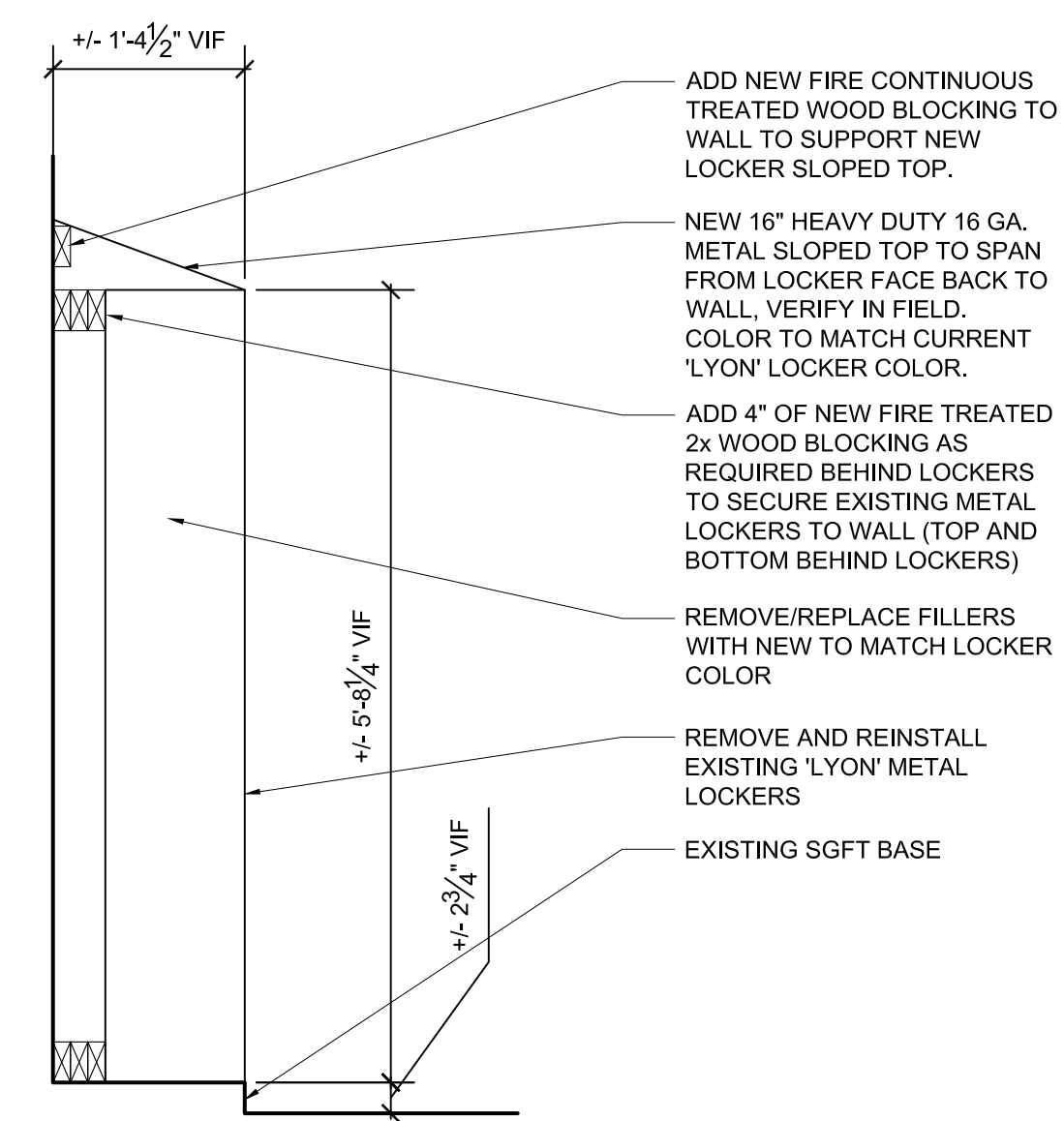
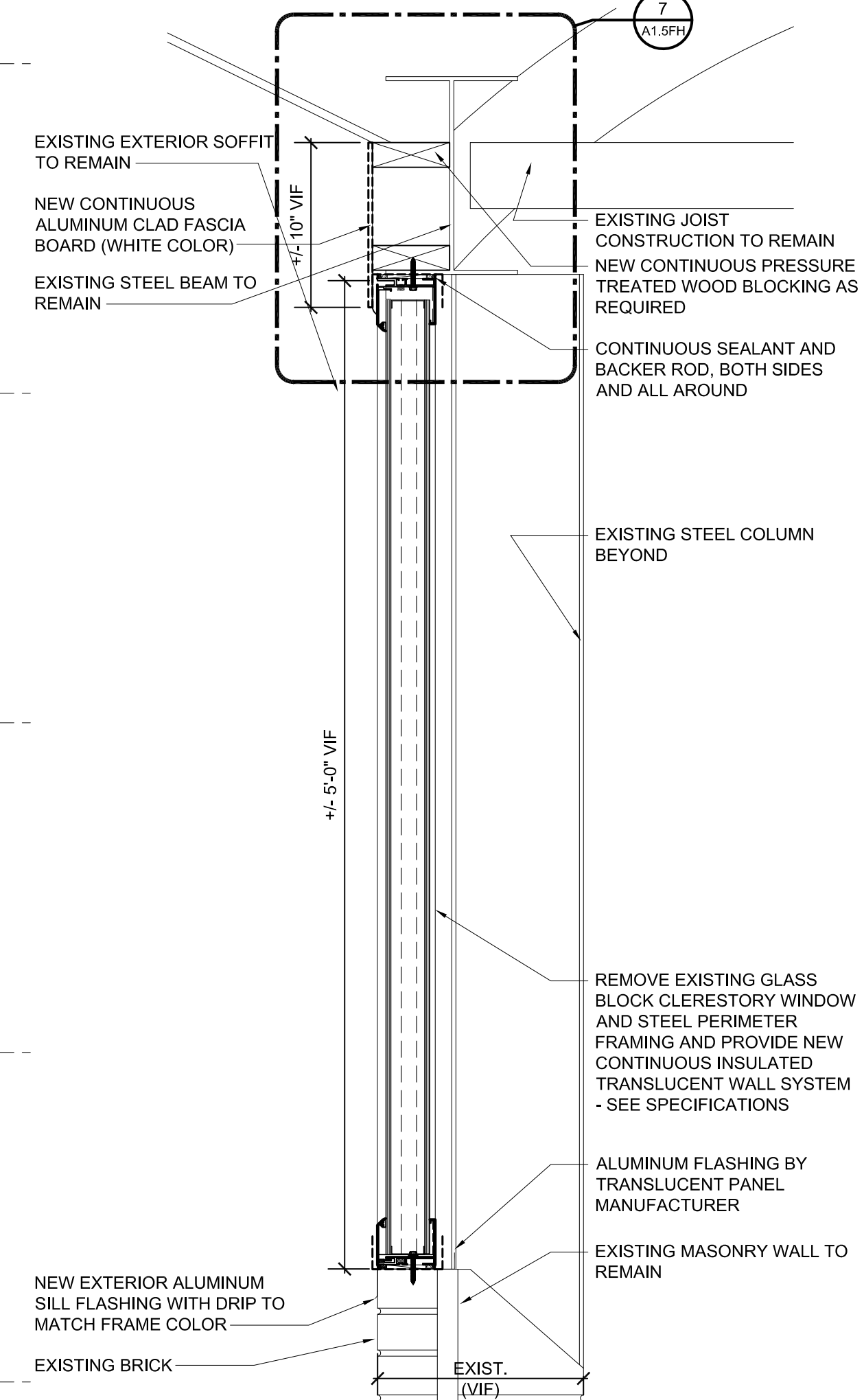
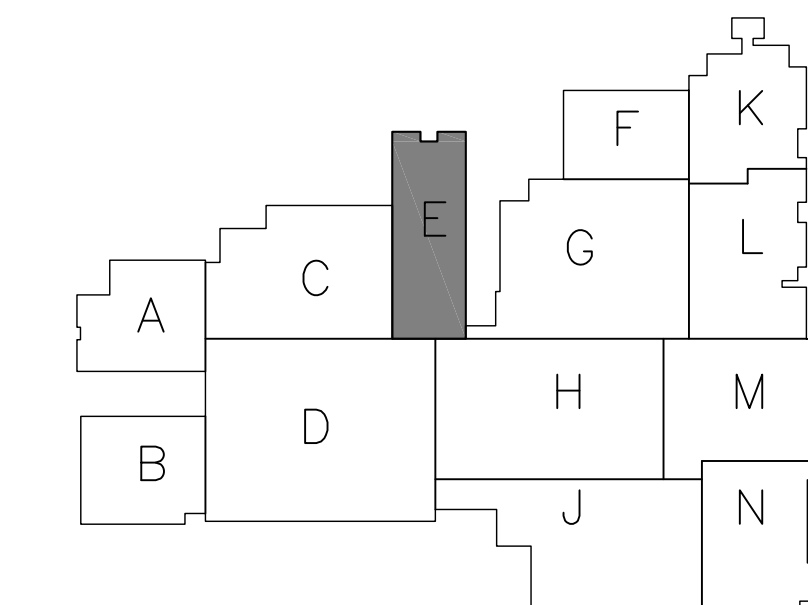
EXISTING JOIST REINF. ELEVATION -RJ-2

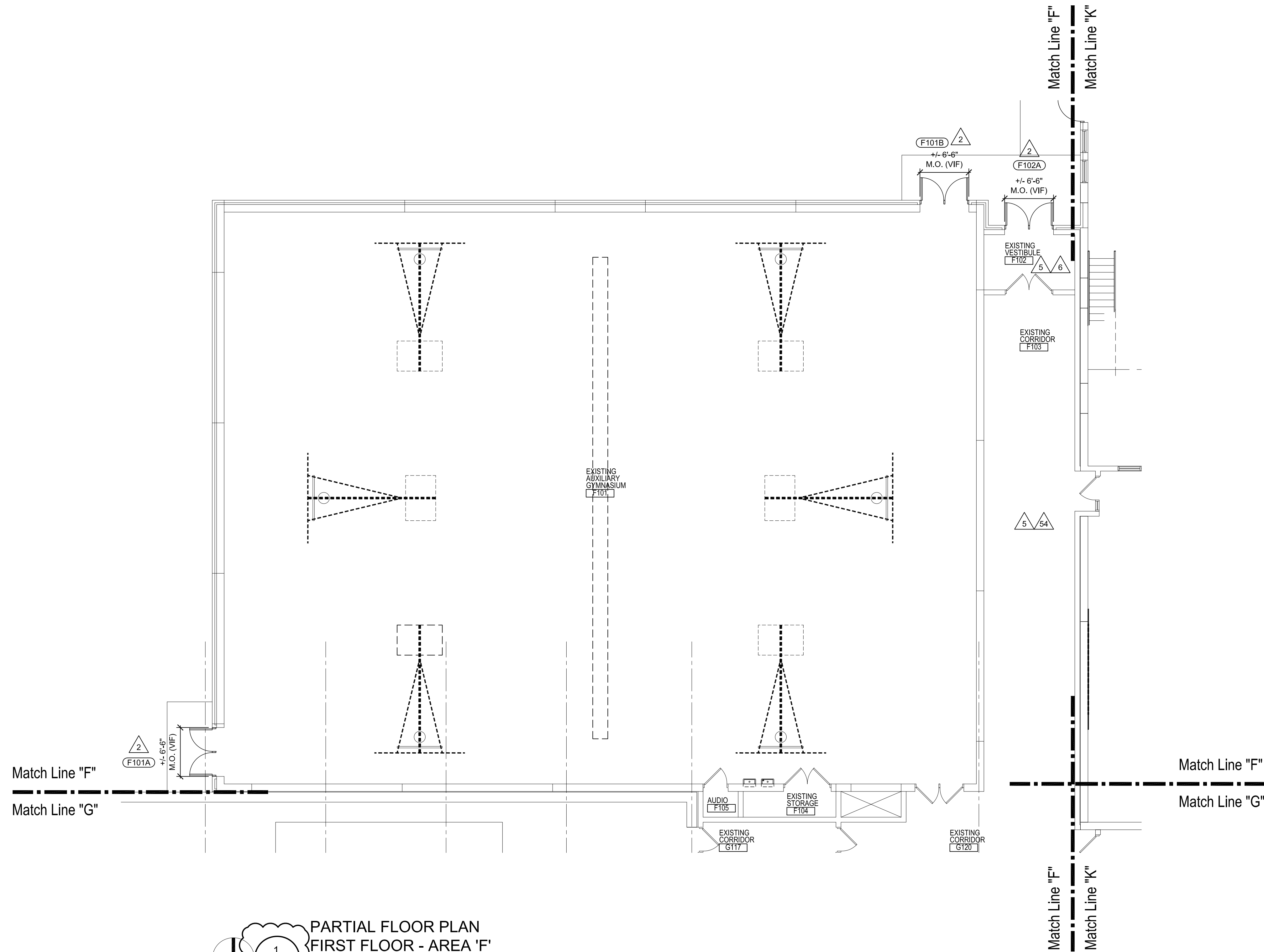


EXISTING JOIST REINF. ELEVATION- RJ-3

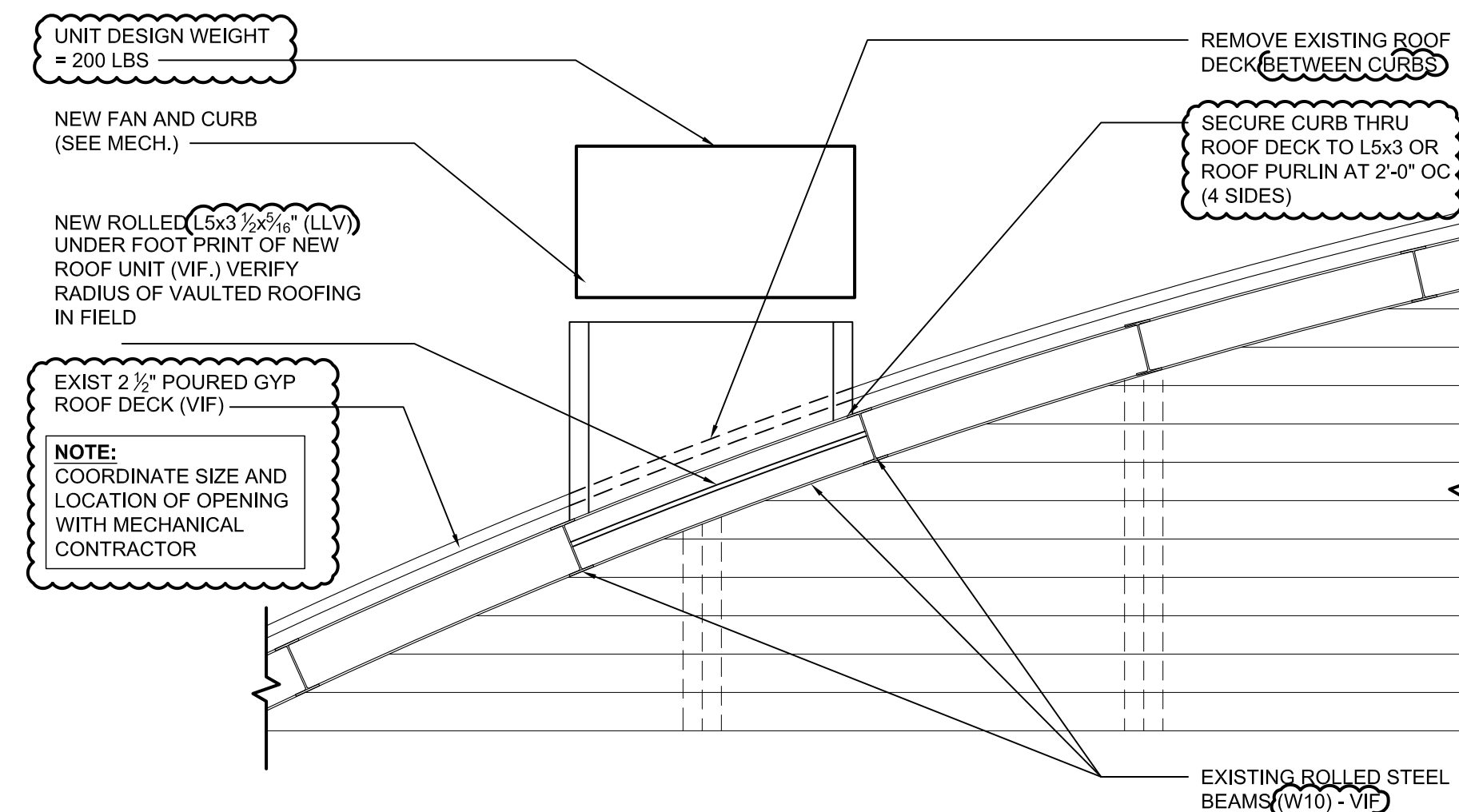
1. CONTRACTOR TO VERIFY ALL SIZES, DIMENSIONS & JOIST CONFIGURATIONS IN THE FIELD & NOTIFY ARCH/ENGR. IMMEDIATELY OF ANY DISCREPANCIES. FROM THAT WHICH IS INDICATED ON THESE DRAWINGS.
2. CONTRACTOR SHALL USE CARE DURING WELDING TO ENSURE AGAINST DISTORTION OF EXISTING JOIST MEMBERS.
3. IN ADDITION TO REINFORCING SHOWN HERE, EXIST. JOISTS MUST ALSO BE REINFORCE WHERE NEW CONCENTRATED LOADS ARE LOCATED BETWEEN PANEL POINTS OF EXIST. JOISTS.
4. JOIST REINFORCING SHALL BE INSTALLED WHILE EXISTING JOIST HAS NO APPLIED DEAD OR LIVE LOADS ON IT. JOIST SHALL BE SHORED, AND UNLOADED, TO ITS ORIGINAL UNDEFLECTED CONDITION IF EXIST. JOIST IS SUBJECT ANY LIVE LOAD OR APPLIED DEAD LOAD AT THE TIME THAT NEW JOIST REINFORCING IS TO BE INSTALLED.



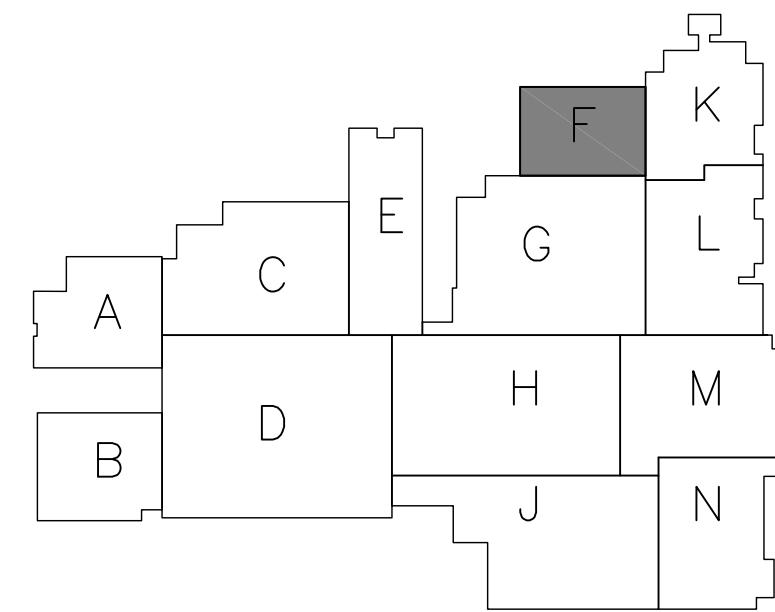
4 GYMNASIUM CLERESTORY ELEVATION
A1.5FH SCALE: 1/8" = 1'-0"5 GYMNASIUM CLERESTORY
PARTIAL DEMOLITION PLAN
A1.8FH SCALE: 1/8" = 1'-0"6 GYMNASIUM CLERESTORY
PARTIAL FLOOR PLAN
A1.8FH SCALE: 1/8" = 1'-0"9 PLAN DETAIL AT COLUMN
A1.5FH SCALE: 1-1/2" = 1'-0"8 PLAN DETAIL AT JAMB
A1.5FH SCALE: 1-1/2" = 1'-0"7 DETAIL - CLERESTORY
A1.5FH SCALE: 3" = 1'-0"11 INTERIOR ELEVATION
A1.5FH SCALE: 1/4" = 1'-0"10 INTERIOR ELEVATION
A1.5FH SCALE: 1/4" = 1'-0"PARTIAL FLOOR PLAN
FIRST FLOOR - AREA 'E'
SCALE: 1/8" = 1'-0"2 SECTION - LOCKERS
A1.5FH SCALE: 3/4" = 1'-0"3 SECTION - CLERESTORY
A1.5FH SCALE: 1-1/2" = 1'-0"KEY PLAN
NOT TO SCALE



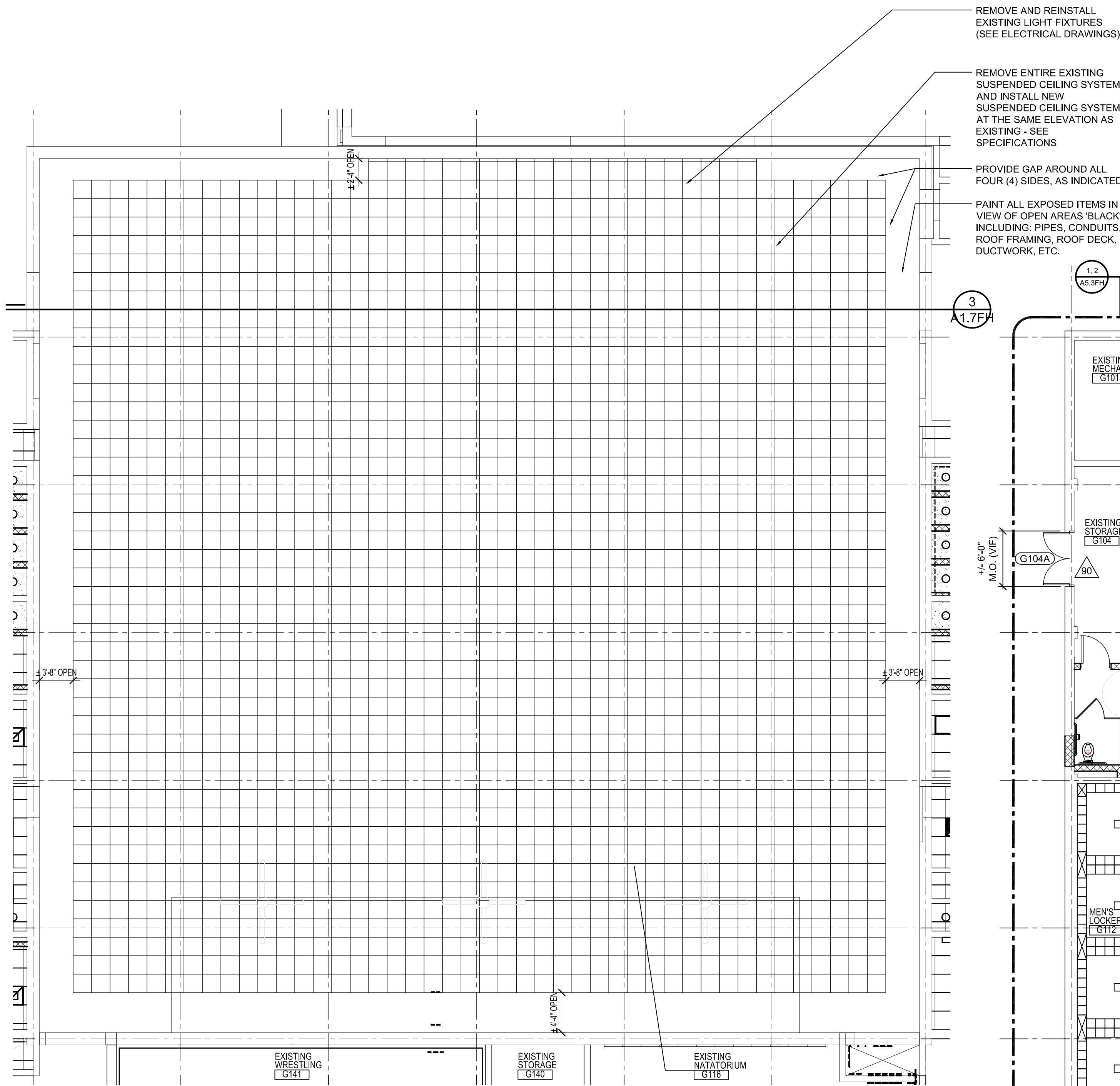
PARTIAL FLOOR PLAN
FIRST FLOOR - AREA 'F'
SCALE: 1/8" = 1'-0"



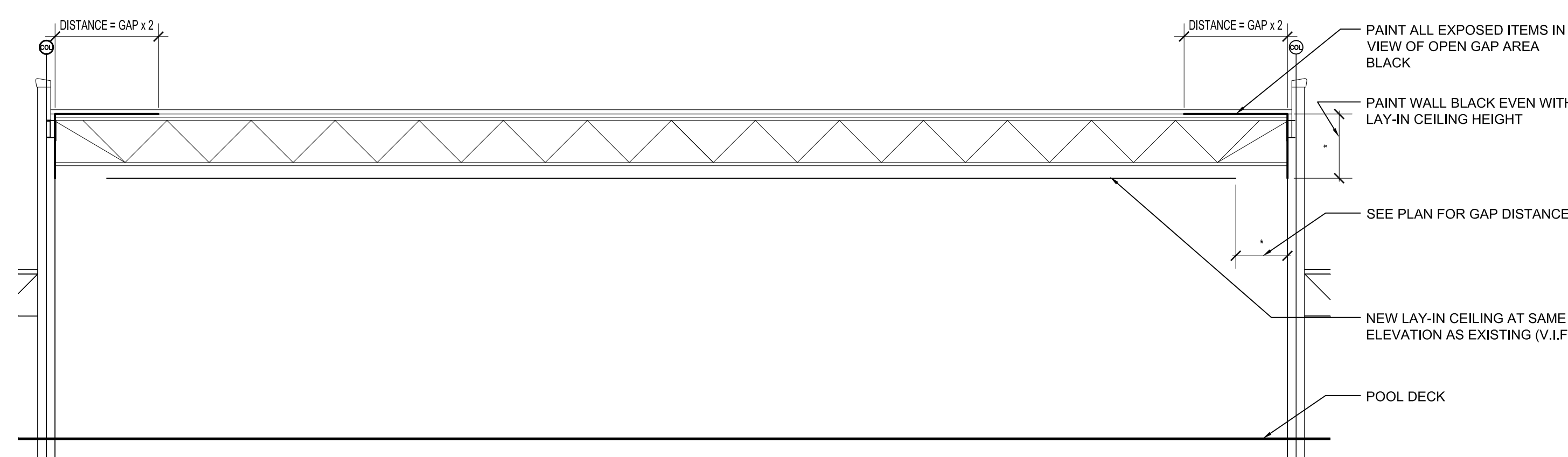
SECTION @ GYM ROOF EXHAUST FAN
SCALE: 1/2" = 1'-0"



KEY PLAN
NOT TO SCALE



2
A2.0FH
PARTIAL CEILING PLAN
AREA 'G' - NATATORIUM
SCALE: 1/8" = 1'-0"



3
A2.0FH
TYPICAL DETAIL AT
NATATORIUM WALL
SCALE: 1/8" = 1'-0"

Match Line "E"
Match Line "G"

Match Line "E"
Match Line "G"

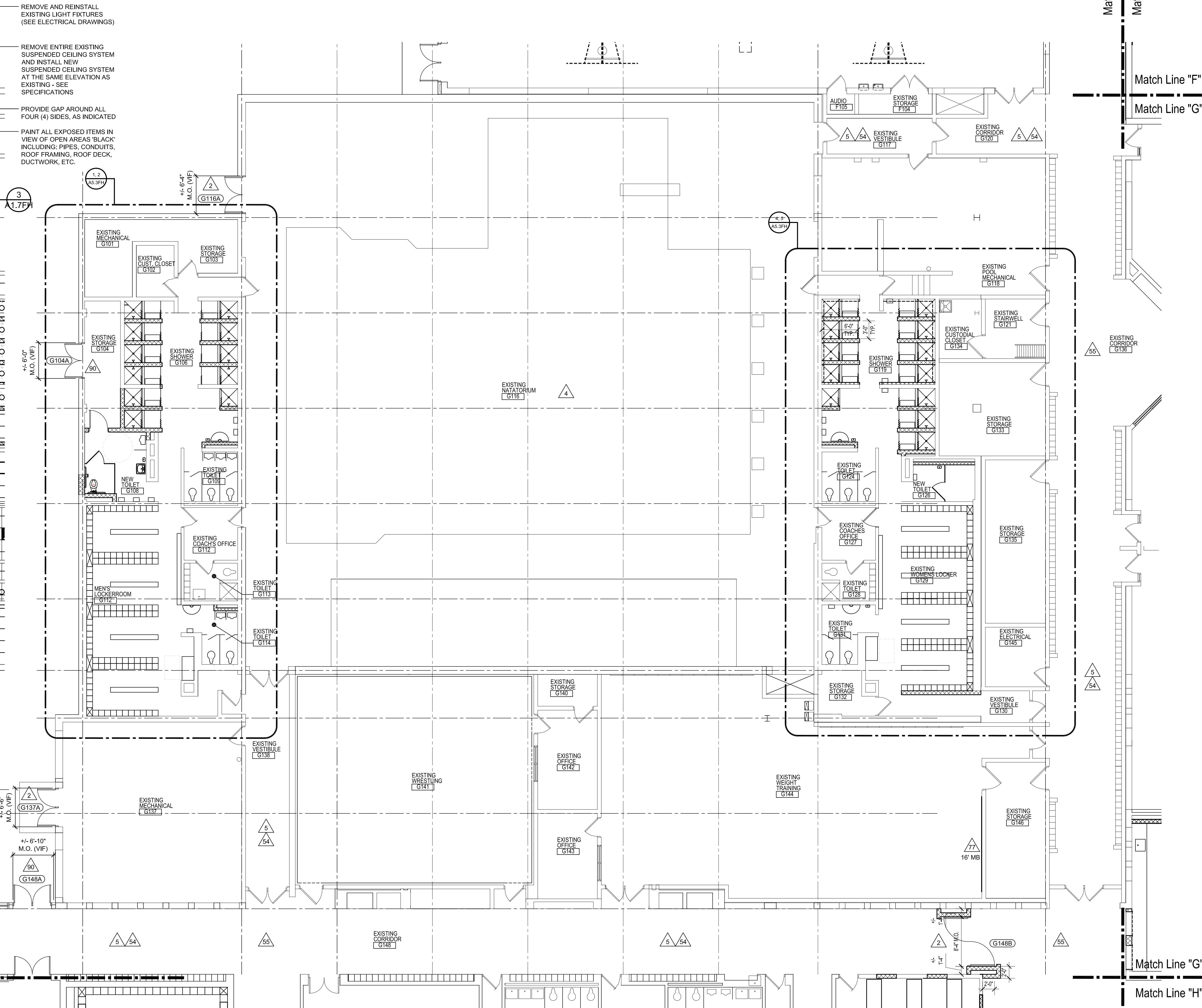
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Match Line "G"

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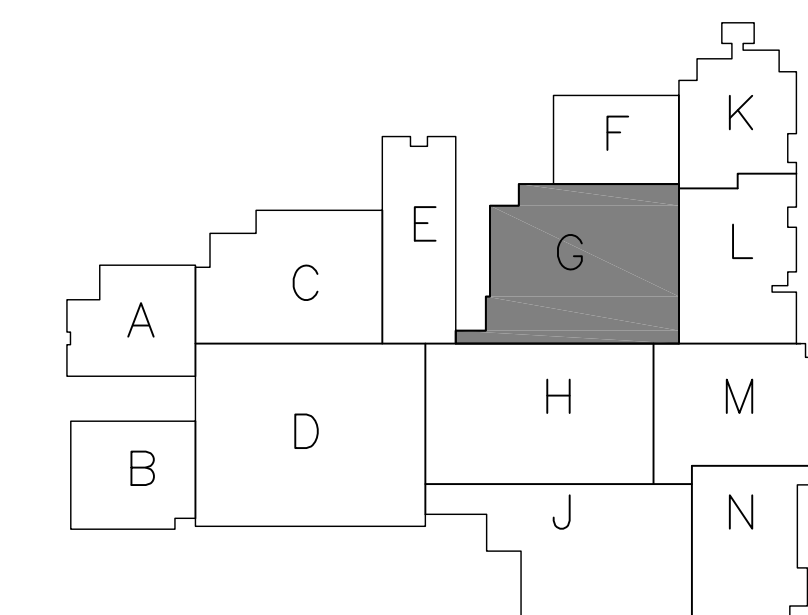
Match Line "E"
Match Line "G"

Match Line "E"
Match Line "G"

Match Line "E"
Match Line "G"



1
A1.0FH
PARTIAL FLOOR PLAN
FIRST FLOOR - AREA 'G'
SCALE: 1/8" = 1'-0"



KEY PLAN
NOT TO SCALE

WA

WAKELY ASSOCIATES, INC.
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2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

FARMINGTON HIGH SCHOOL
PARTIAL FLOOR PLAN
FIRST FLOOR AREA 'G'

PRELIMINARY ☐

DESIGN DEVELOPMENT ☐

CONSTRUCTION ☒

FINAL RECORD ☐

DRAWN BY: JMS, NJL

CHECKED BY: BJS

REVISIONS

A00 NO 02 2-17-16

DATE: FEBRUARY 1, 2016

SHEET NO.

A1.7FH

JOB NO. 151626C

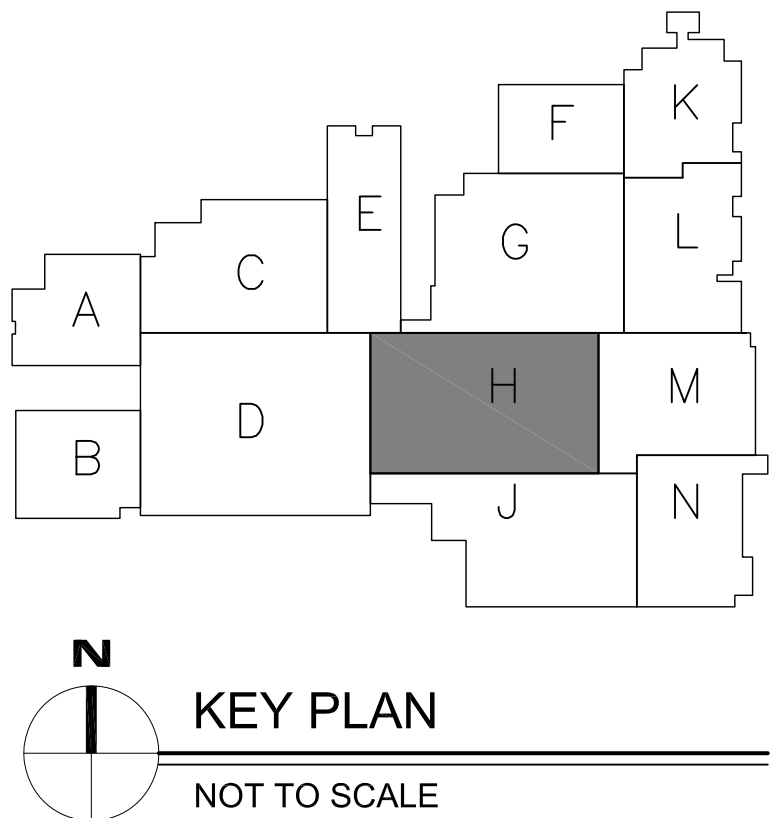
FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

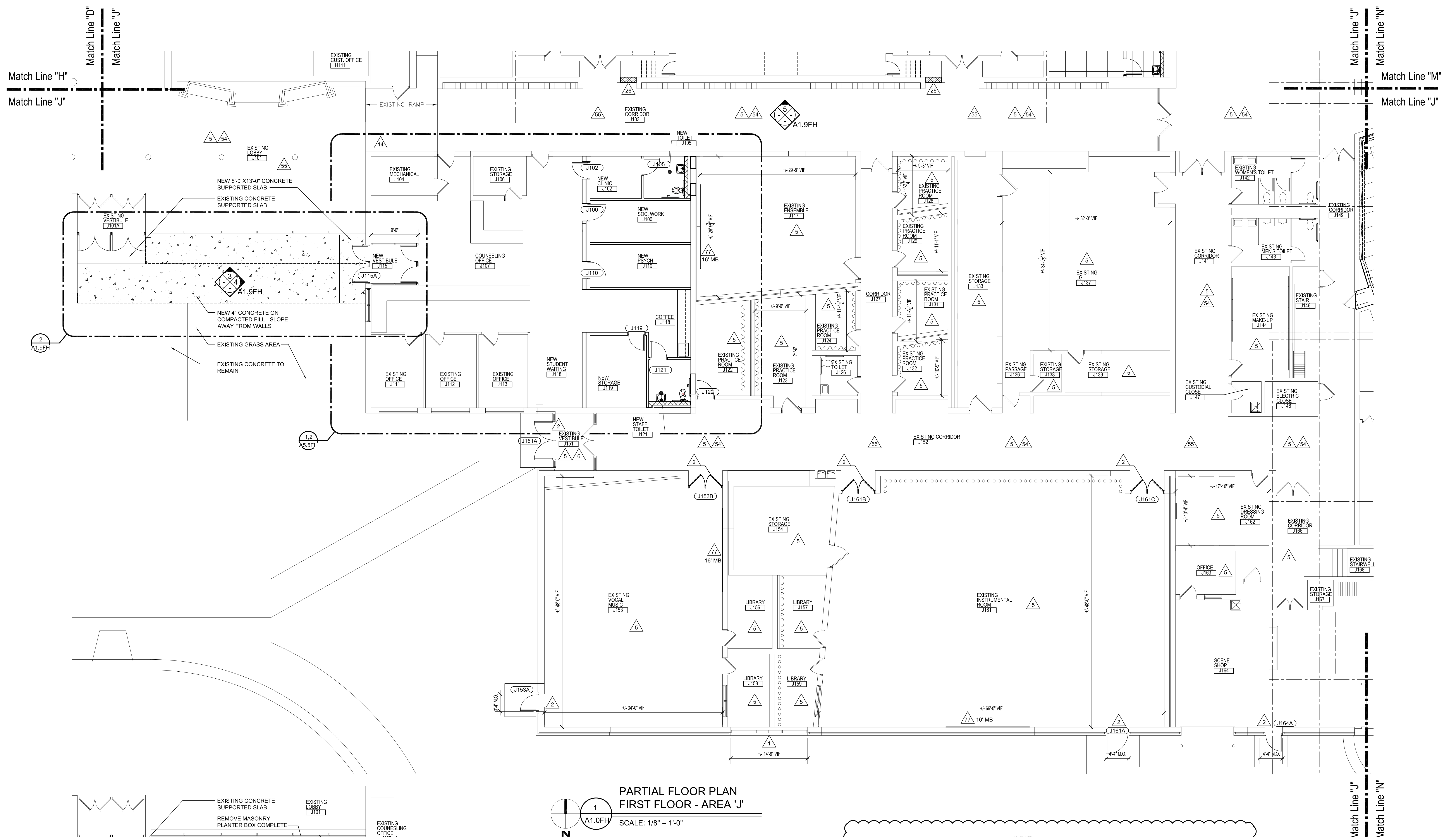
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NO 01	2-8-16
NO 02	2-17-16

TE: FEBRUARY 1, 2016
EET NO.

A1.8FH

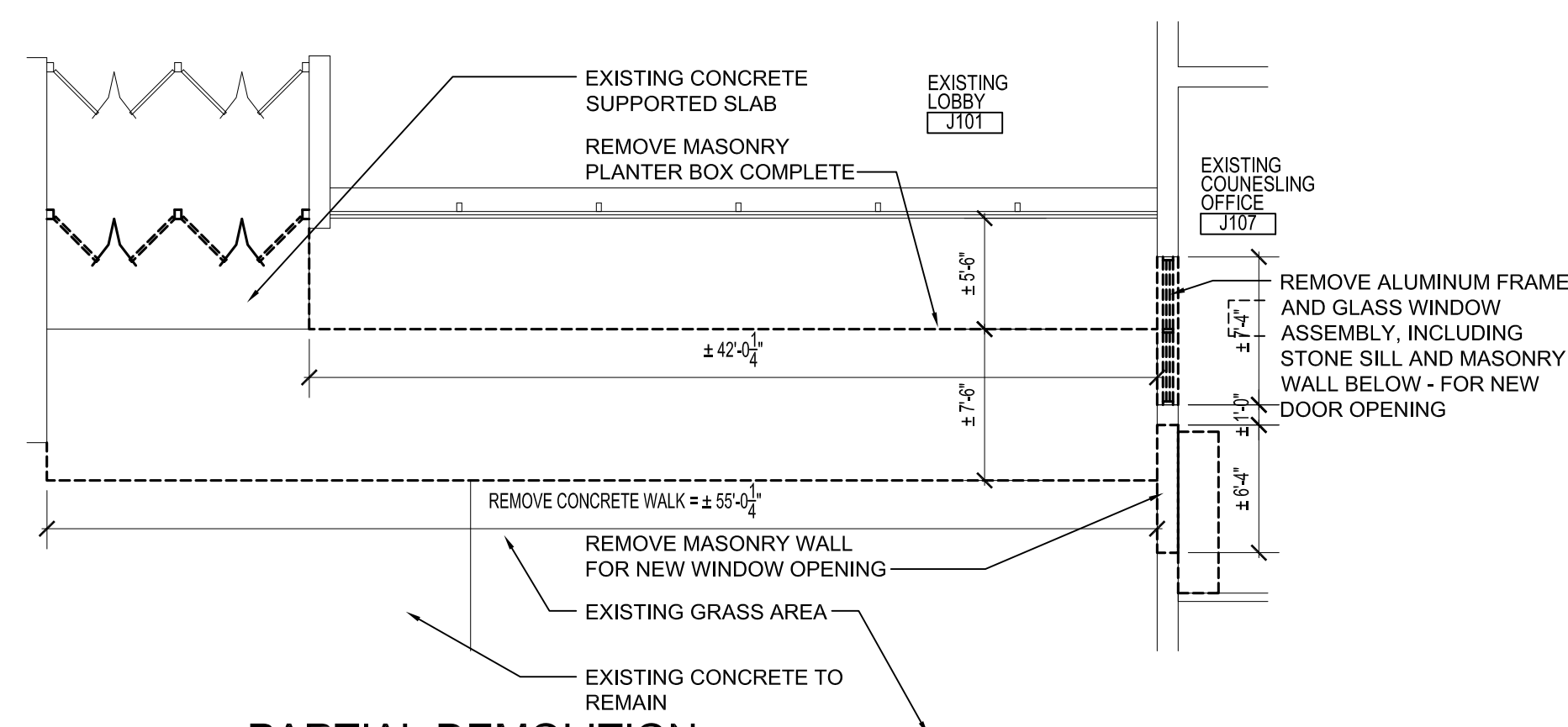
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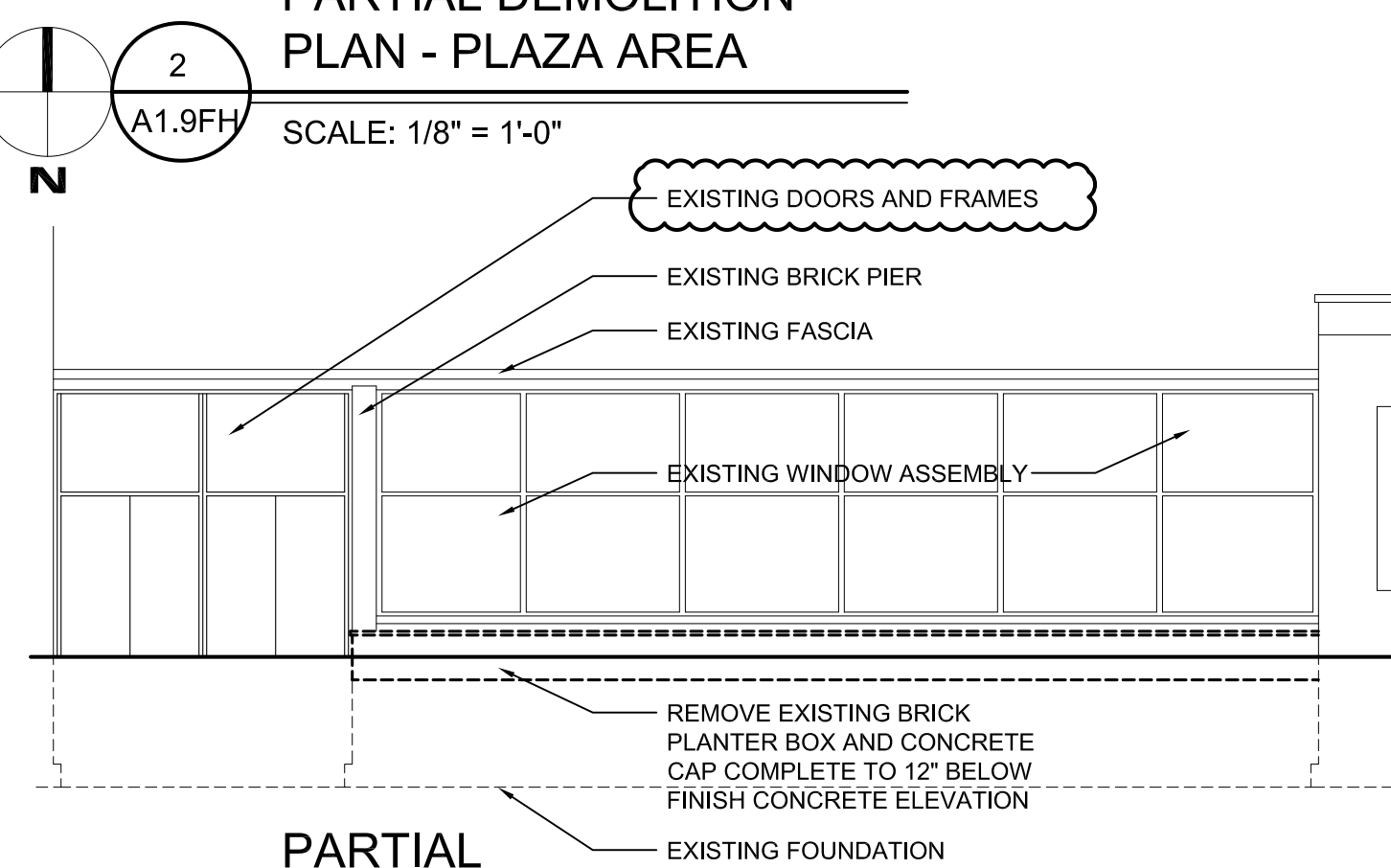


PARTIAL FLOOR PLAN
FIRST FLOOR - AREA 'J'

SCALE: 1/8" = 1'-0"

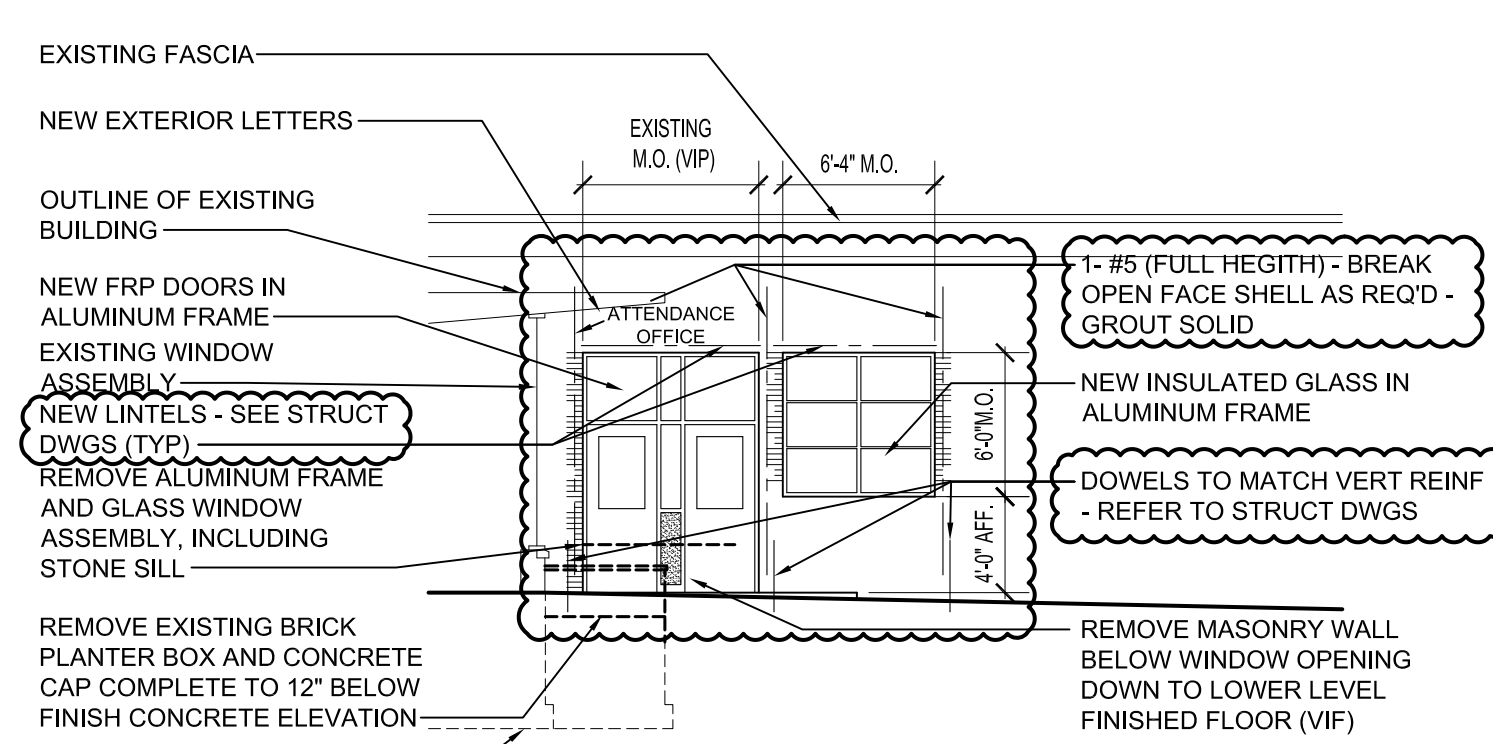
PARTIAL DEMOLITION
PLAN - PLAZA AREA

SCALE: 1/8" = 1'-0"

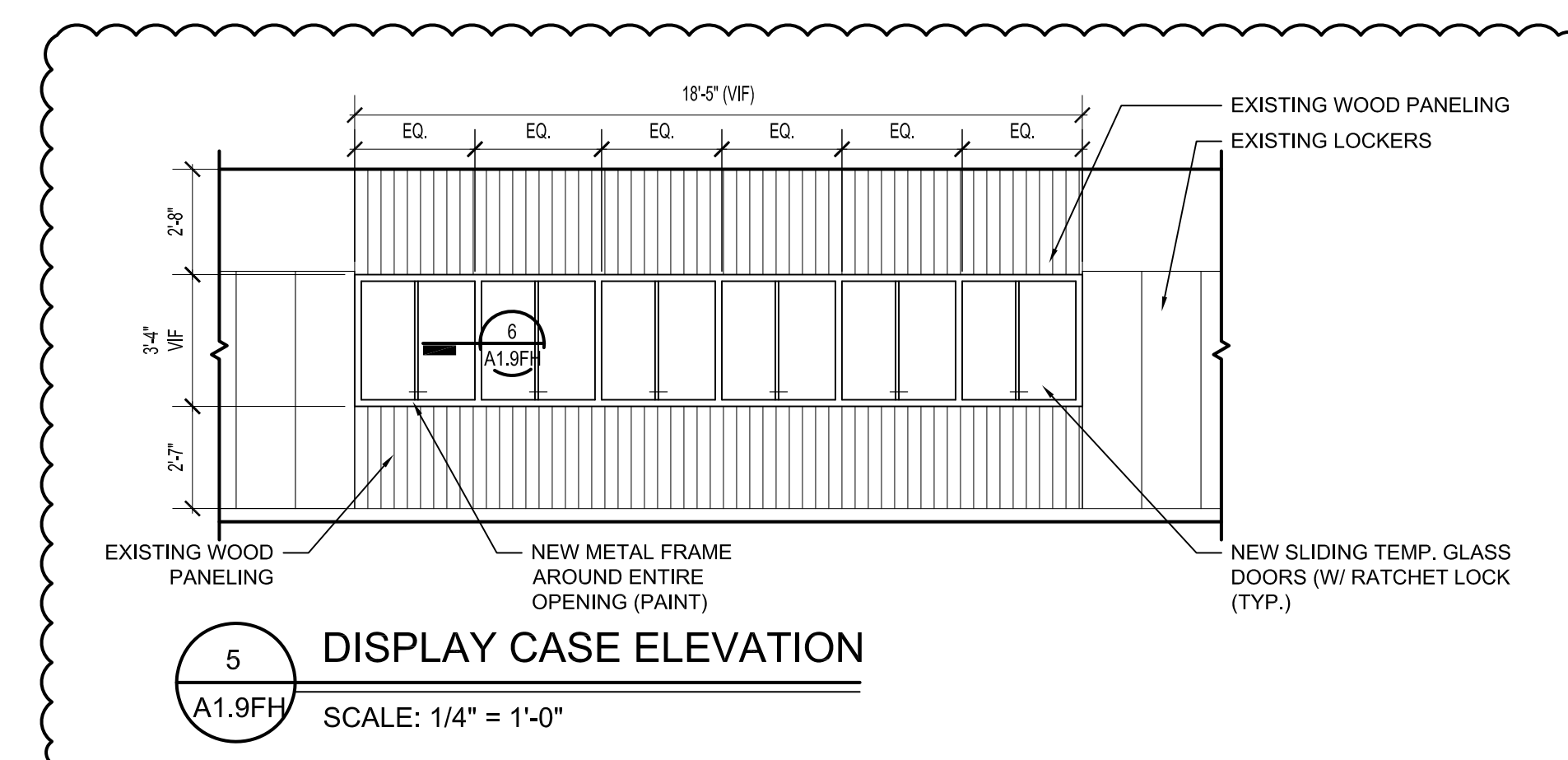


PARTIAL
SOUTH ELEVATION

SCALE: 1/8" = 1'-0"

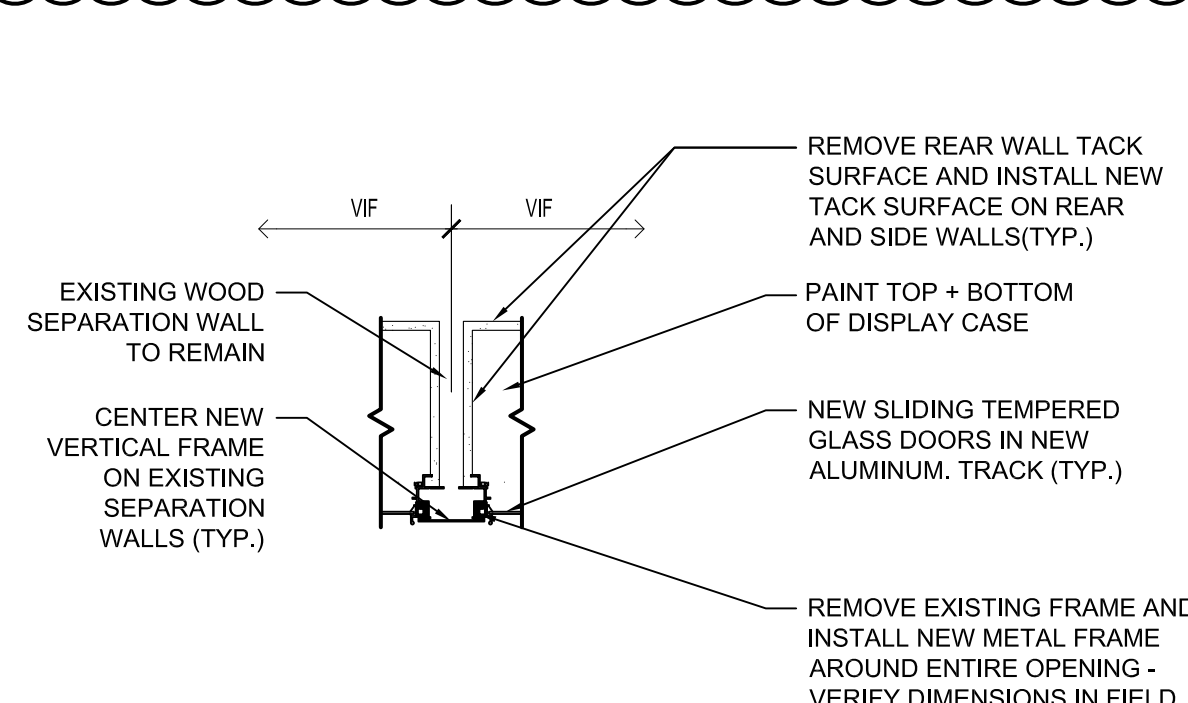
PARTIAL WEST
ELEVATION

SCALE: 1/8" = 1'-0"



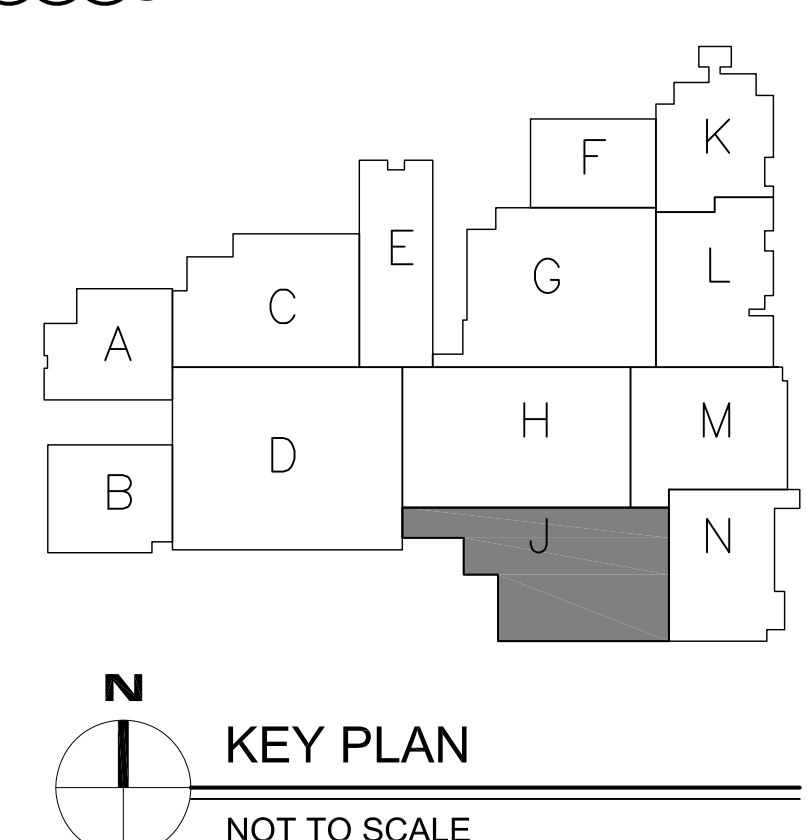
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SCALE: 1/4" = 1'-0"



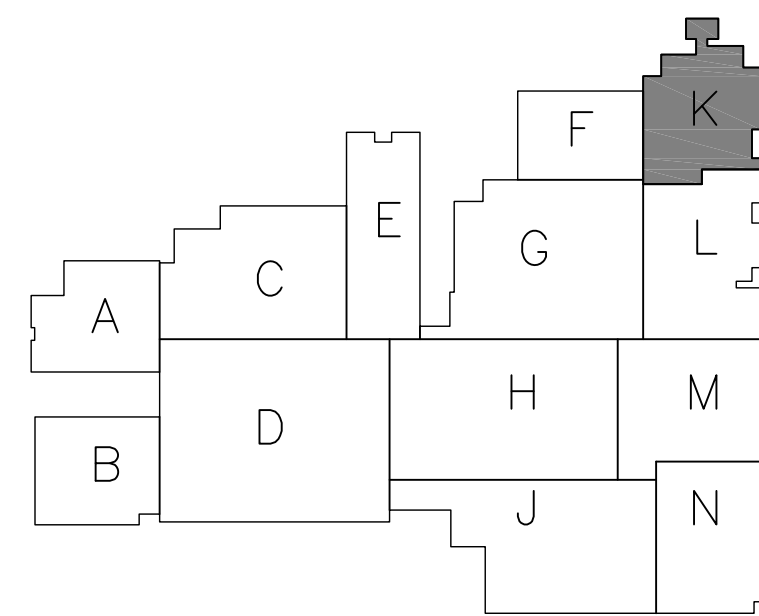
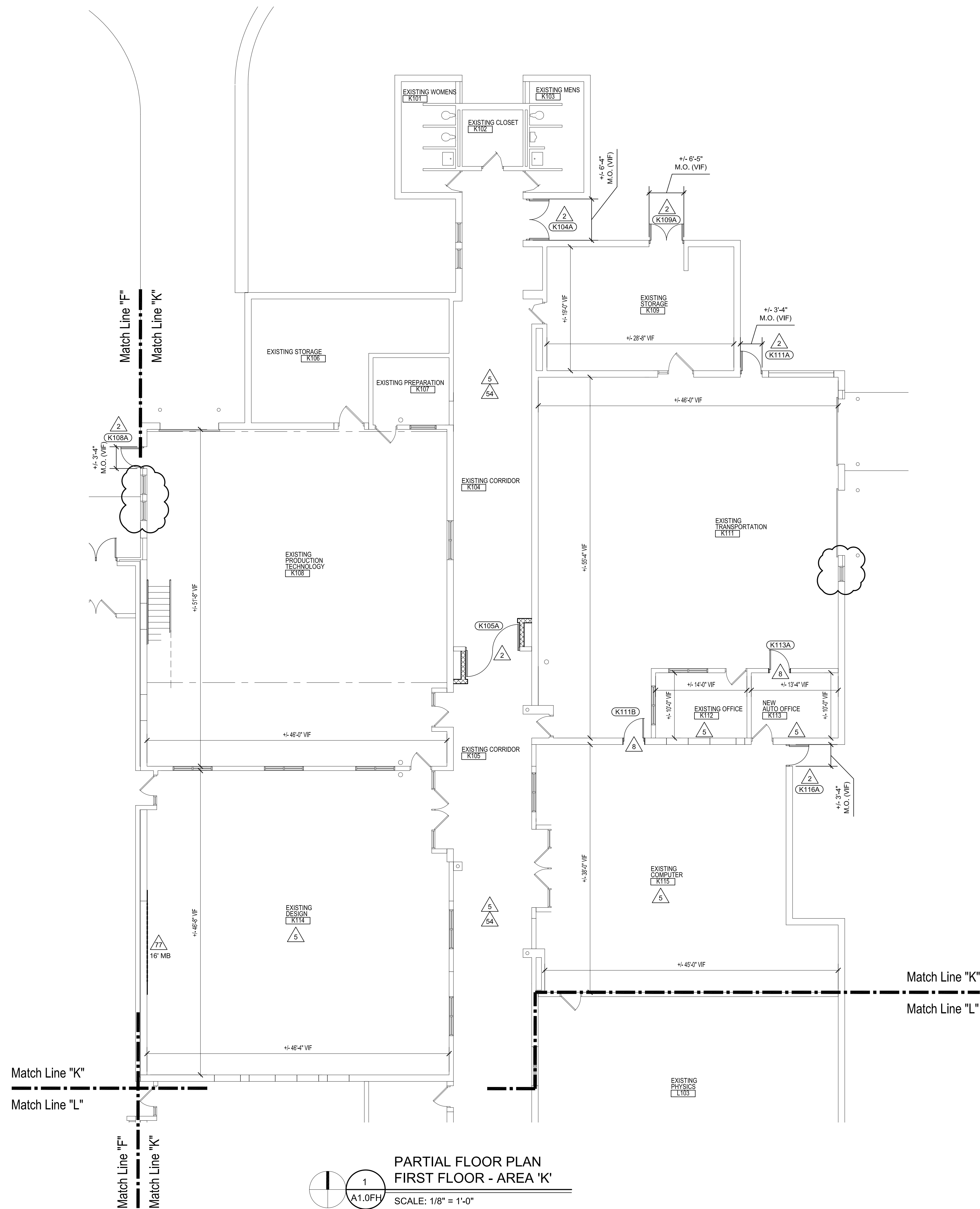
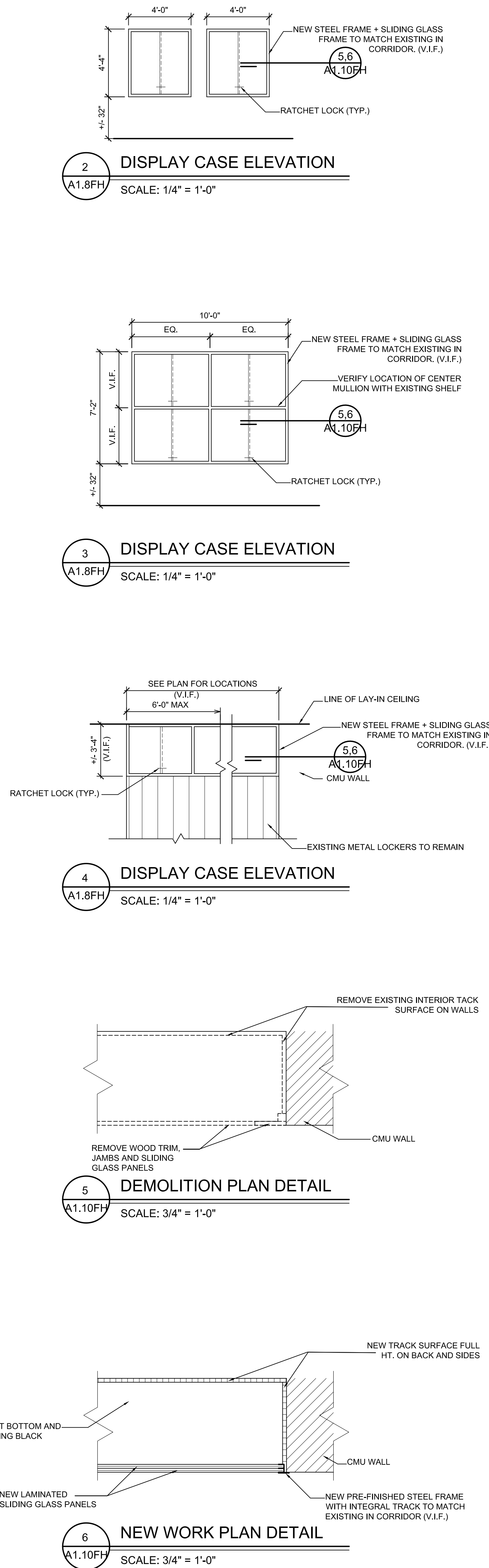
DISPLAY CASE DETAIL

SCALE: 3/4" = 1'-0"



KEY PLAN

NOT TO SCALE



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2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

BIRMINGHAM HIGH SCHOOL

PARTIAL FLOOR PLAN
1ST FLOOR AREA 'L'

ELIMINARY	<input type="checkbox"/>
SIGN DEVELOPMENT	<input type="checkbox"/>
INSTRUCTION	<input checked="" type="checkbox"/>
AL RECORD	<input type="checkbox"/>

AWN BY JMS, NJL
ECKED BY BJS

VISIONS	
NO 02	2-17-16

TE: FEBRUARY 1, 2016

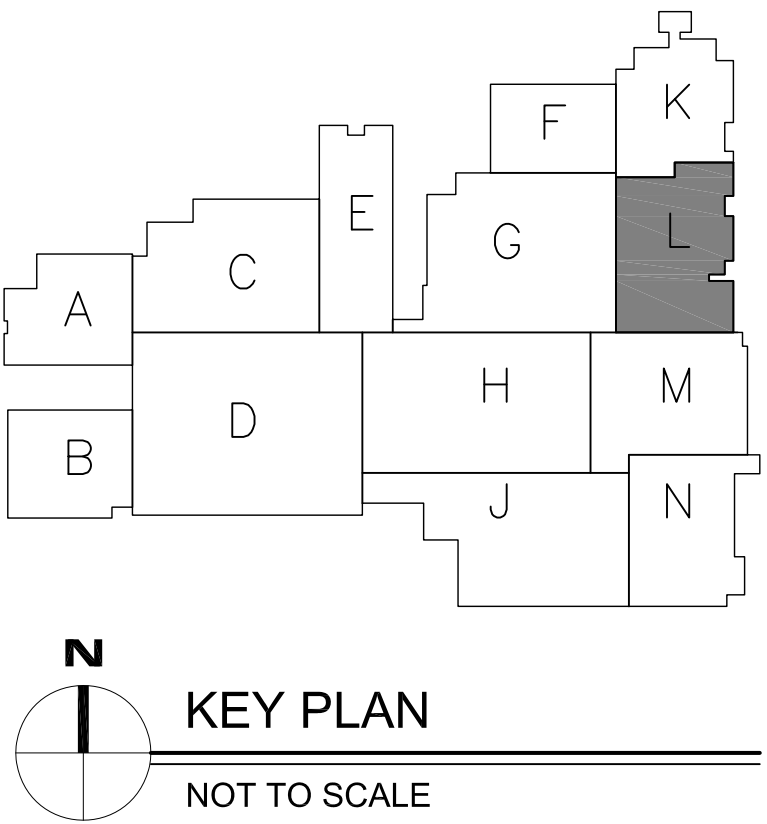
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A1.11FH

R NO

151626C

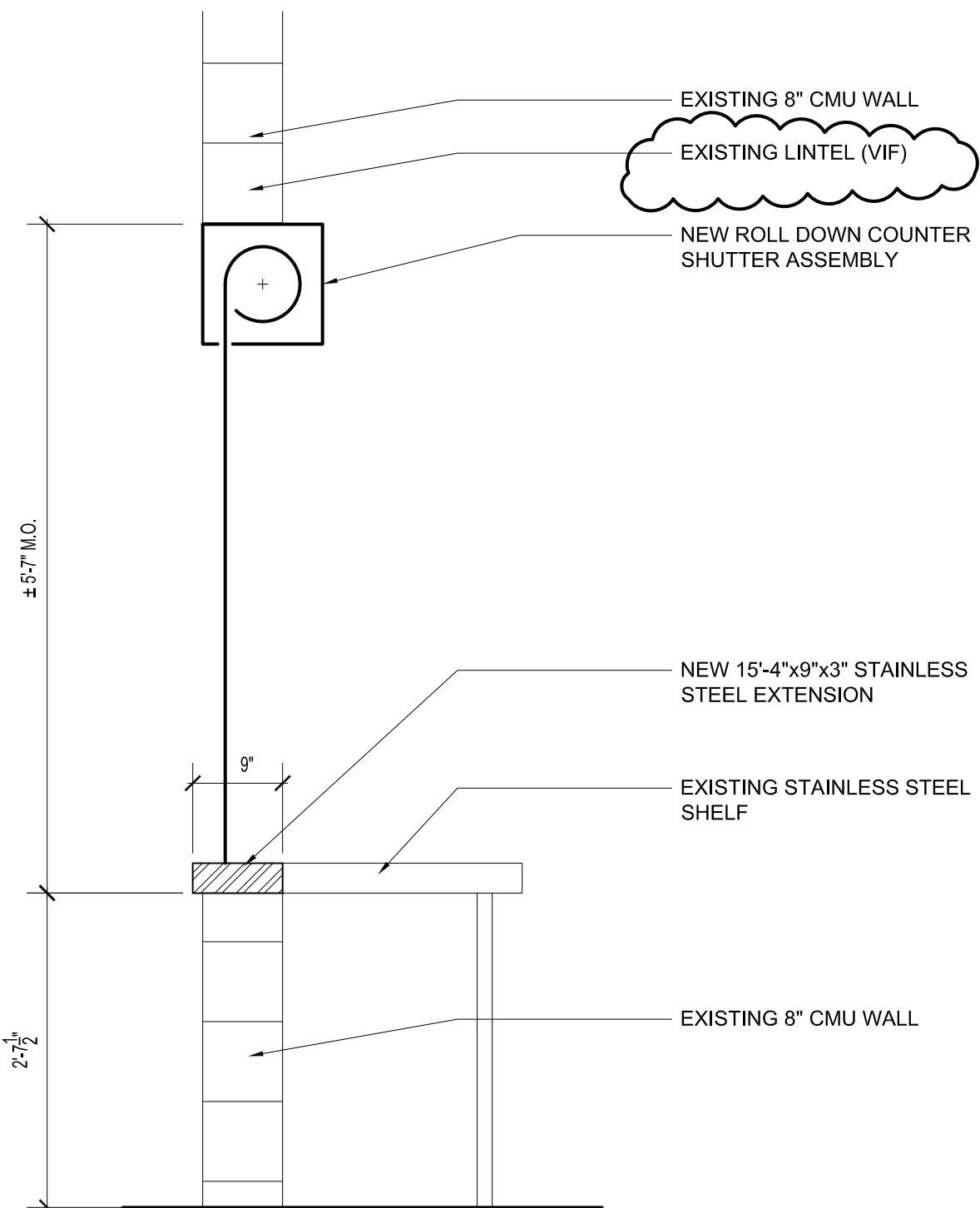
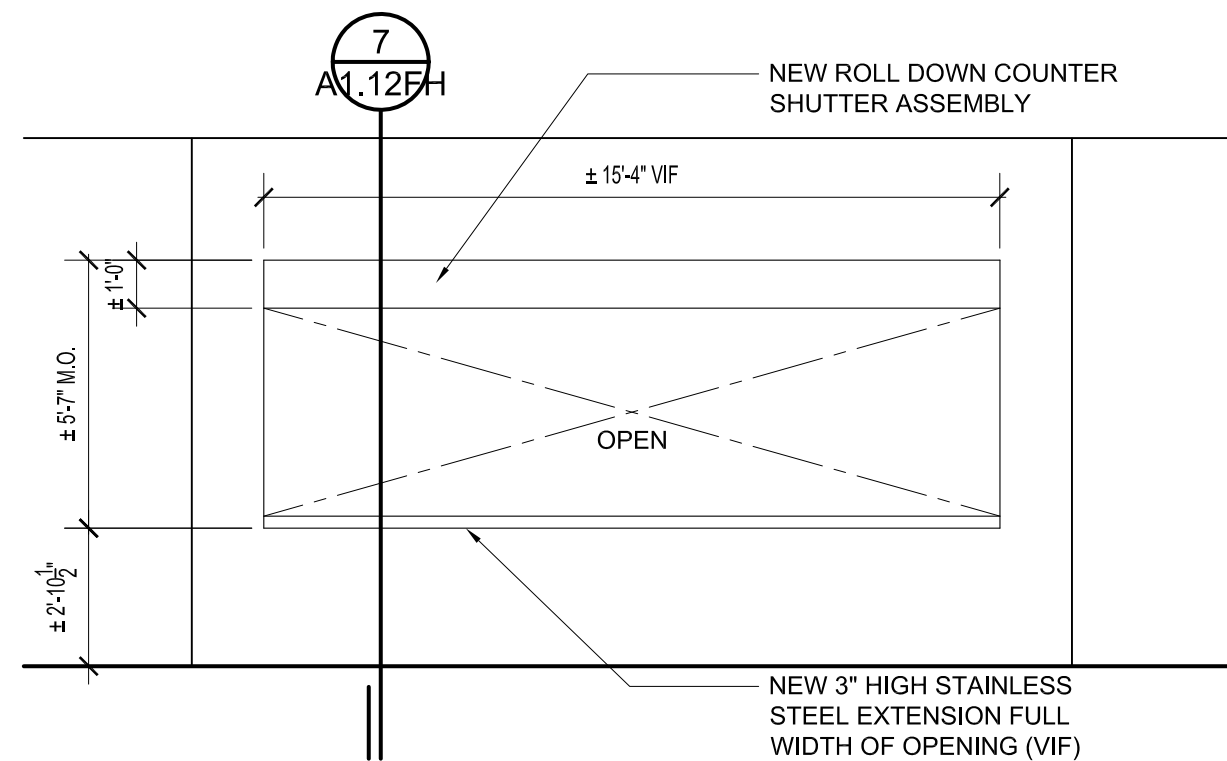
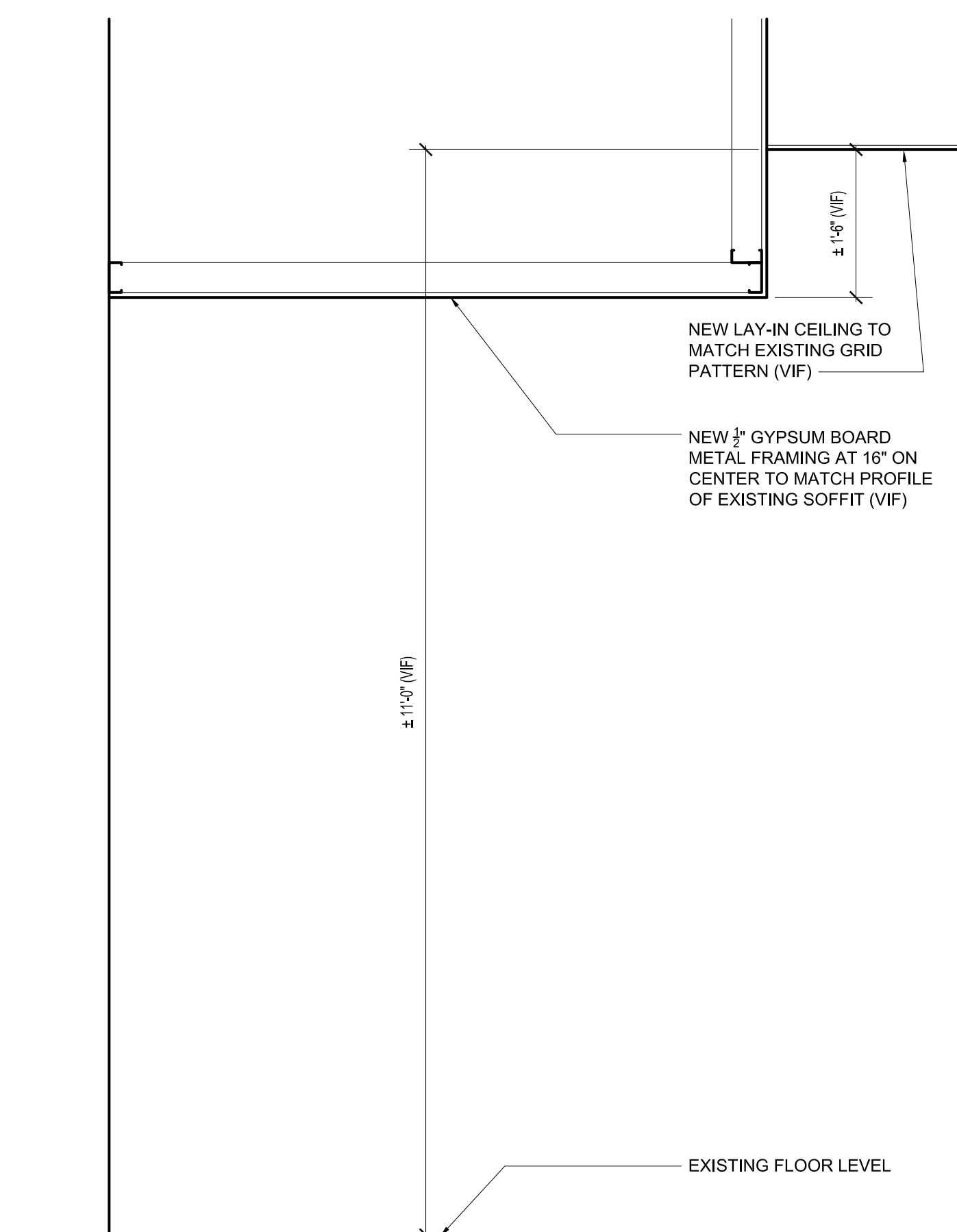
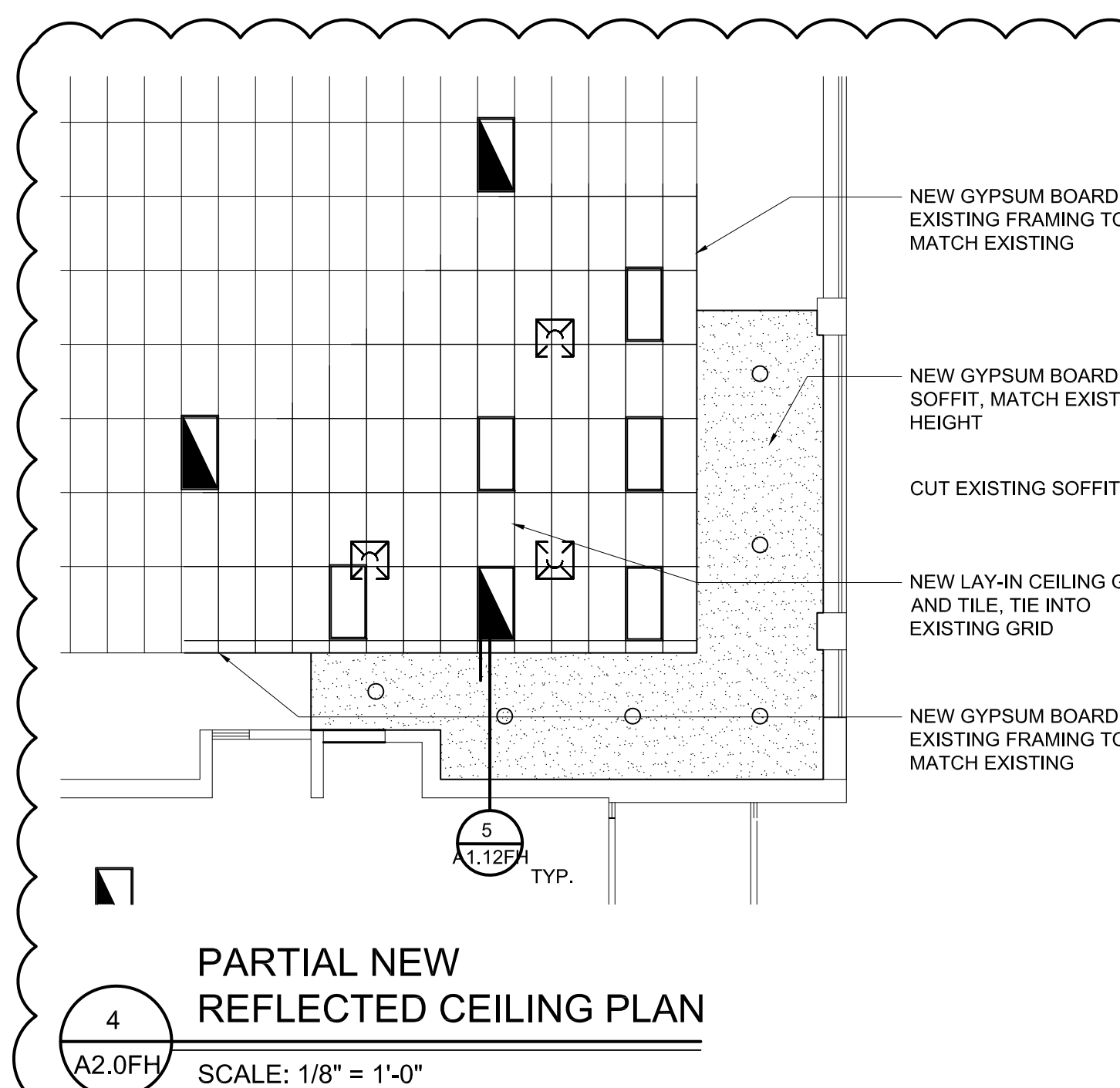
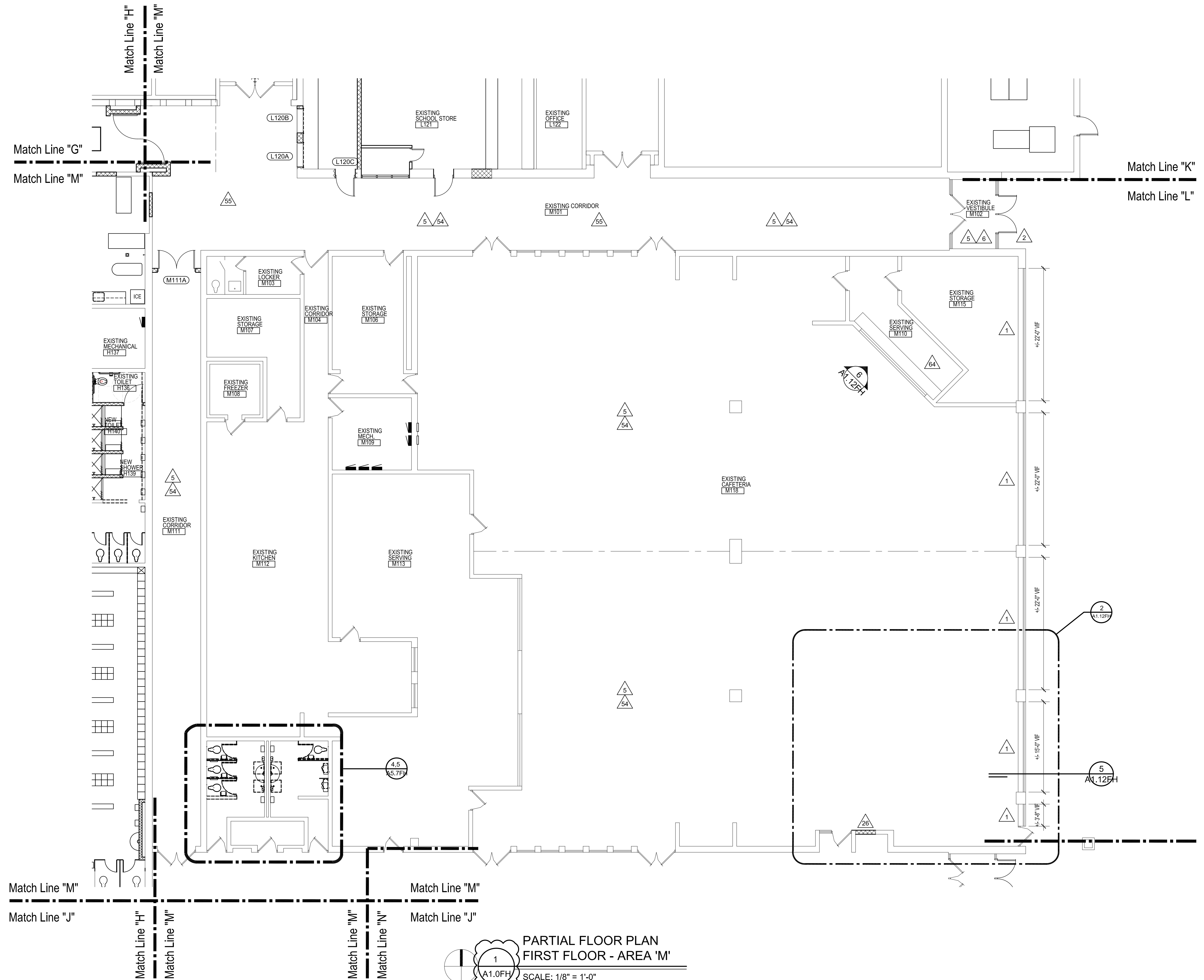
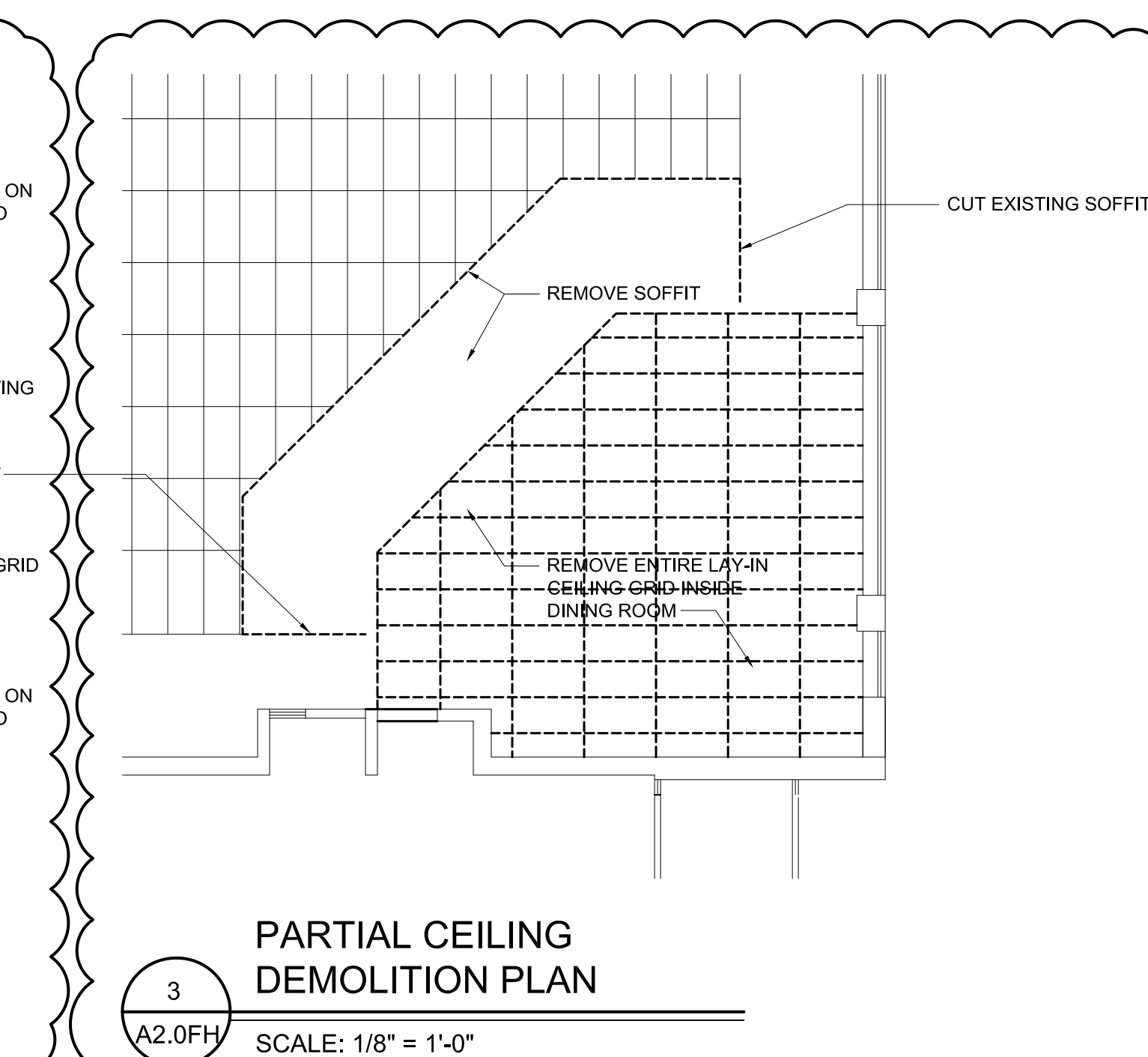
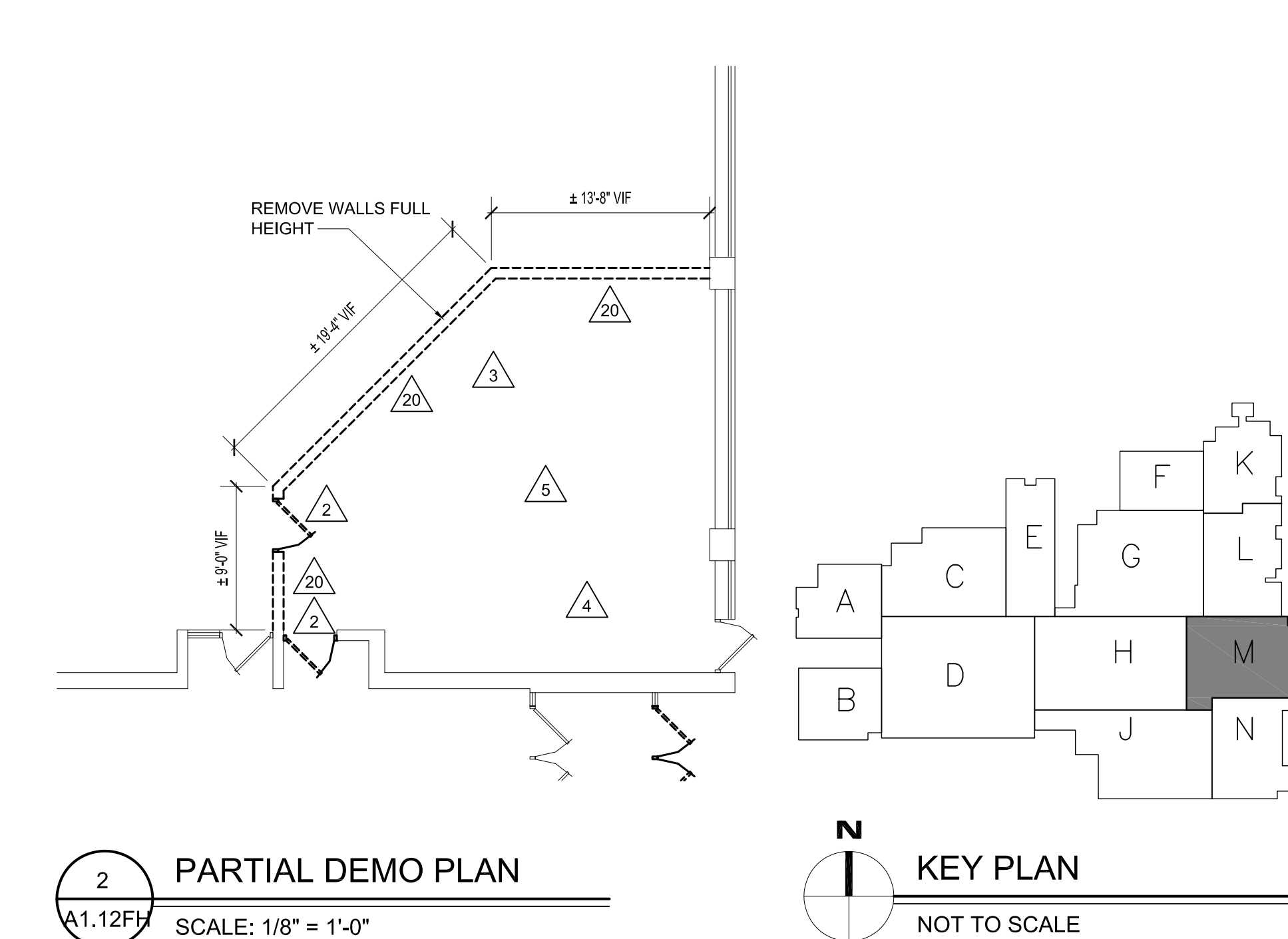


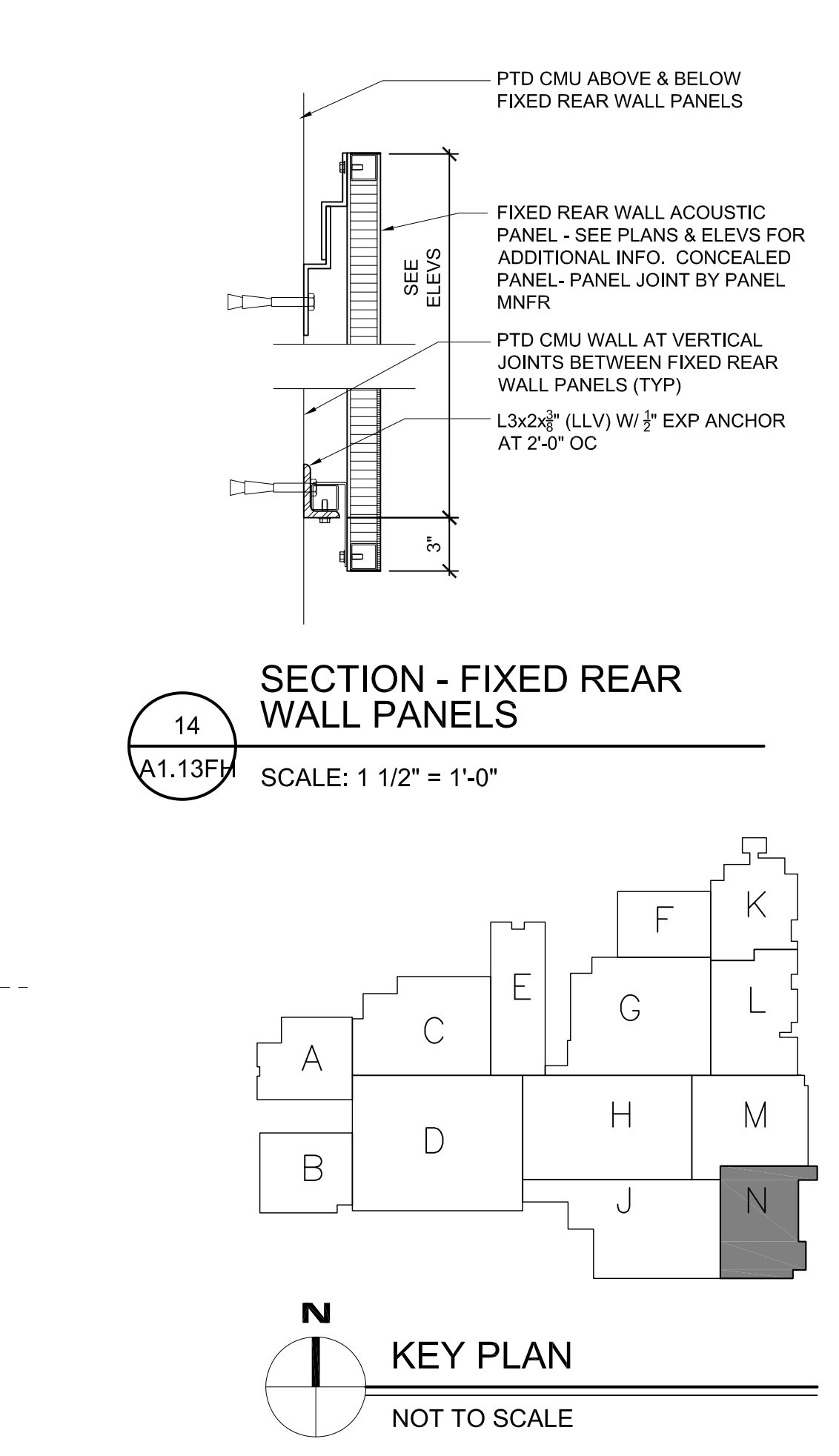
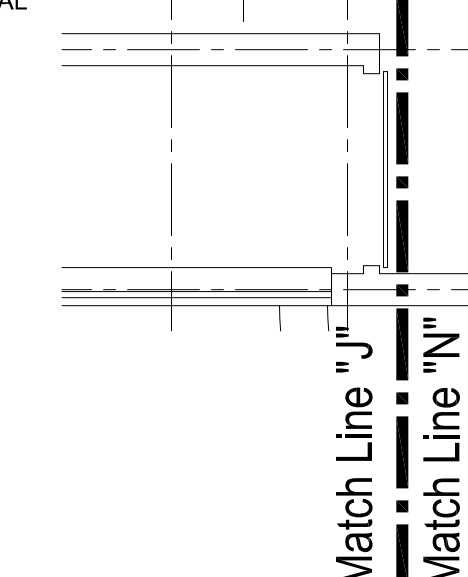
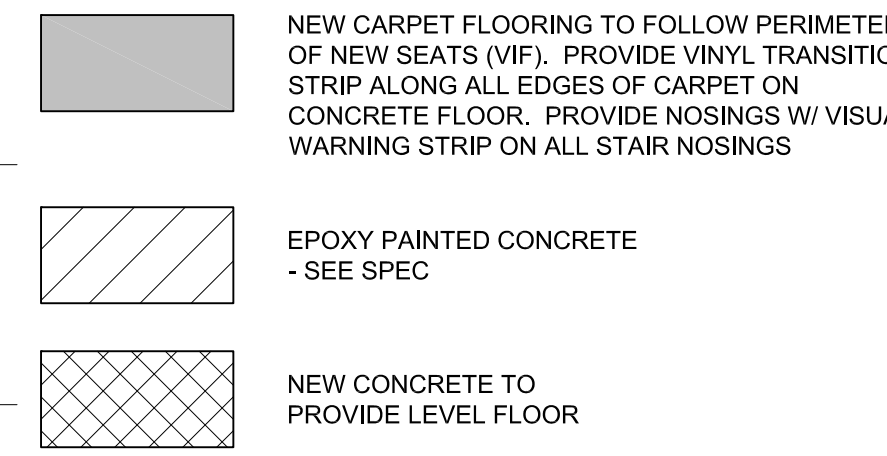
FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

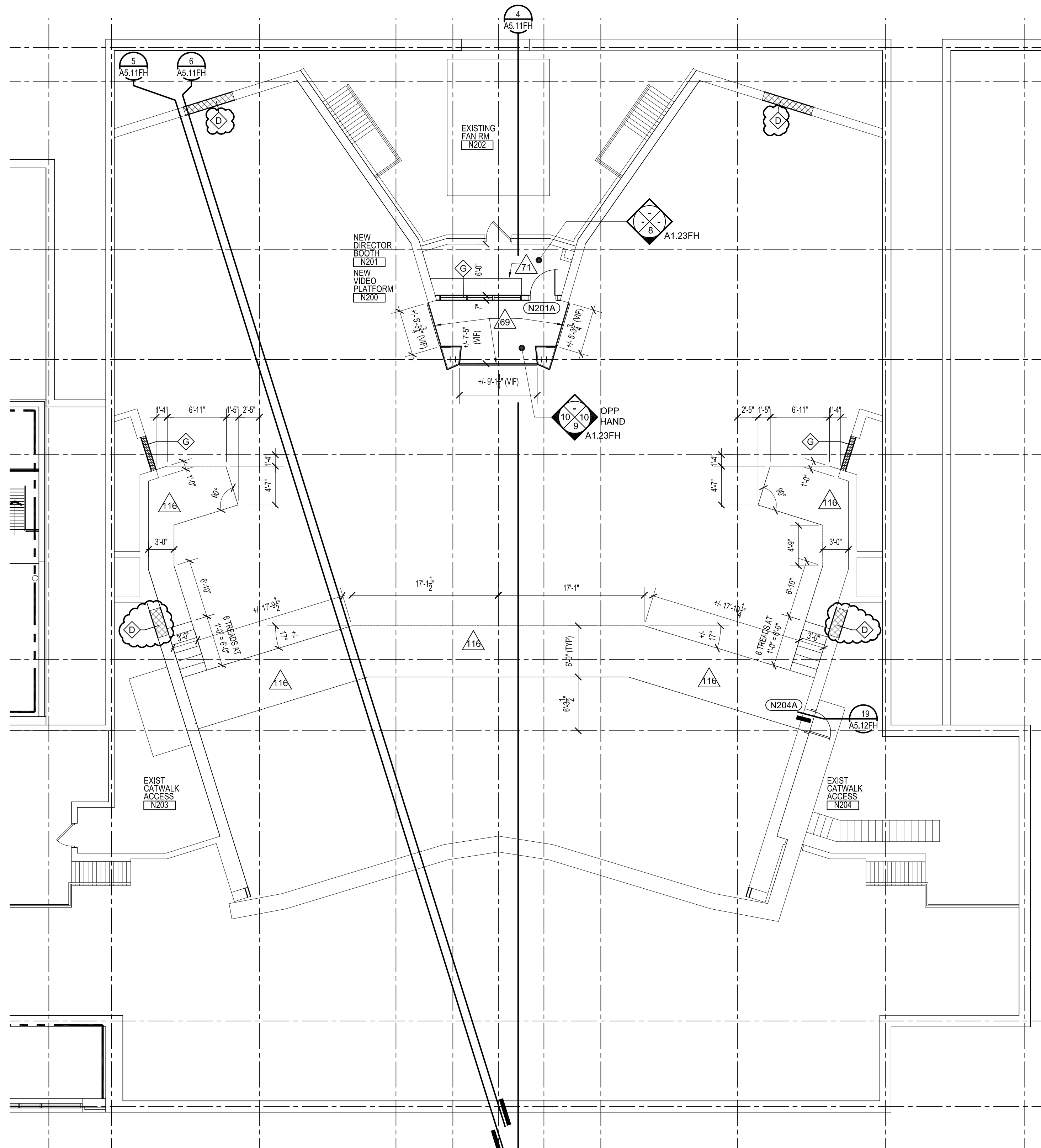
FARMINGTON HIGH SCHOOL

PARTIAL FLOOR PLAN
FIRST FLOOR AREA 'M'PRELIMINARY ☐
DESIGN DEVELOPMENT ☐
CONSTRUCTION ☒
FINAL RECORD ☐DRAWN BY JMS, NJL
CHECKED BY BJSREVISIONS
ADD NO 01 2-8-16
ADD NO 02 2-17-16DATE: FEBRUARY 1, 2016
SHEET NO.

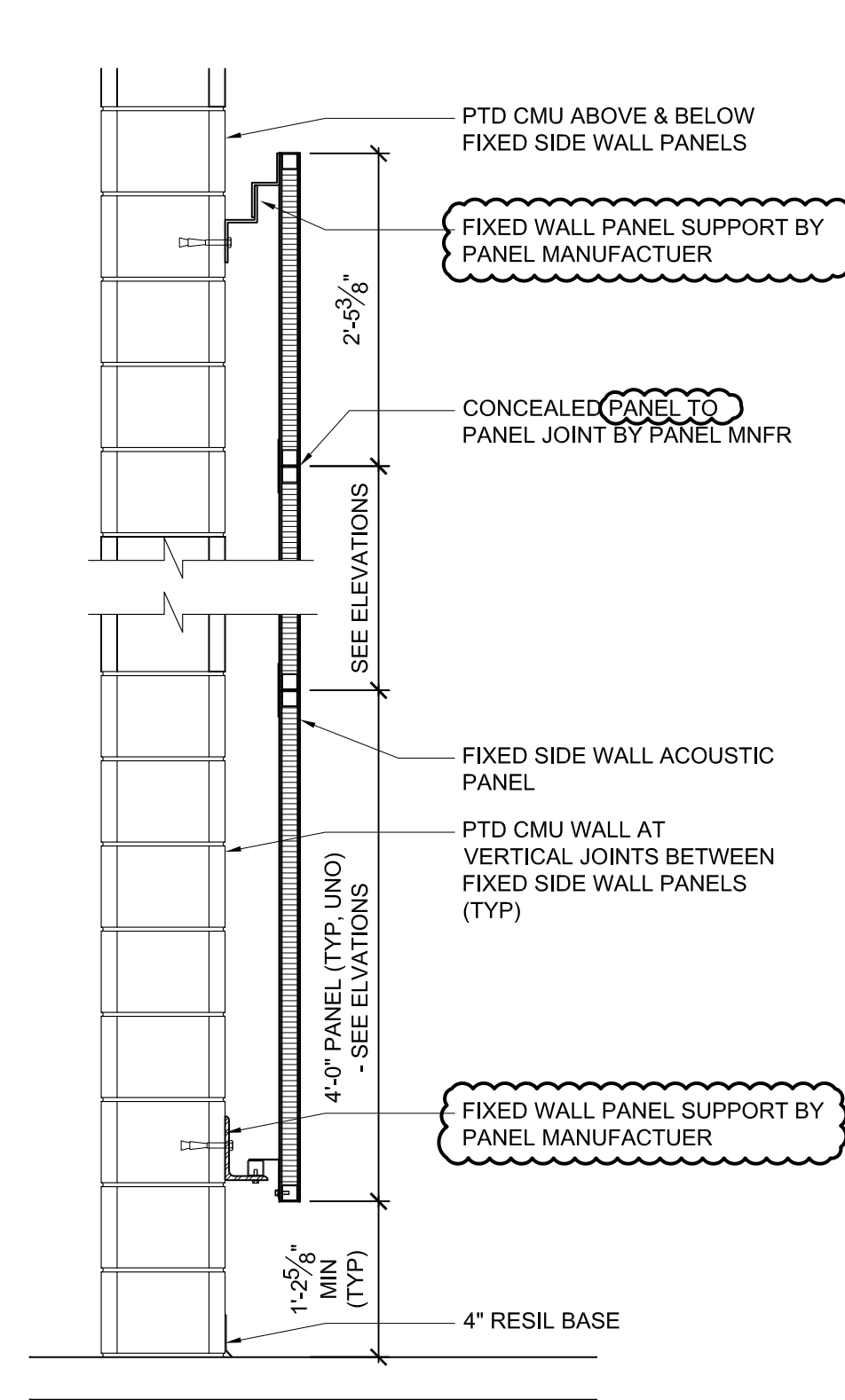
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JOB NO.
151626C7 PARTIAL WALL SECTION
A1.12FH SCALE: 3/4" = 1'-0"6 PARTIAL INTERIOR ELEVATION
A1.12FH SCALE: 1/4" = 1'-0"5 SOFFIT DETAIL
A1.12FH SCALE: 3/4" = 1'-0"4 PARTIAL NEW REFLECTED CEILING PLAN
A2.0FH SCALE: 1/8" = 1'-0"3 PARTIAL CEILING DEMOLITION PLAN
A2.0FH SCALE: 1/8" = 1'-0"2 PARTIAL DEMO PLAN
A1.12FH SCALE: 1/8" = 1'-0"KEY PLAN
NOT TO SCALE

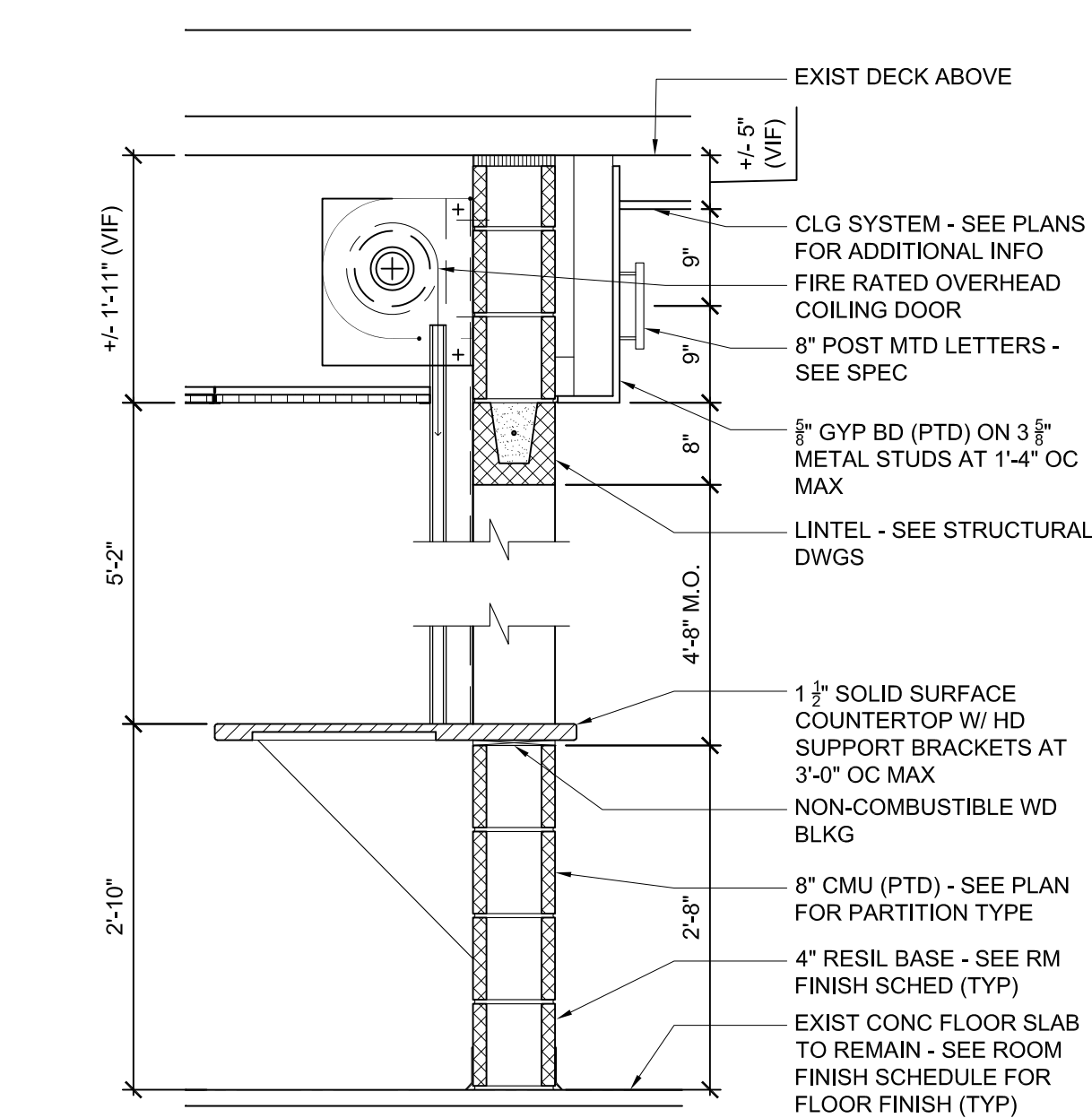




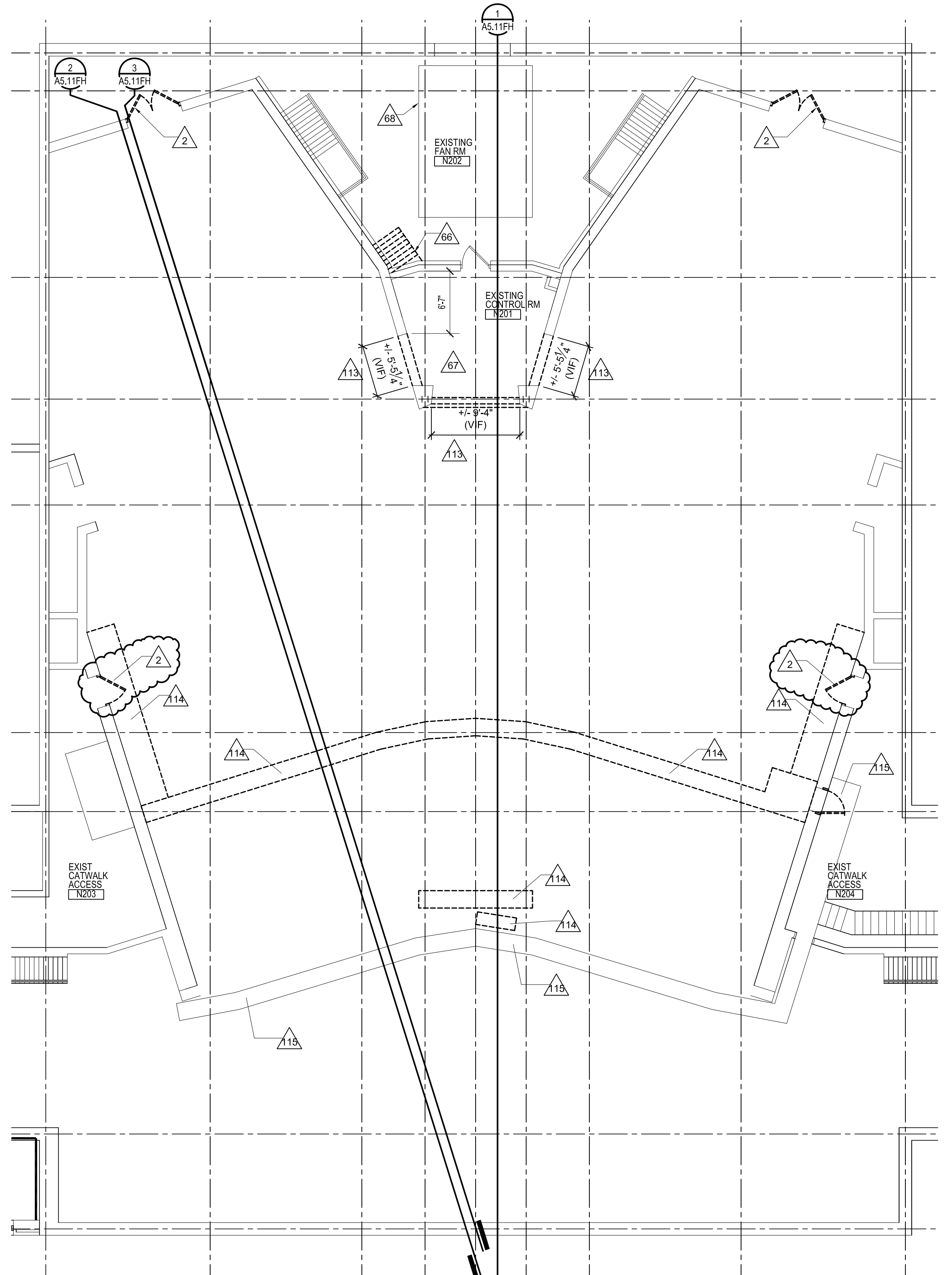
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PARTIAL FLOOR PLAN
MEZZANINE - AREA 'N'
SCALE: 1/8" = 1'-0"



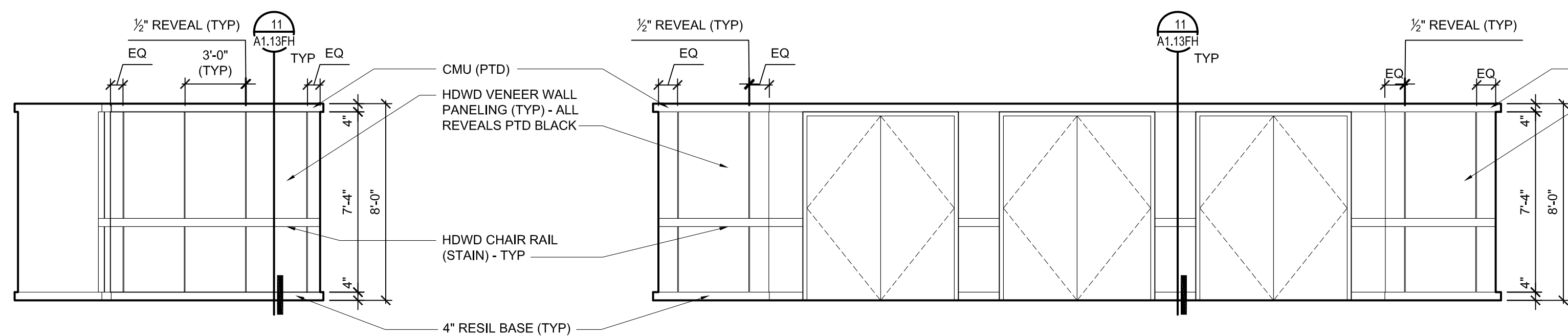
13
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SECTION - FIXED
SIDE WALL PANEL
SCALE: 3/4" = 1'-0"



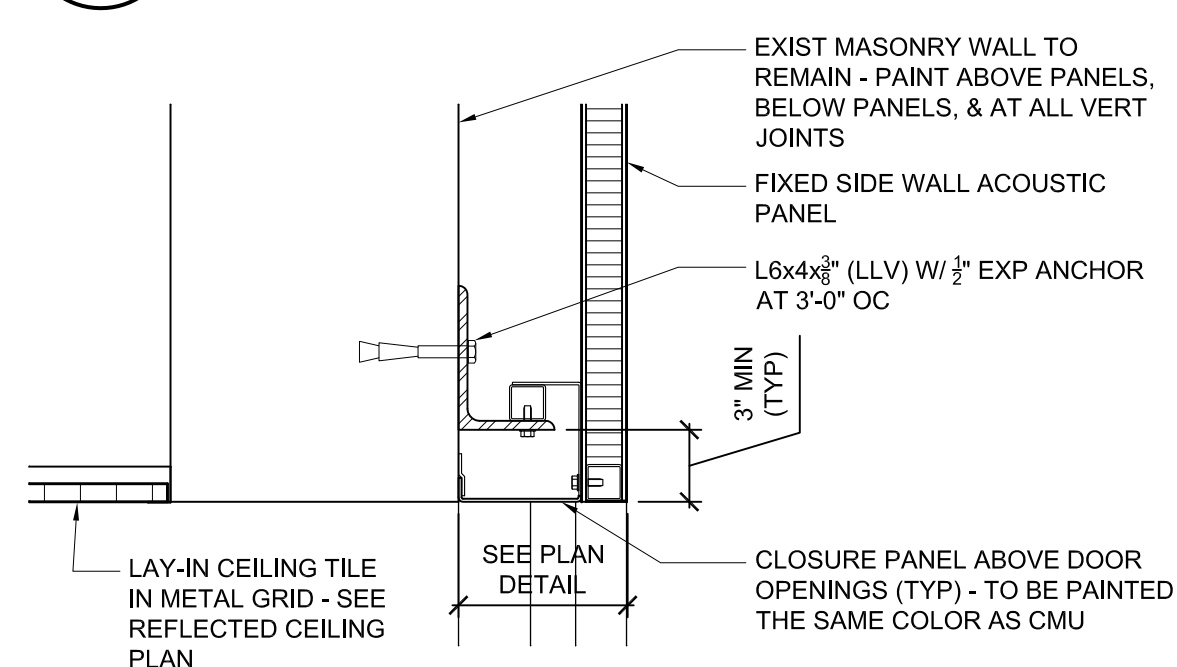
12
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SECTION - TICKET COUNTER
SCALE: 3/4" = 1'-0"



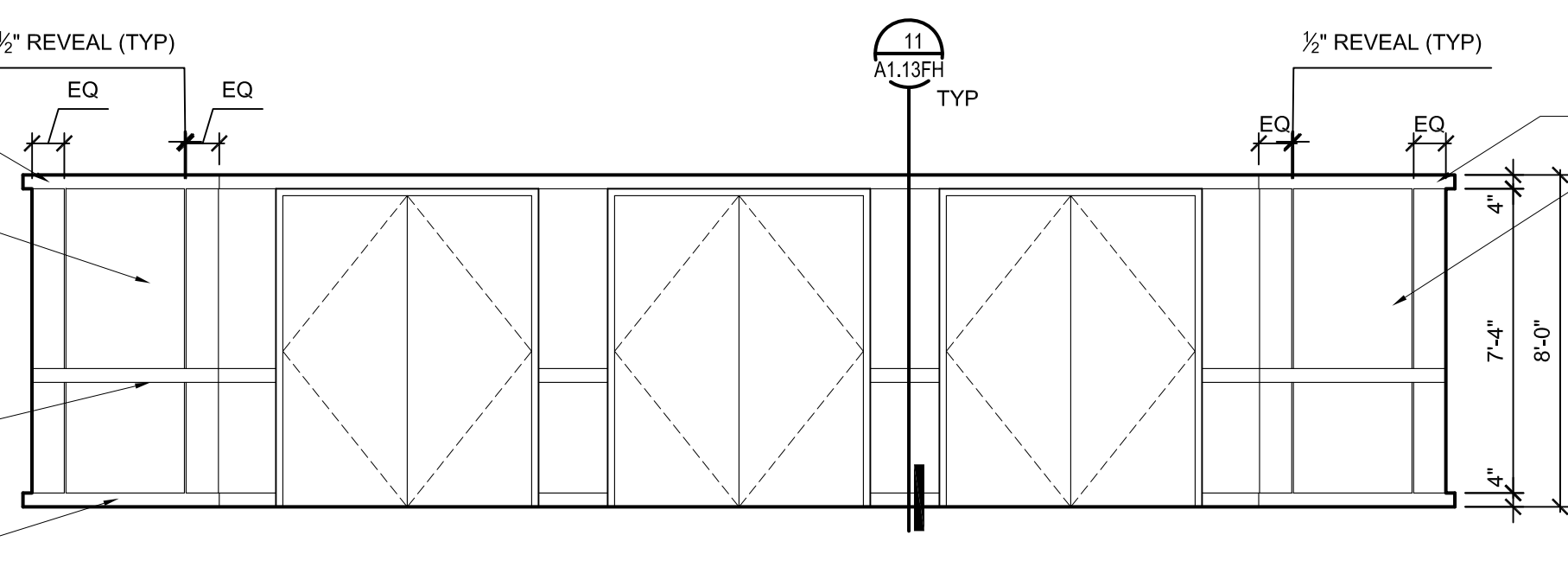
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PARTIAL DEMOLITION PLAN
MEZZANINE - AREA 'N'
SCALE: 1/8" = 1'-0"



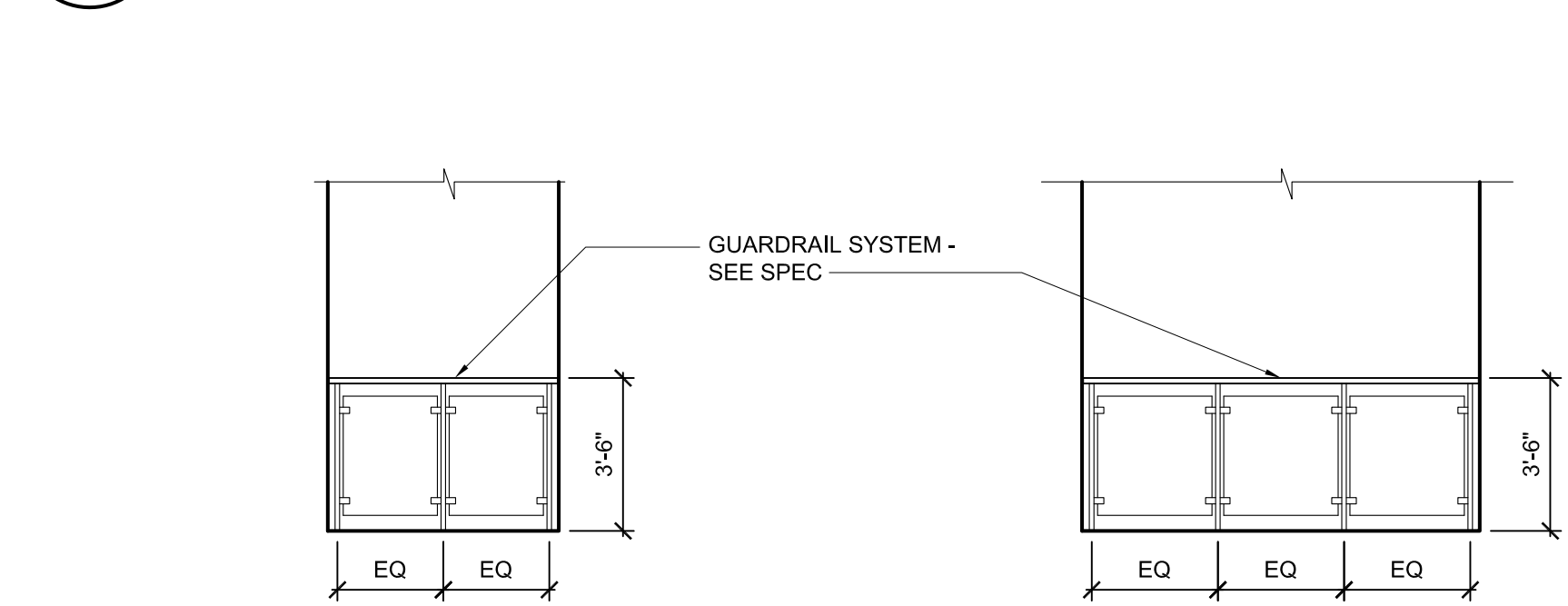
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INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



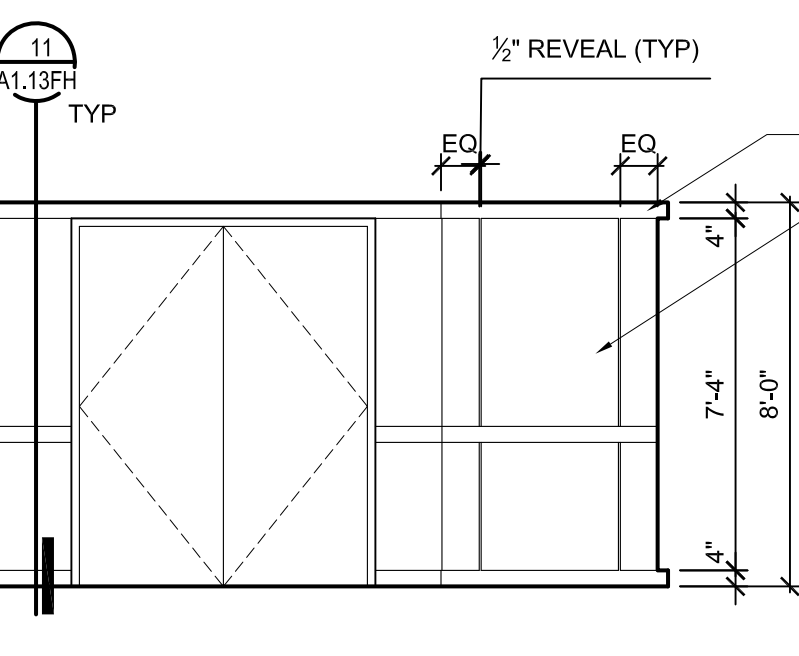
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SECTION - FIXED SIDE
WALL PANEL DOOR HEAD
SCALE: 3/4" = 1'-0"



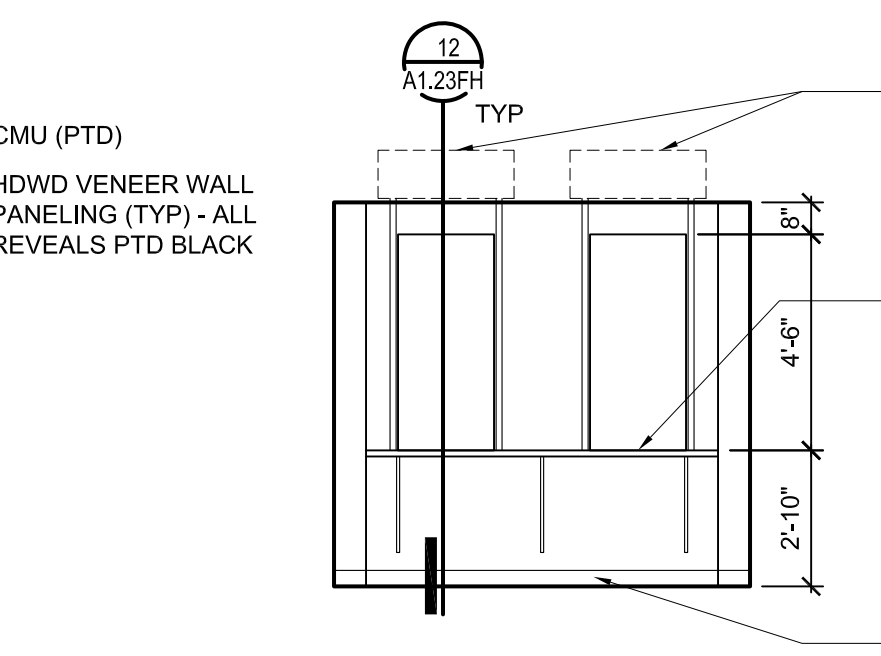
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INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



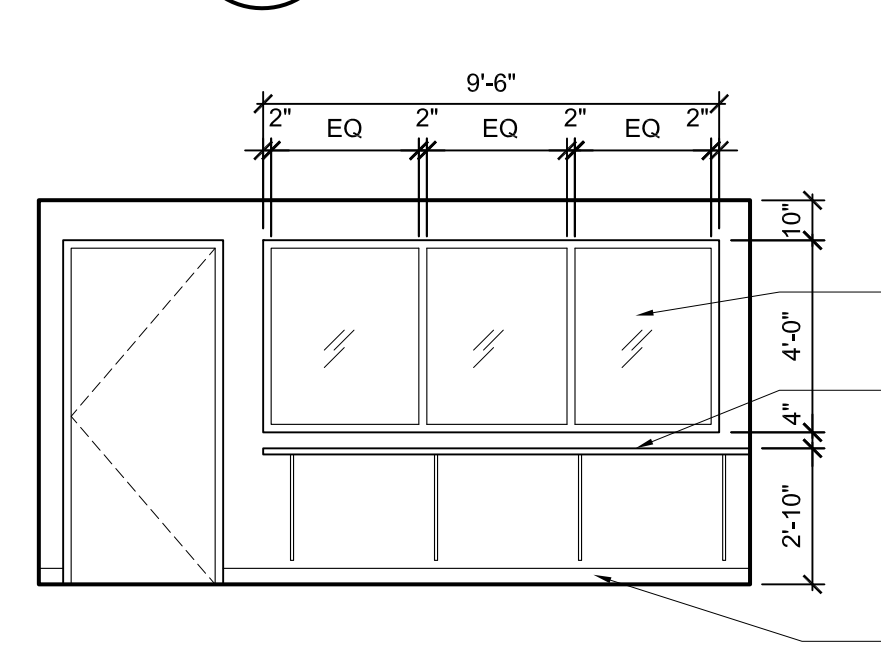
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INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



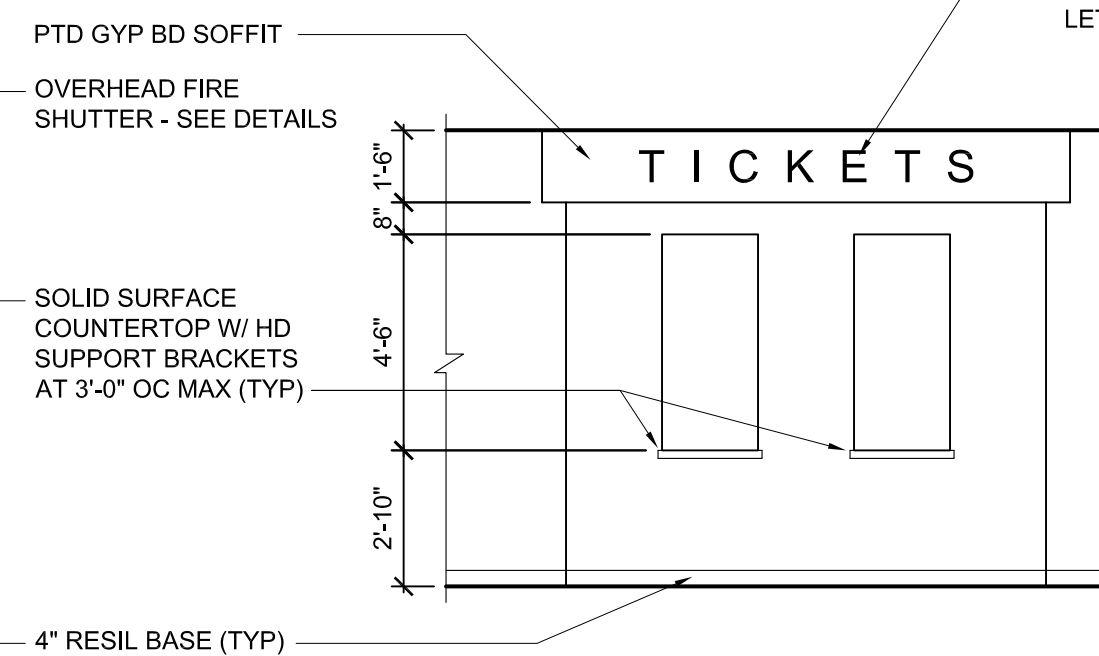
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INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



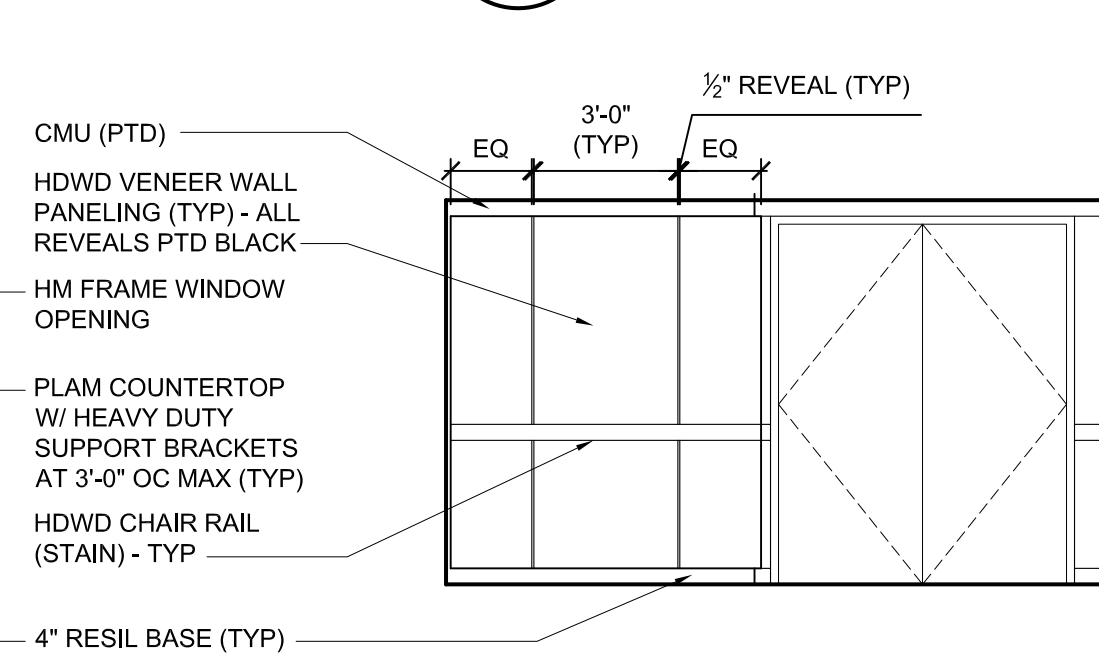
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INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



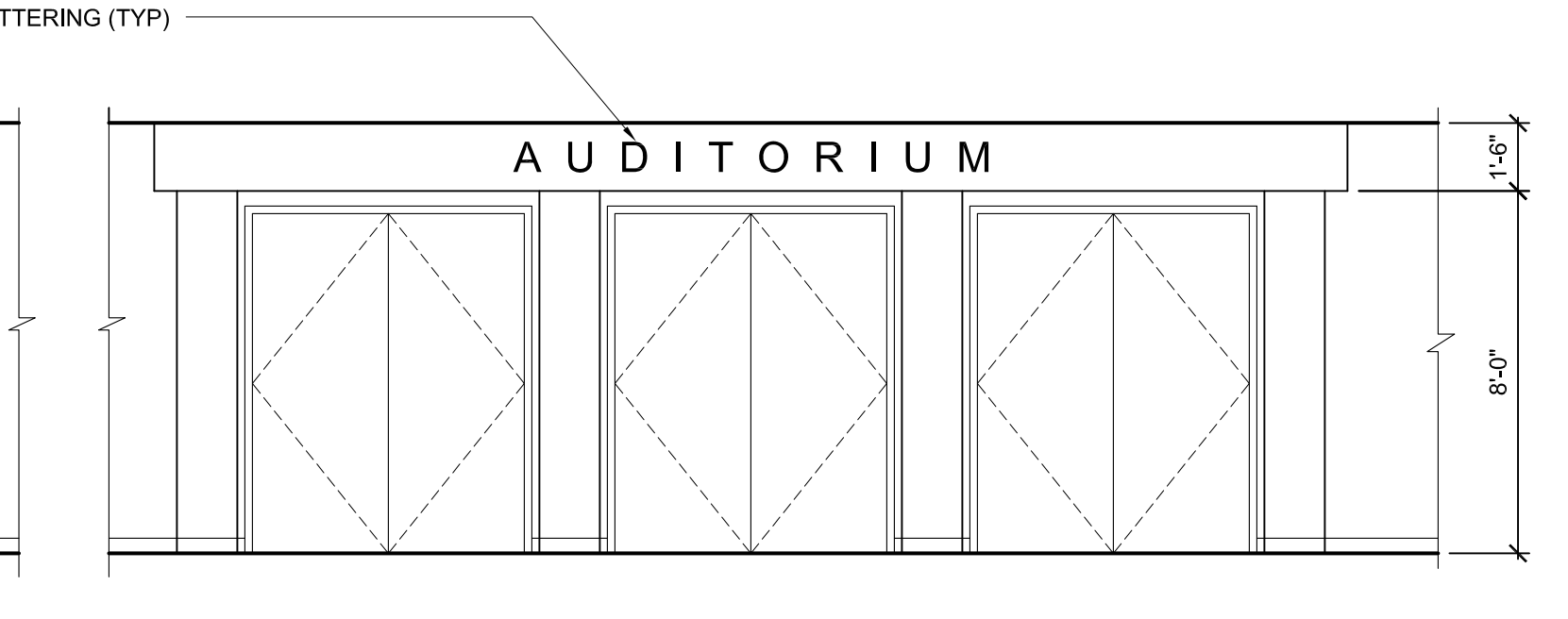
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INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



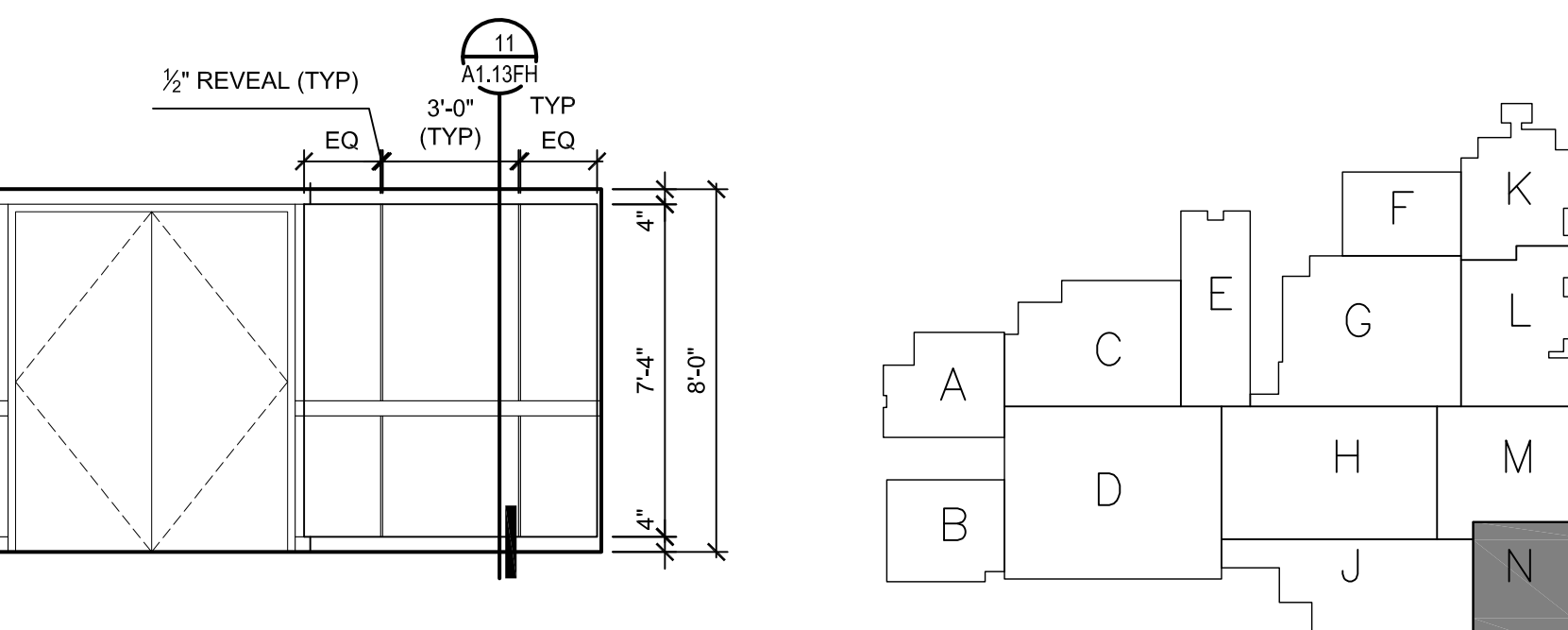
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INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



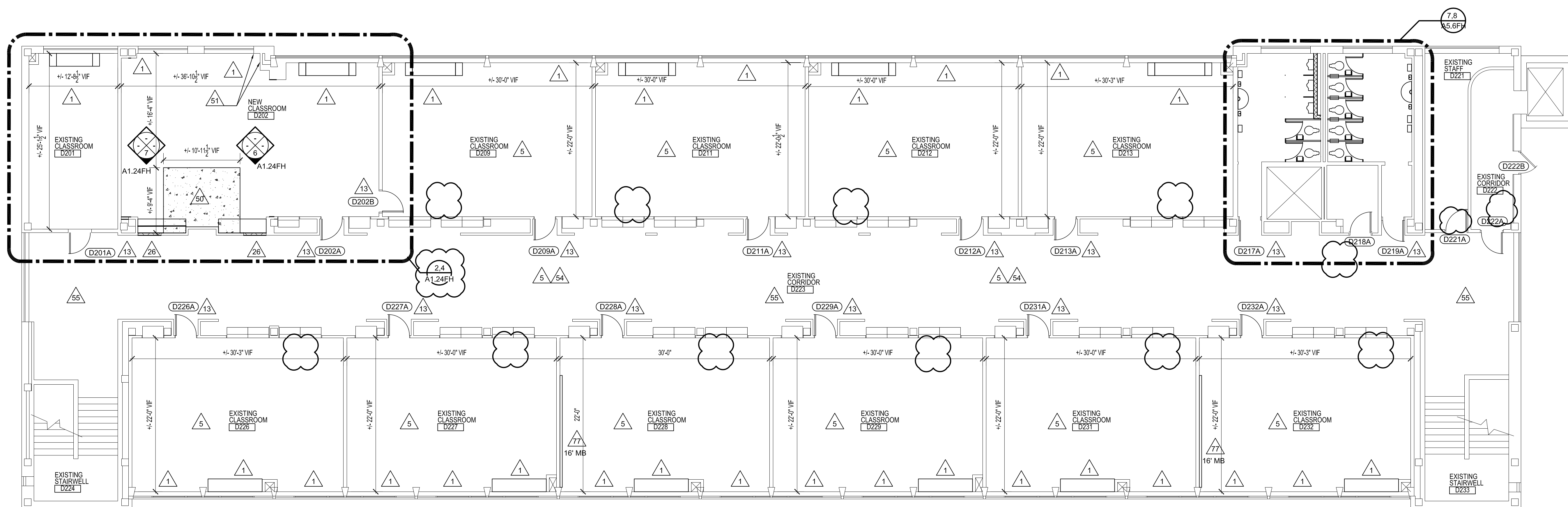
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INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



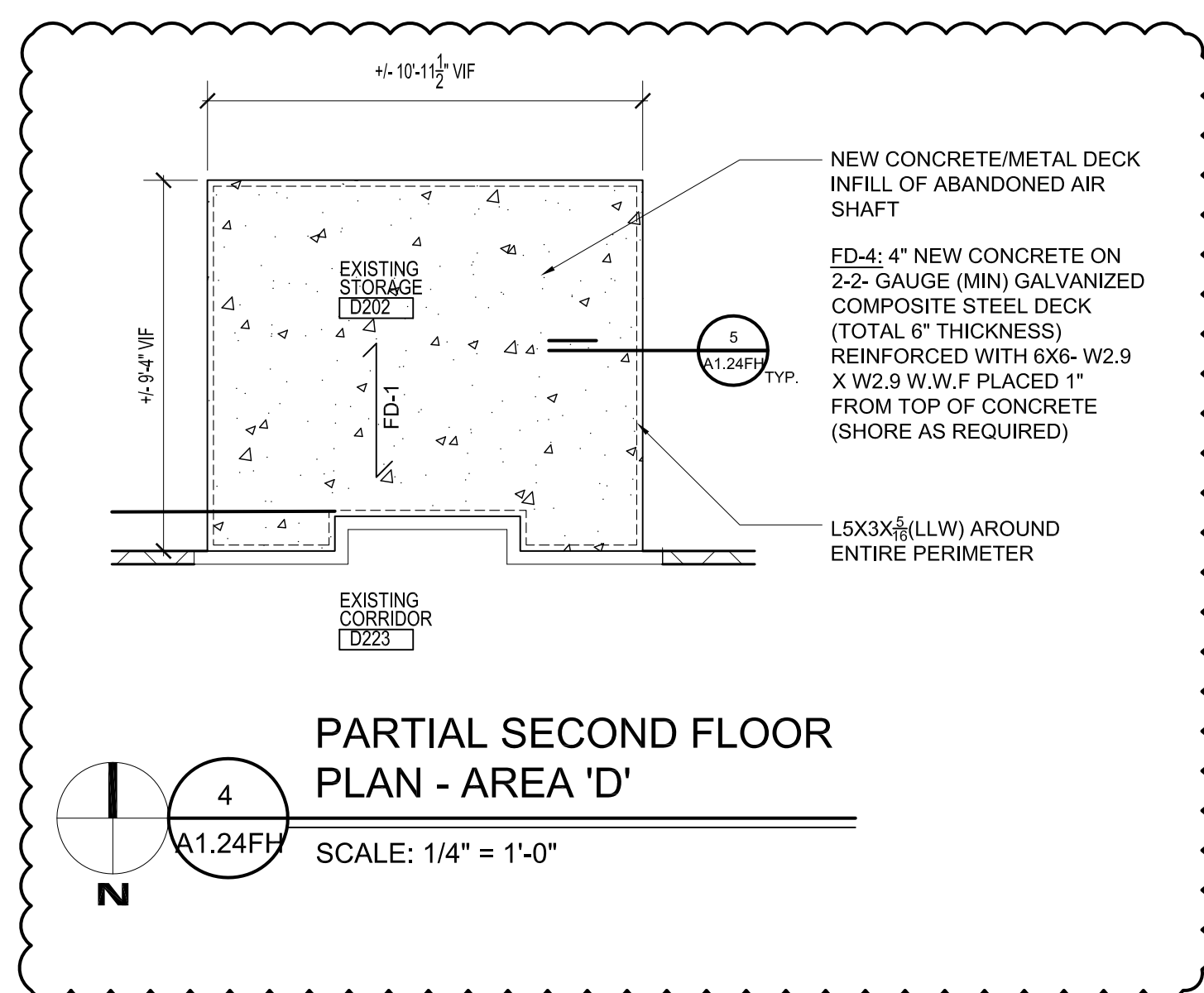
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INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



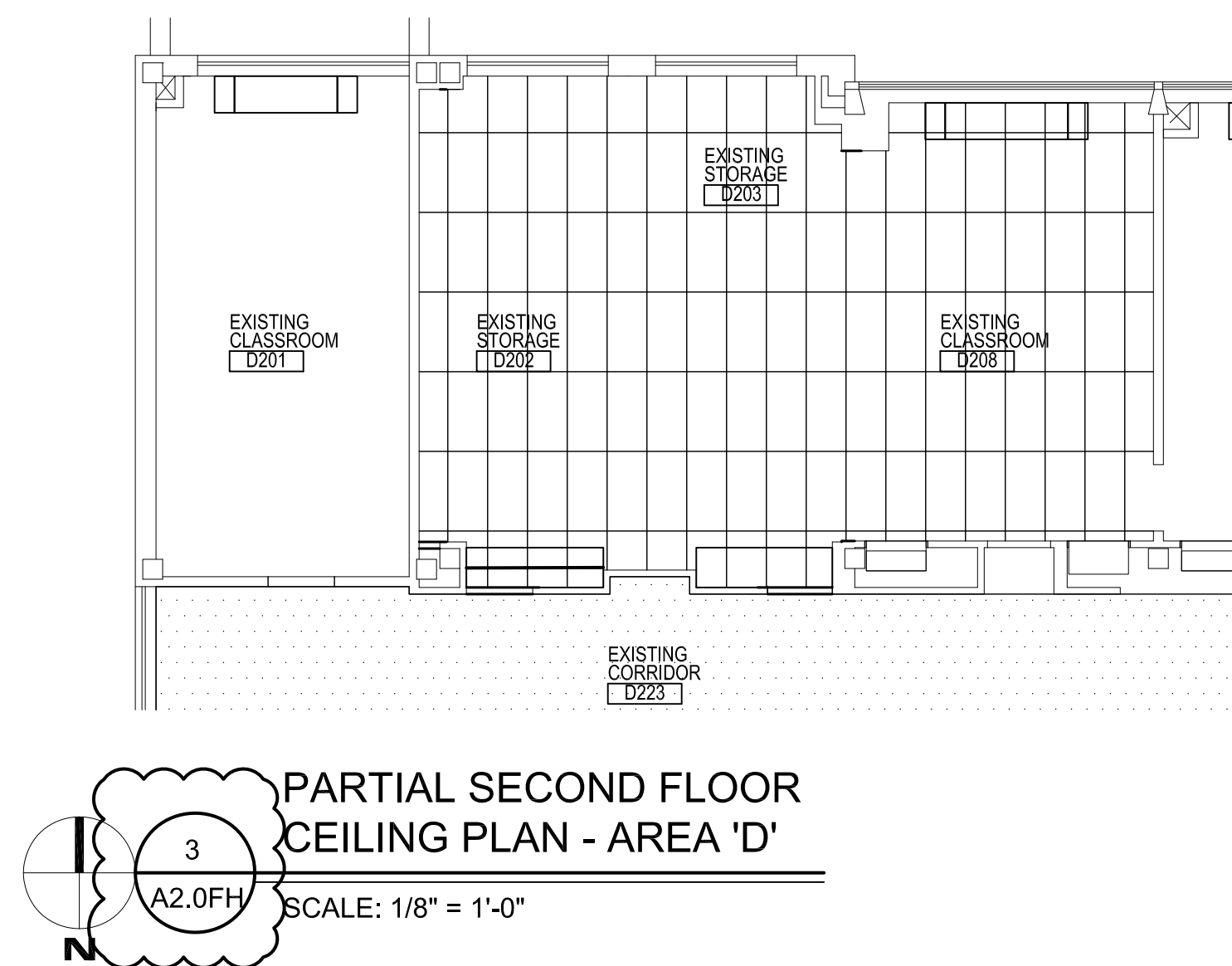
1
A1.13FH
KEY PLAN
NOT TO SCALE



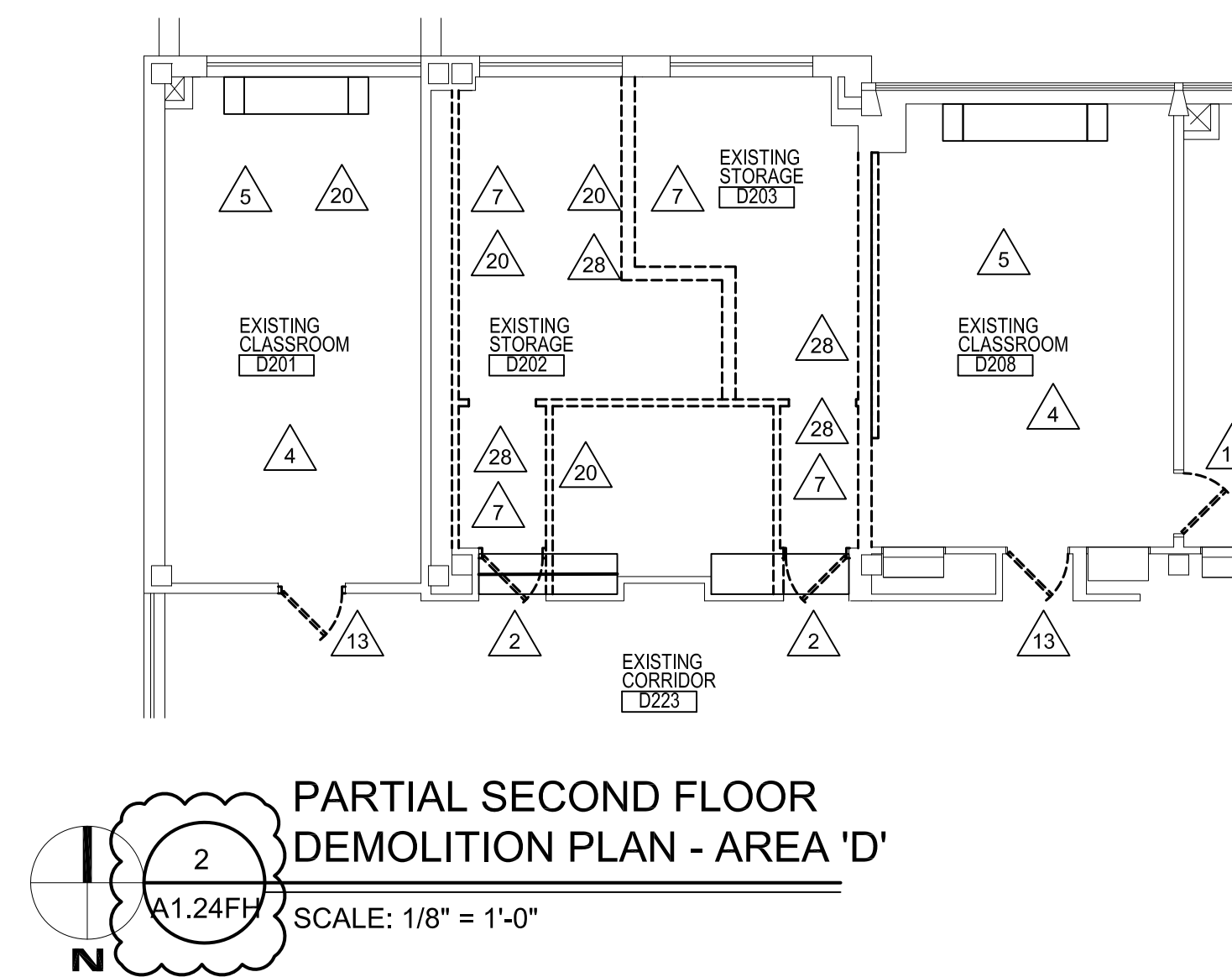
PARTIAL FLOOR PLAN
SECOND FLOOR - AREA 'D'
SCALE: 1/8" = 1'-0"



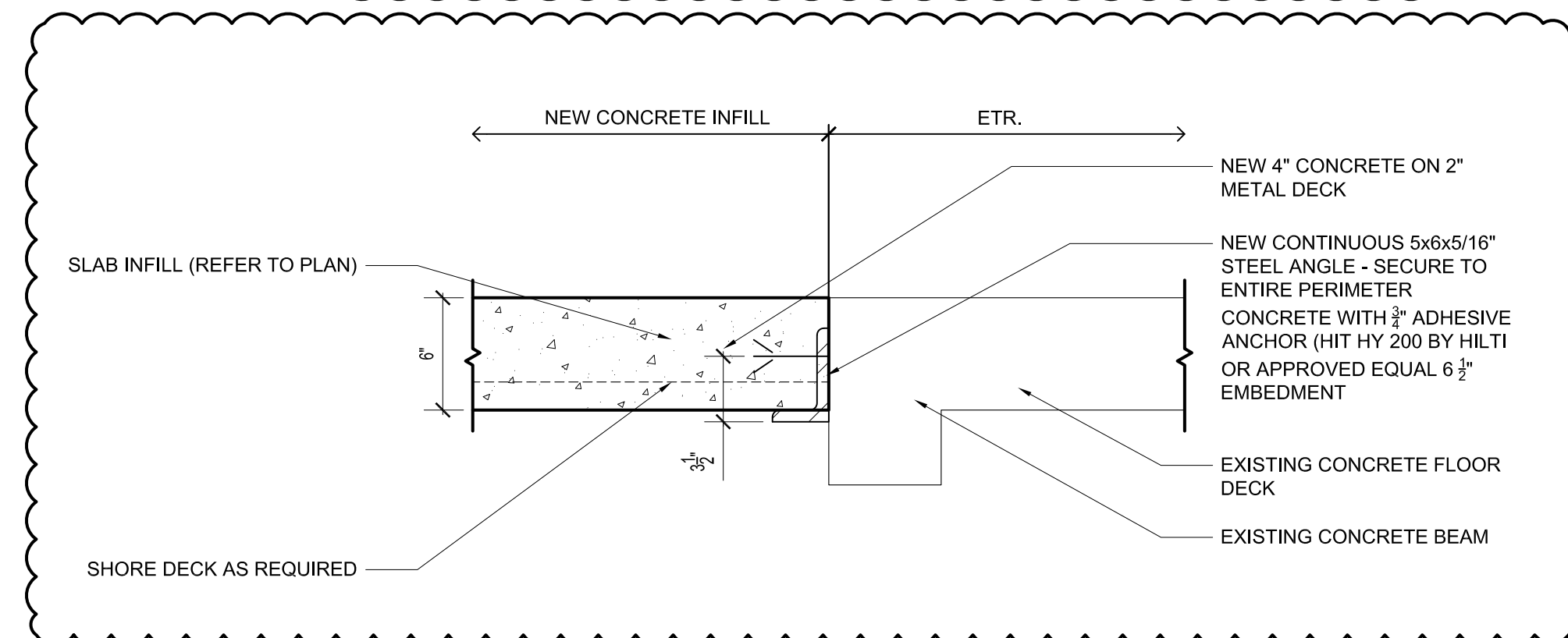
PARTIAL SECOND FLOOR
PLAN - AREA 'D'
SCALE: 1/4" = 1'-0"



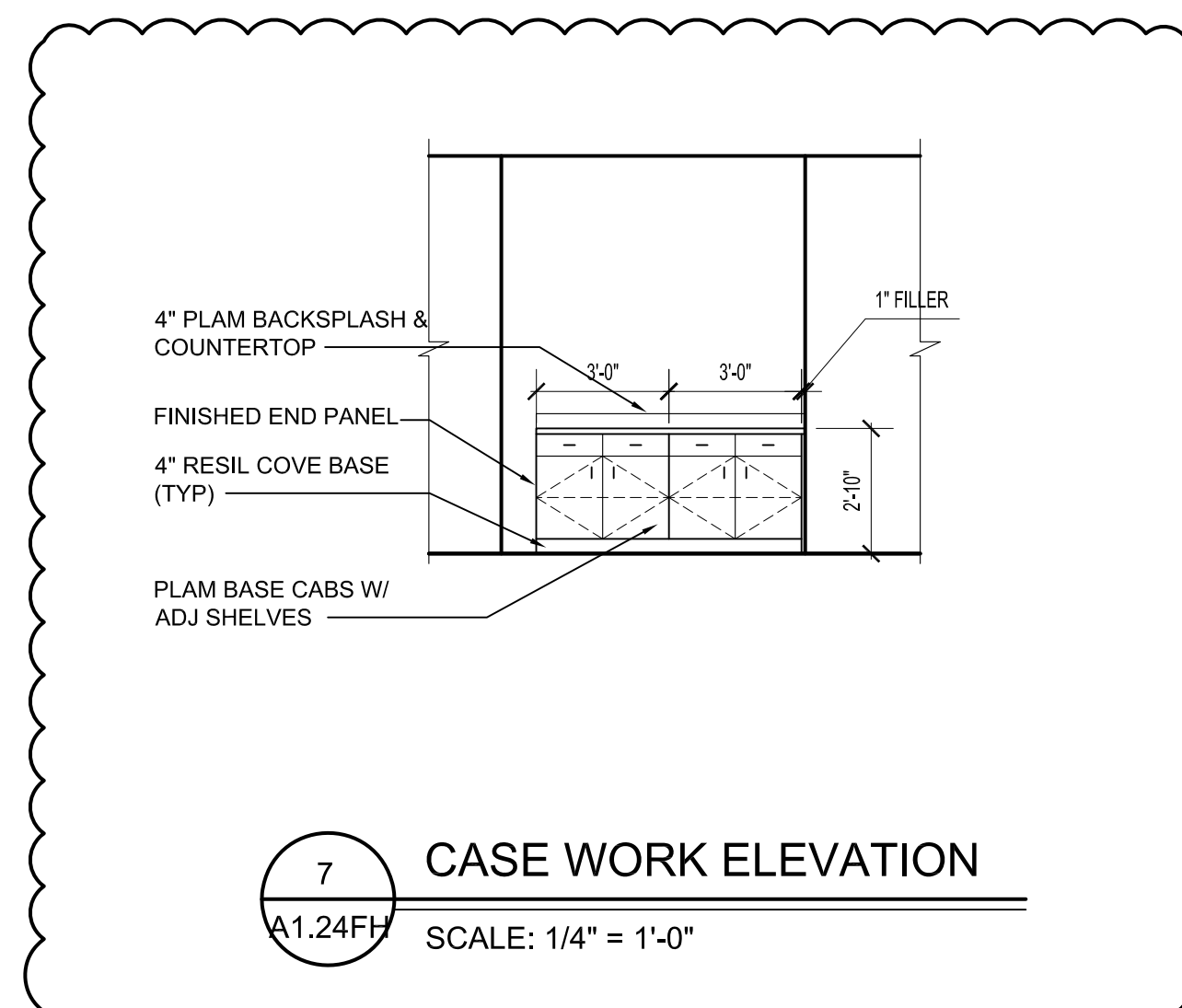
PARTIAL SECOND FLOOR
CEILING PLAN - AREA 'D'
SCALE: 1/8" = 1'-0"



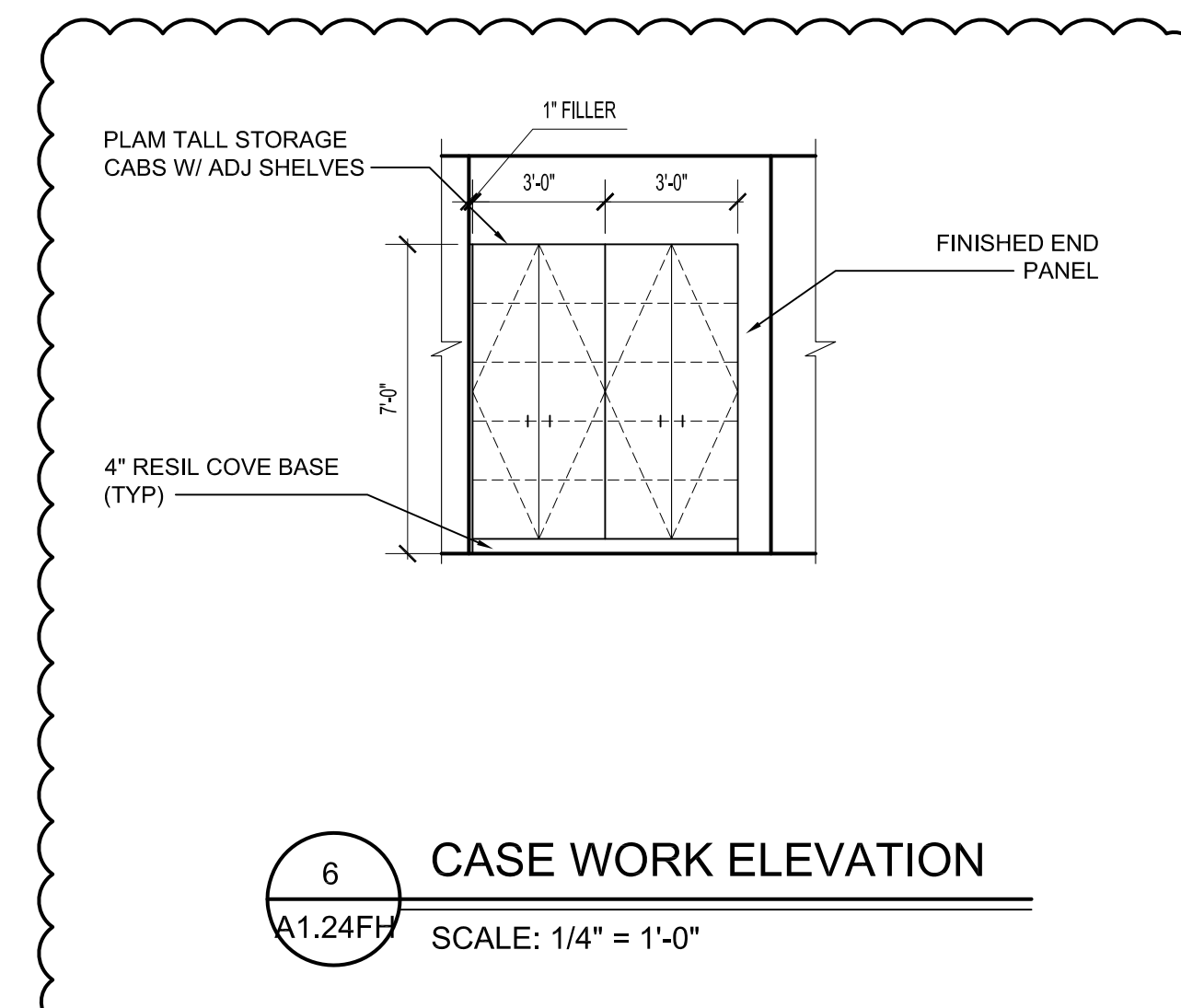
PARTIAL SECOND FLOOR
DEMOLITION PLAN - AREA 'D'
SCALE: 1/8" = 1'-0"



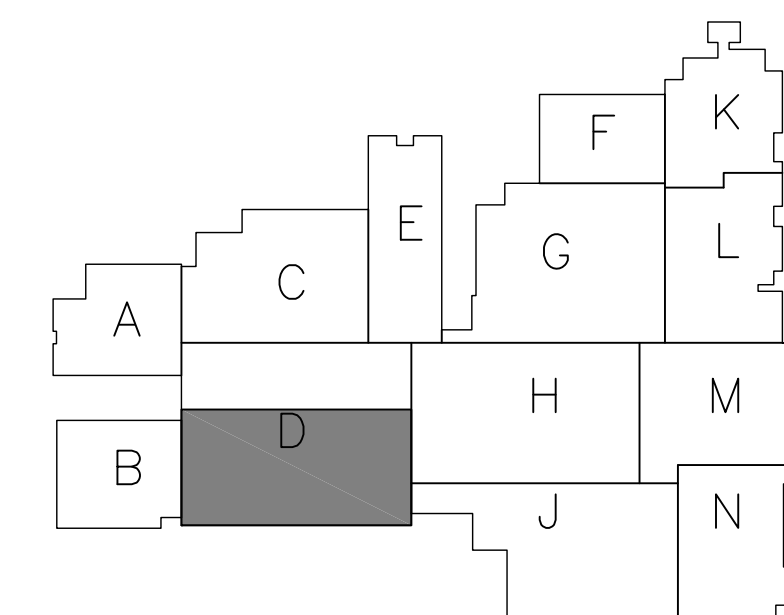
FLOOR INFILL DETAIL
SCALE: 1-1/2" = 1'-0"



CASE WORK ELEVATION
SCALE: 1/4" = 1'-0"



CASE WORK ELEVATION
SCALE: 1/4" = 1'-0"



KEY PLAN
NOT TO SCALE

FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

FARMINGTON HIGH SCHOOL

FIRST & SECOND FLOOR
COMPOSITE REFLECTED
CEILING PLAN

PRELIMINARY ☐
DESIGN DEVELOPMENT ☐
CONSTRUCTION ☒
FINAL RECORD ☐

DRAWN BY JMS, NJL

CHECKED BY BJS

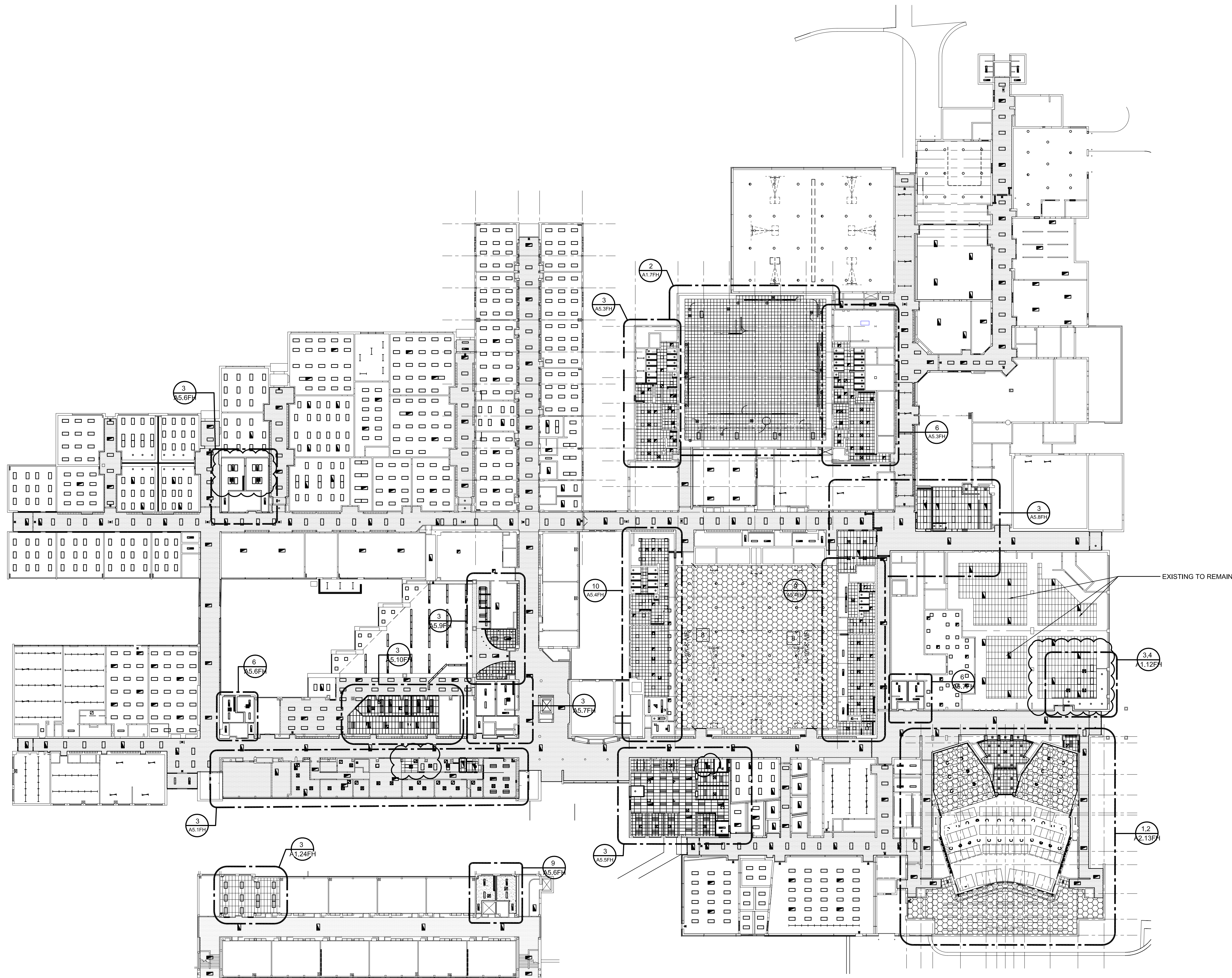
REVISIONS
ADD NO 01 2-8-16
ADD NO 02 2-17-16

DATE: FEBRUARY 1, 2016

SHEET NO.

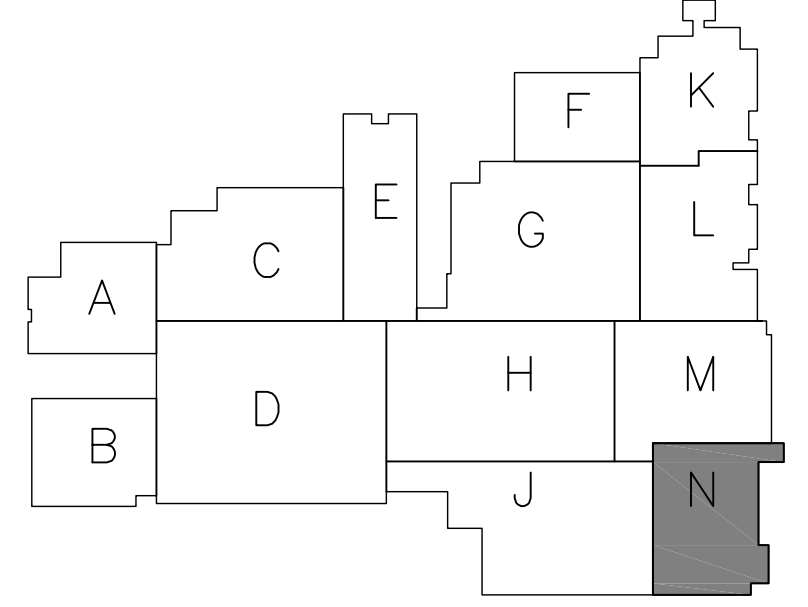
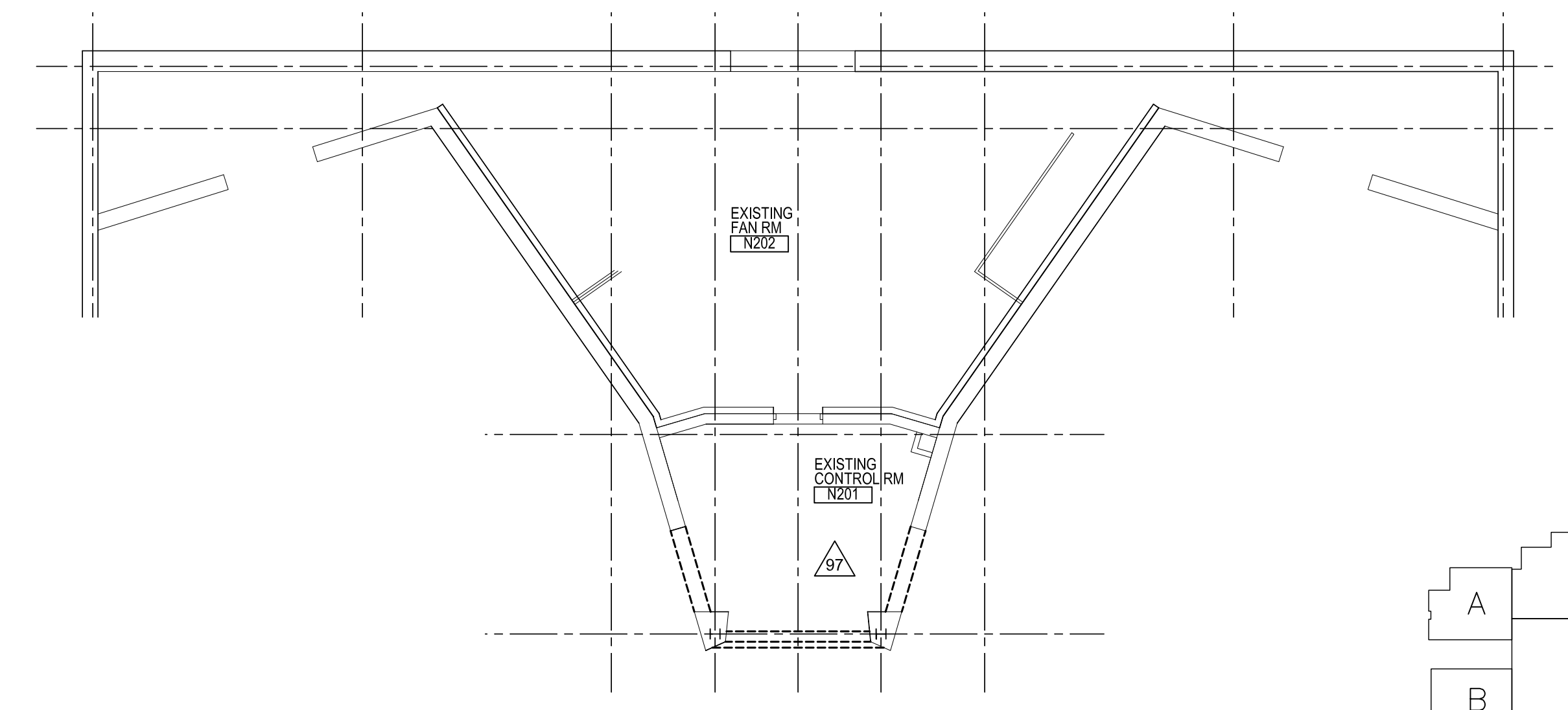
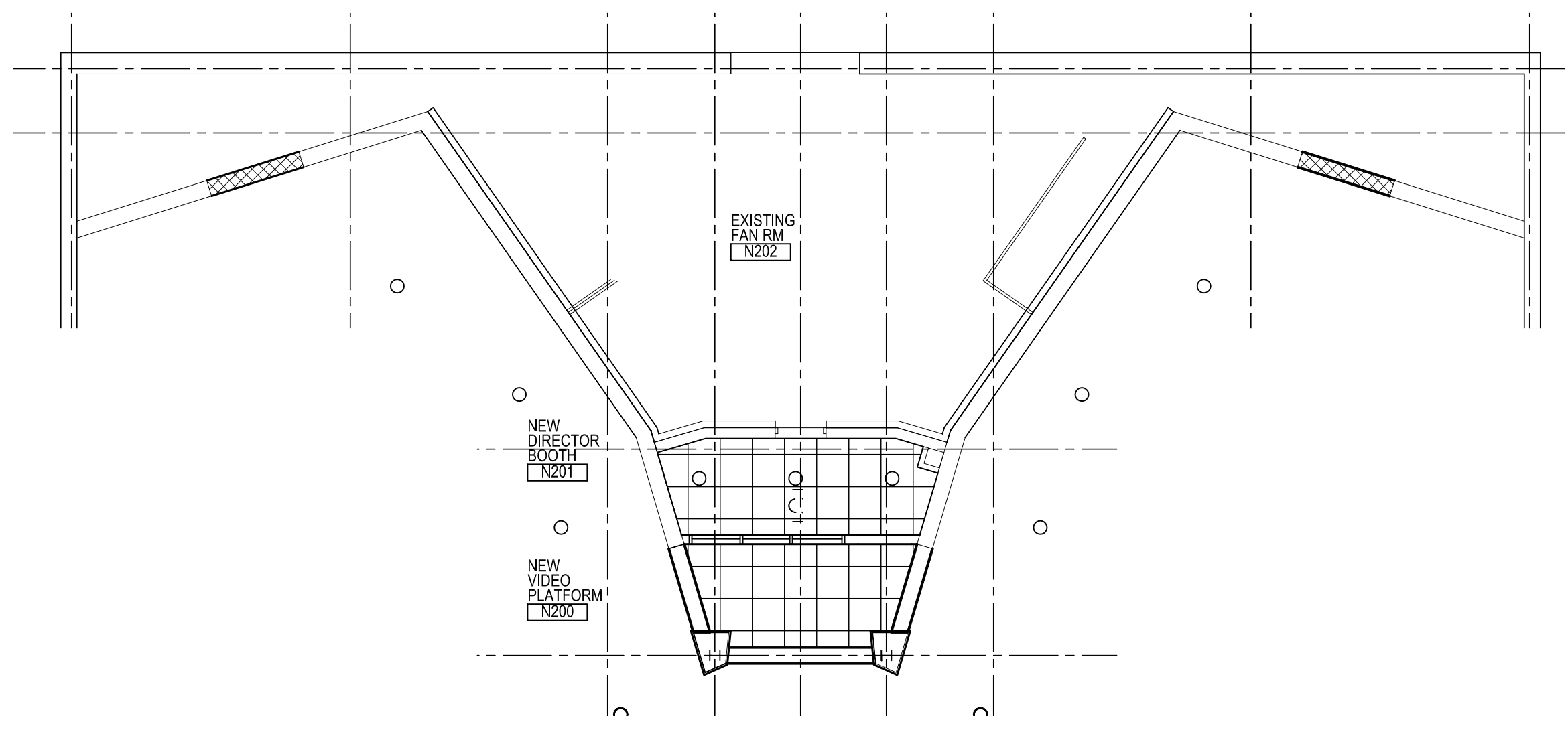
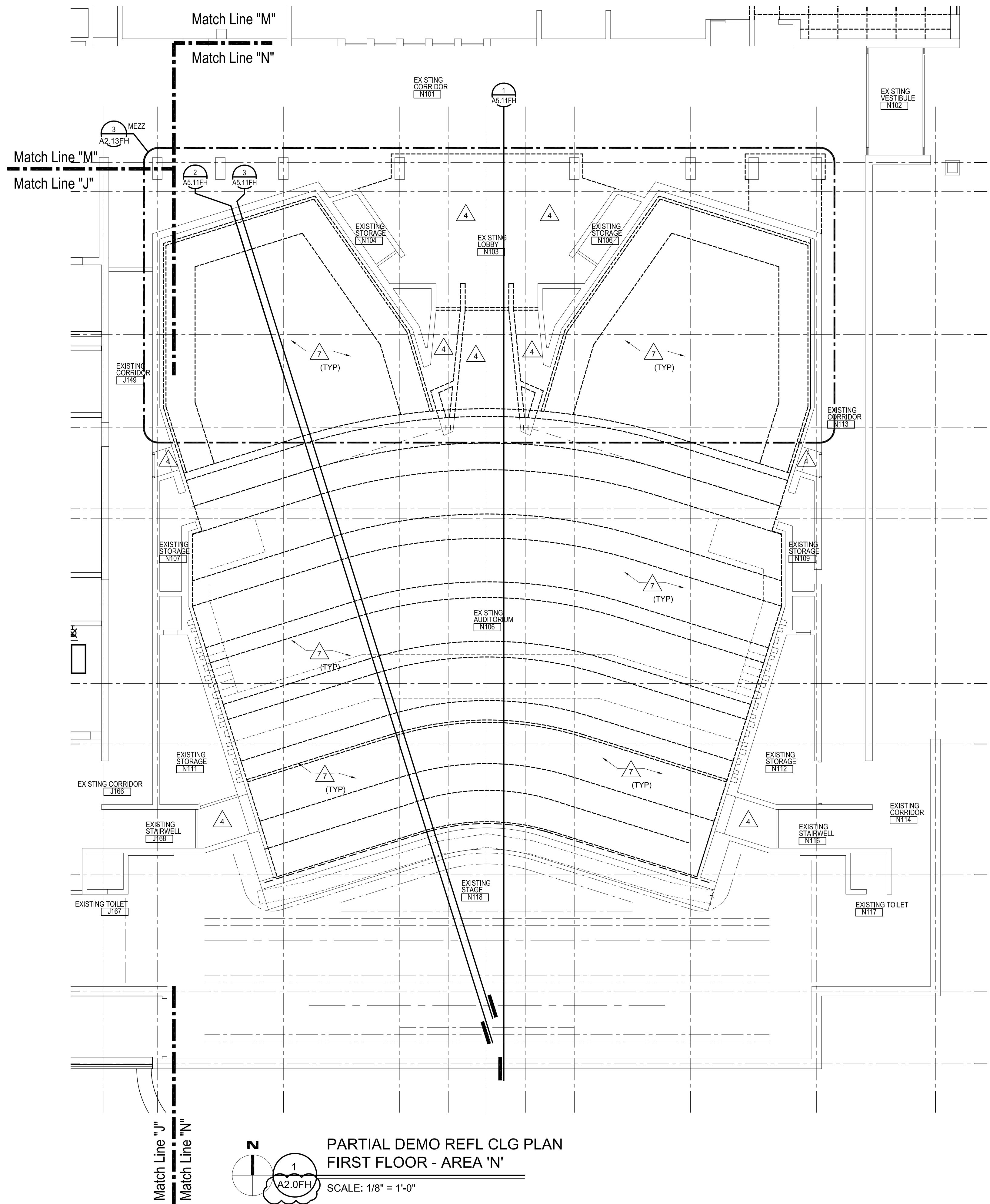
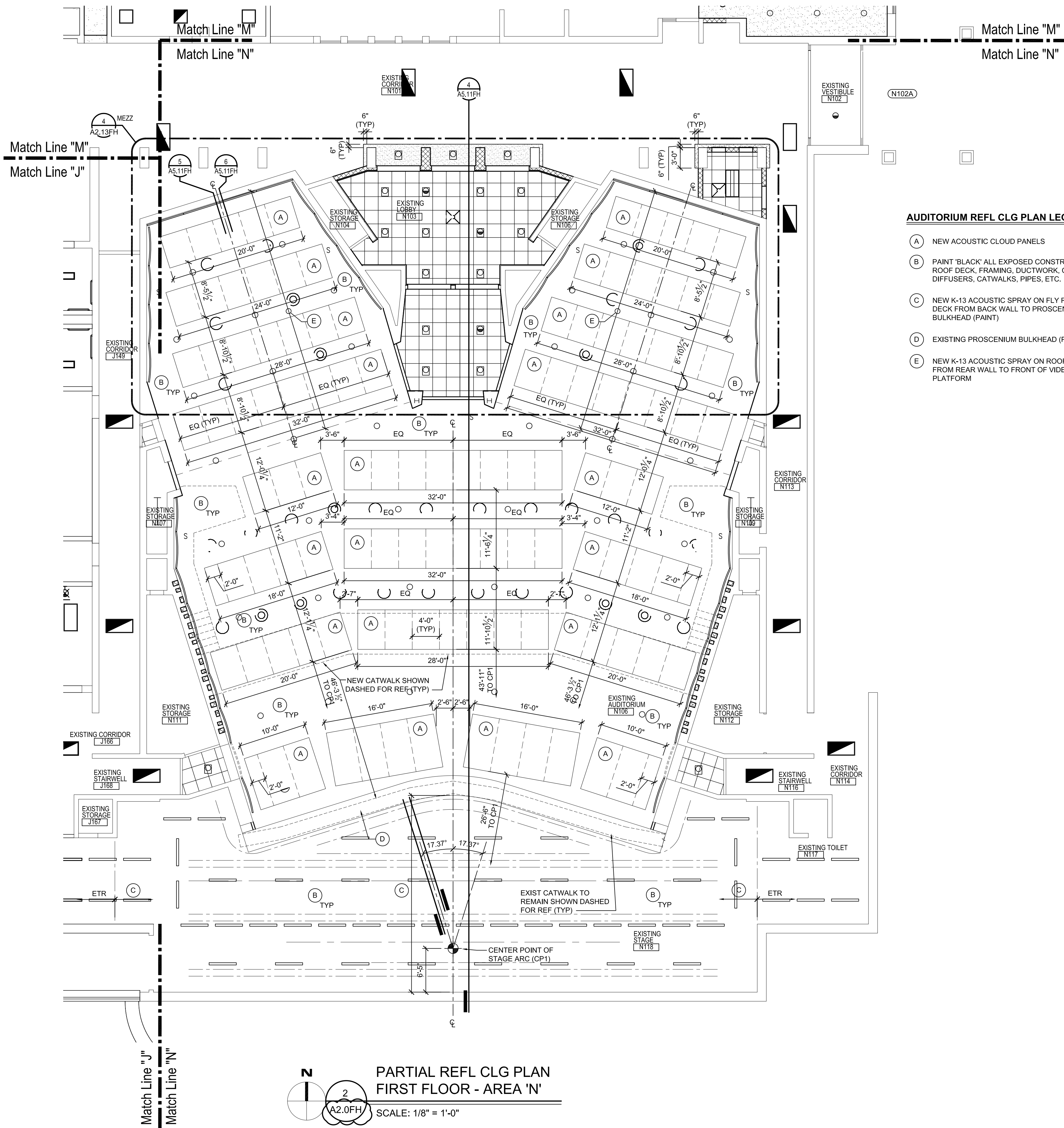
A2.0FH

JOB NO. 151626C



2 SECOND FLOOR COMPOSITE
REFLECTED CEILING PLAN
SCALE: 1/32" = 1'-0"

1 FIRST FLOOR COMPOSITE
REFLECTED CEILING PLAN
SCALE: 1/32" = 1'-0"



WAKELY ASSOCIATES, INC.
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FARMINGTON PUBLIC SCHOOLS

2015 RENOVATIONS

FARMINGTON HIGH SCHOOL

FARMINGTON HIGH SCHOOL

PARTIAL REFL CLG PLAN
FIRST FLOOR AREA 'N'

PRELIMINARY	<input type="checkbox"/>
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FINAL RECORD	<input type="checkbox"/>

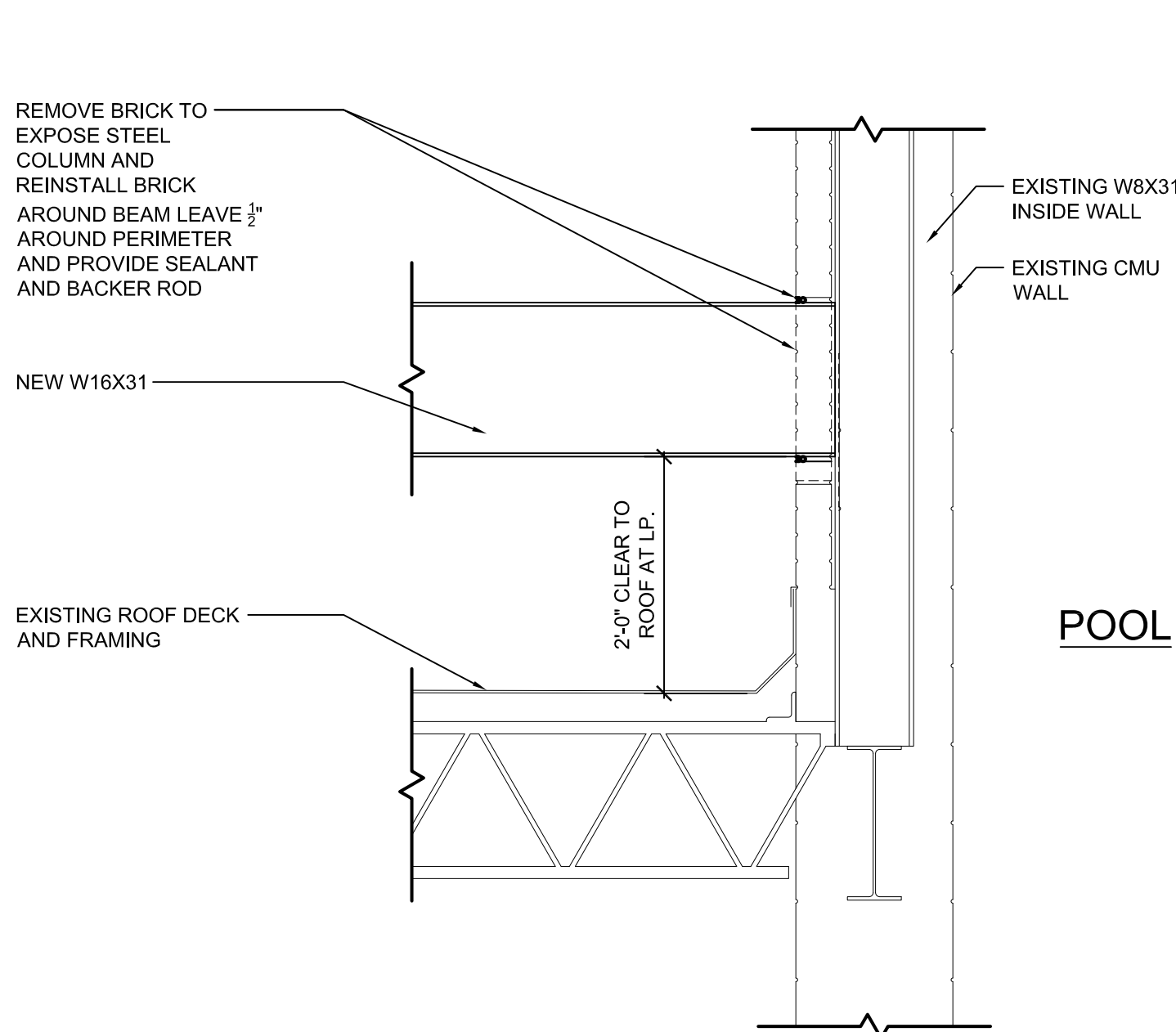
DRAWN BY: JMS, NJL
CHECKED BY: BJS

REVISIONS	
ADD NO 01	2-8-16
ADD NO 02	2-17-16

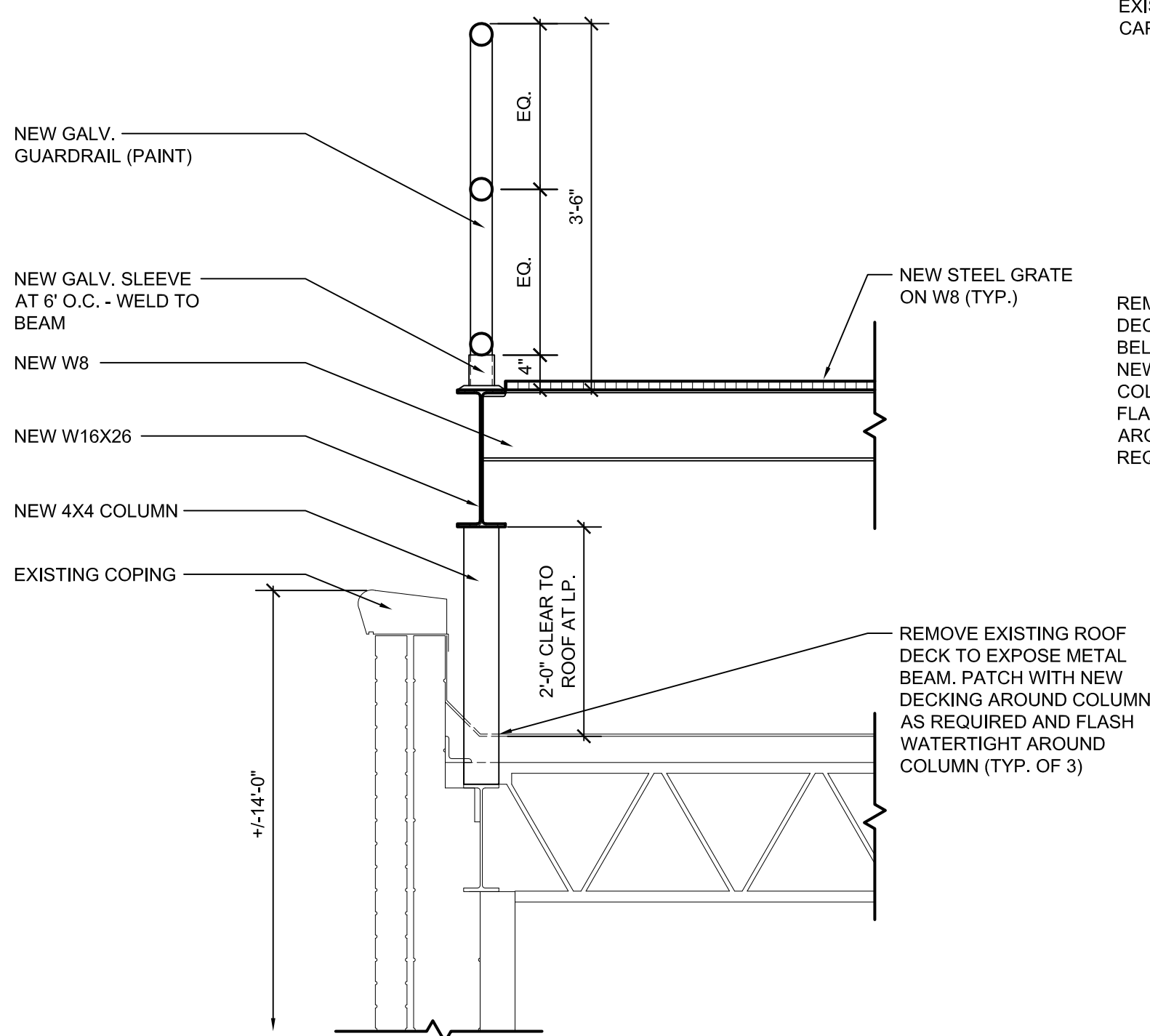
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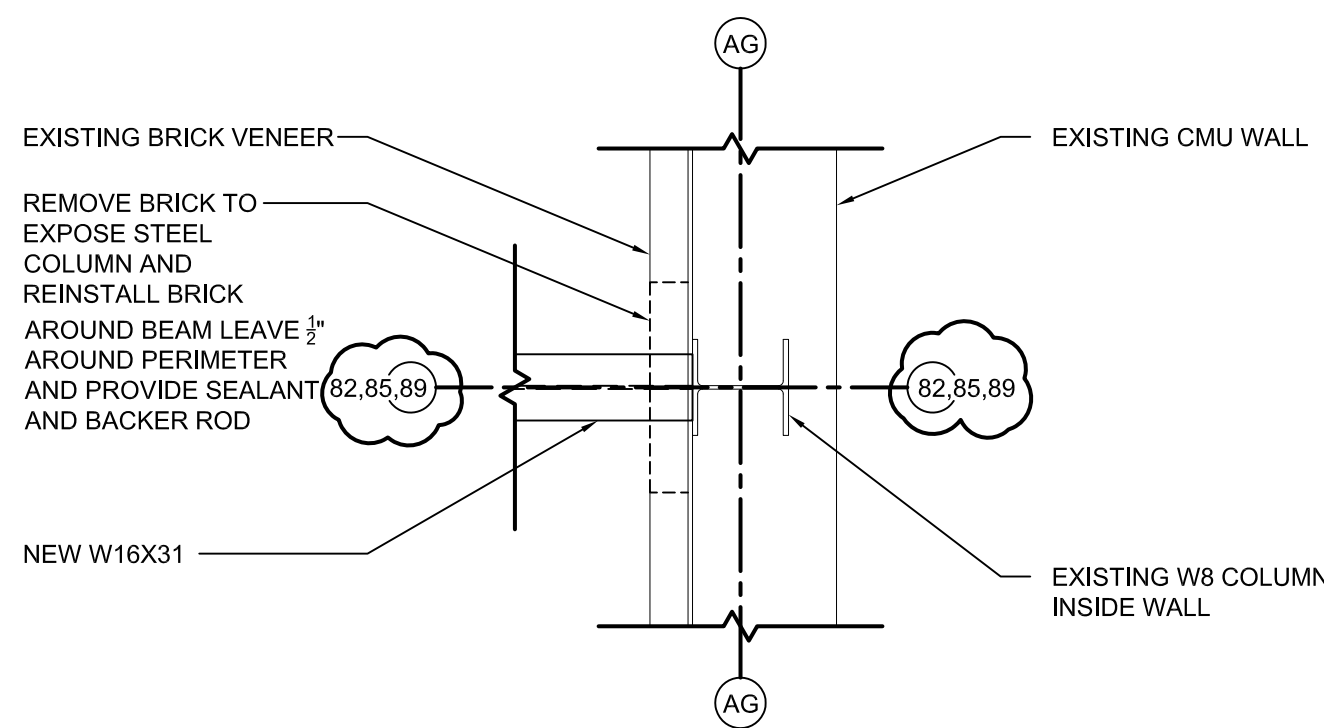
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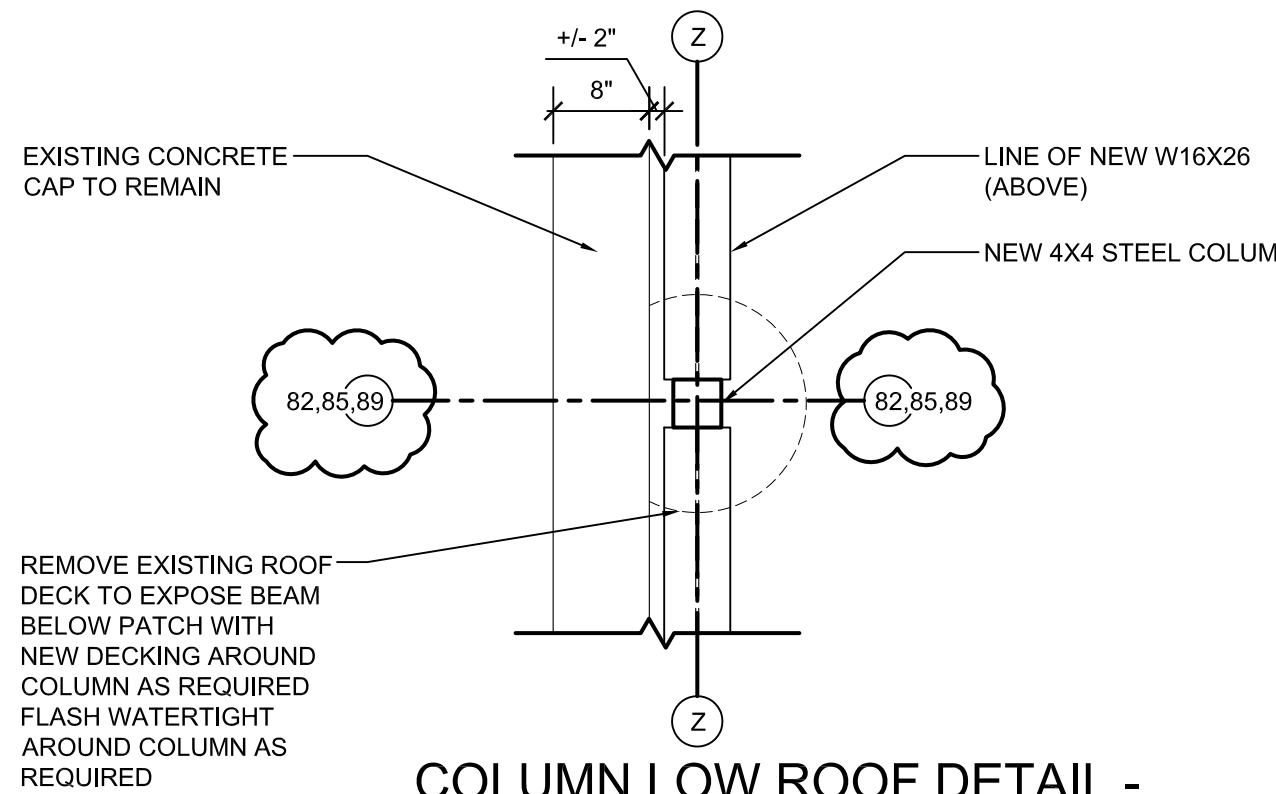
5 DETAIL @ HIGH WALL - TYPICAL OF 3
A3.1FH SCALE: 3/4" = 1'-0"



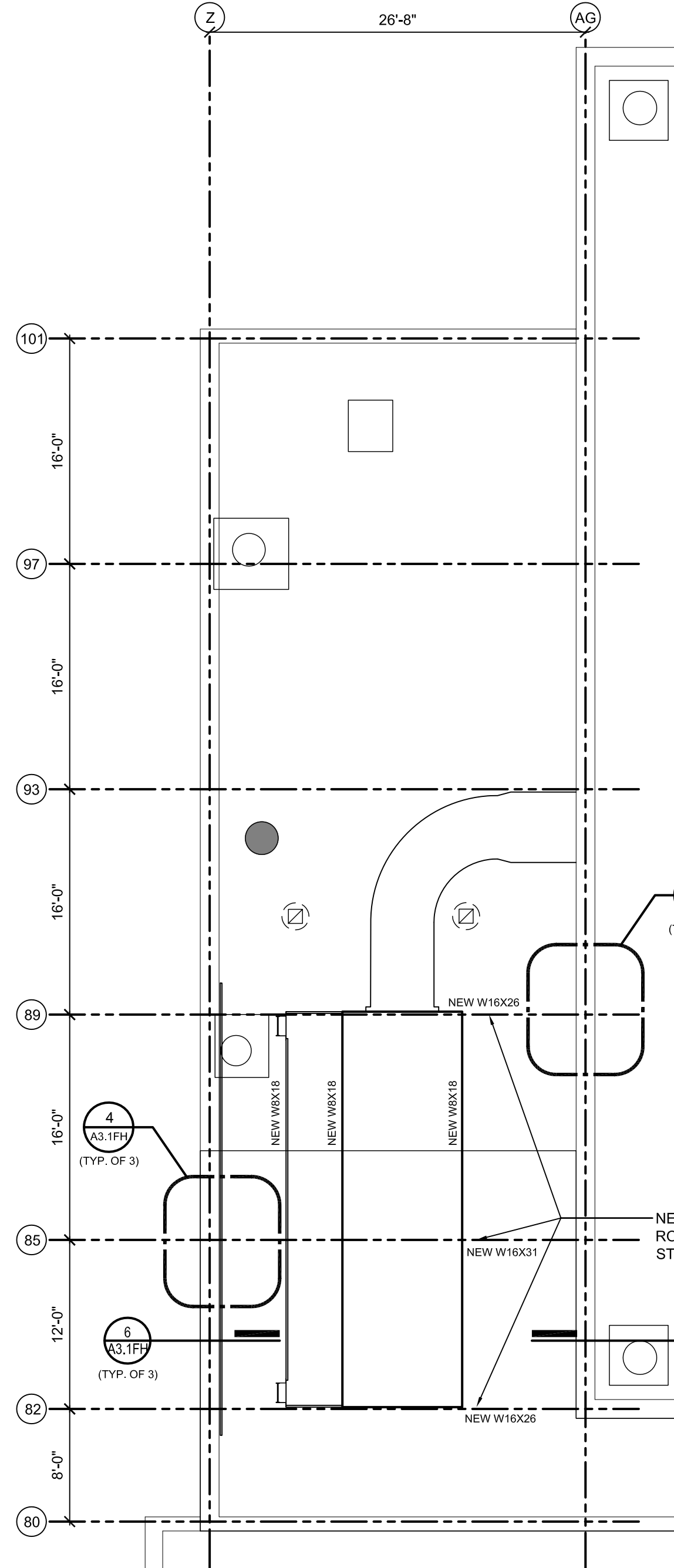
6 DETAIL @ LOW ROOF
A3.1FH SCALE: 3/4" = 1'-0"



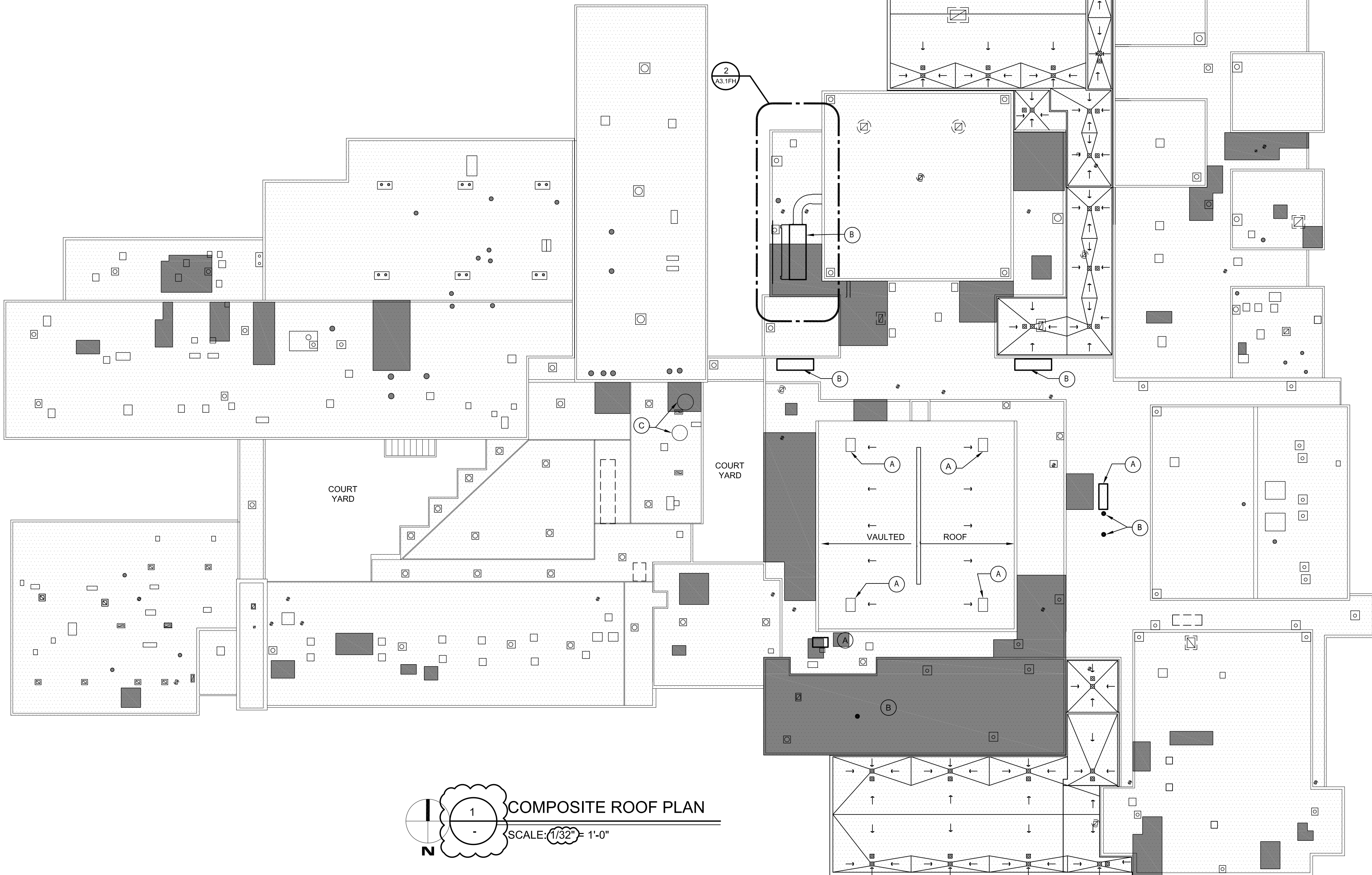
3 COLUMN HIGH ROOF DETAIL
A3.1FH SCALE: 3/4" = 1'-0"



4 COLUMN LOW ROOF DETAIL - TYP. OF 3
A3.1FH SCALE: 3/4" = 1'-0"



2 ENLARGED ROOF PLAN
A3.1FH SCALE: 1/8" = 1'-0"



1 COMPOSITE ROOF PLAN
SCALE: 1/32" = 1'-0"

GENERAL NOTES:

- REFER TO SHEET G4.1 FOR TYPICAL NOTES, SYMBOLS, GENERAL INFORMATION, AND ABBREVIATIONS.
- REFER TO SHEET G4.2 FOR REFERENCED KEYNOTES.

ROOF PLAN GENERAL NOTES:

- VERIFY ALL DIMENSIONS IN FIELD AND NOTIFY ARCHITECT OF ANY DISCREPANCIES.
- VERIFY QUANTITY, SIZE AND LOCATION OF ALL ROOF PENETRATIONS FOR MECHANICAL AND ELECTRICAL WORK WITH THE APPROPRIATE TRADE. PROVIDE ALL OPENINGS SHOWN OR REQUIRED FOR THE COMPLETION OF THE WORK.
- NOT ALL ROOF SUMPS, FANS, AHUS, VENT PIPES, ETC ARE SHOWN ON ROOF PLAN. VERIFY EXACT LOCATION AND QUANTITIES IN FIELD.

ROOF PLAN LEGEND:


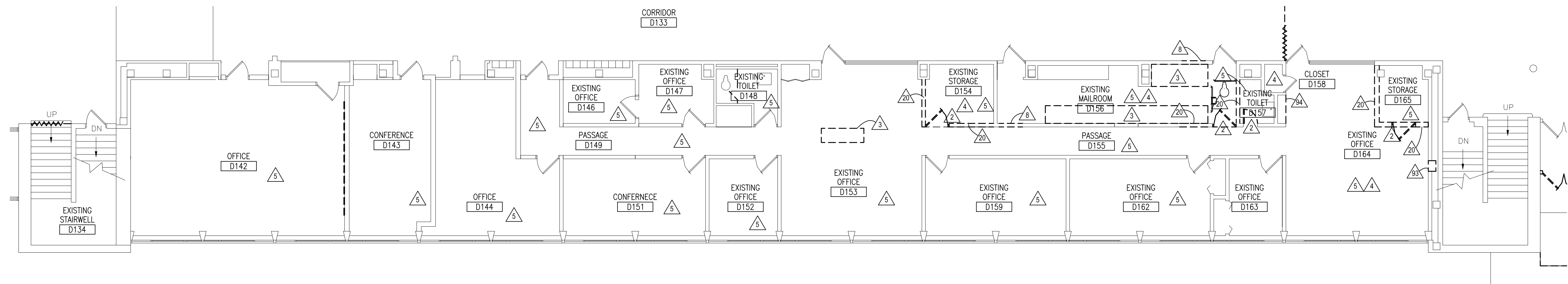
- NEW SINGLE PLY ROOF MEMBRANE ON NEW 1" BOARD OVER EXISTING BUILT-UP ROOF SYSTEM (REMOVE ALL LOOSE STONE BALLAST) PROVIDE NEW METAL COPING ALONG ENTIRE PERIMETER OF ROOF INCLUDING AT CONCRETE COPING AREAS. SEE SPEC.
- REMOVE EXISTING ROOF SYSTEM & WET INSULATION DOWN TO ROOF DECK & INSTALL NEW RIGID INSULATION (MATCH EXISTING THICKNESS: 4" VIF) AND SINGLE PLY MEMBRANE ROOF SYSTEM - SEE SPEC.
- NOTE: LOCATIONS SHOWN ARE APPROXIMATE IN SIZE AND CONTRACTOR MUST VERIFY EXTENT OF WET INSULATION IN FIELD.
- DIRECTION OF EXISTING ROOF SLOPE (V.I.F.)
- EXISTING ROOF SUMP LOCATION (VERIFY IN FIELD)
- EXISTING ROOFTOP EQUIPMENT (V.I.F.)
- EXISTING ROOF FAN/ CURB (V.I.F.)
- EXISTING ROOF VENT PIPE PENETRATION OR FAN LOCATION (V.I.F.)

ROOF PLAN NOTES:

- A NEW EXHAUST FAN (SEE MECH DRAWINGS). PROVIDE NEW STEEL ANGLE STRUCTURAL FRAMING BELOW AS REQ'D (SEE STRUCTURAL DWGS AND/OR ARCHITECTURAL NOTES AND DETAILS). AT LOCATIONS WITH EXISTING ROOFING MATERIAL TO REMAIN, CUT AND PATCH EXISTING ROOFING AS REQ'D PROVIDE NEW FLASHING, SUPPORT CURBS, & NEW STRUCTURAL STEEL ANGLE ROOF FRAMING AS REQUIRED - REFER TO SHEET S4.0
- B NEW ROOF TOP UNIT (SEE MECHANICAL DWGS). PROVIDE NEW STRUCTURAL STEEL ANGLE FRAMING BELOW AS REQ'D (SEE STRUCTURAL DWGS). AT LOCATIONS WITH EXISTING ROOFING MATERIAL TO REMAIN, CUT & PATCH EXISTING ROOFING AS REQ'D PROVIDE NEW FLASHING, SUPPORT CURBS & NEW STRUCTURAL STEEL ANGLE ROOF FRAMING AS REQ'D - REFER TO SHEET S4.0 (U.N.O.)
- C REMOVE EXISTING SATELLITE DISH, SUPPORTS, CONDUITS, ETC. COMPLETE FROM ROOF SURFACE

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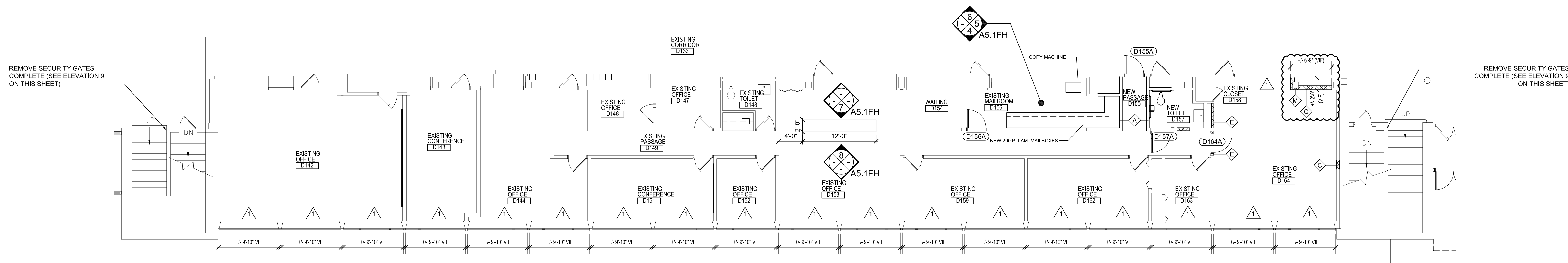
JOB NO. _____



1
A1.4FH

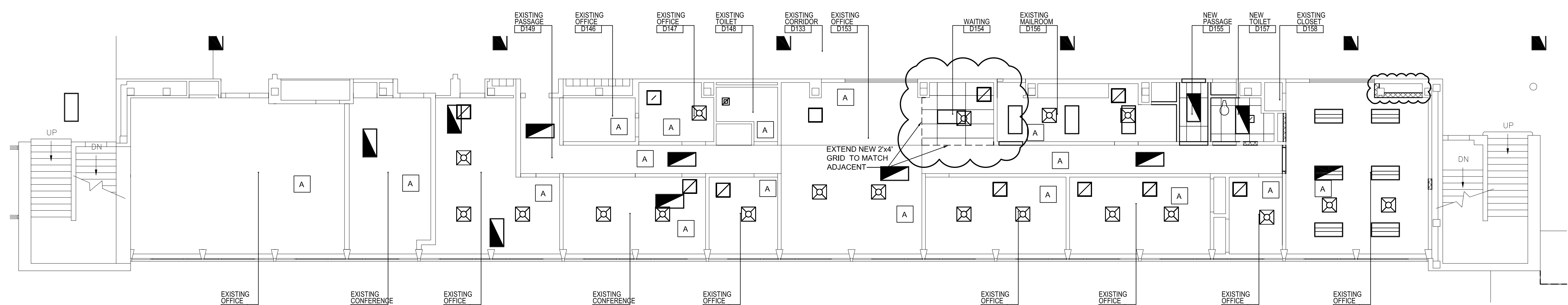
PARTIAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



PARTIAL NEW WORK PLAN

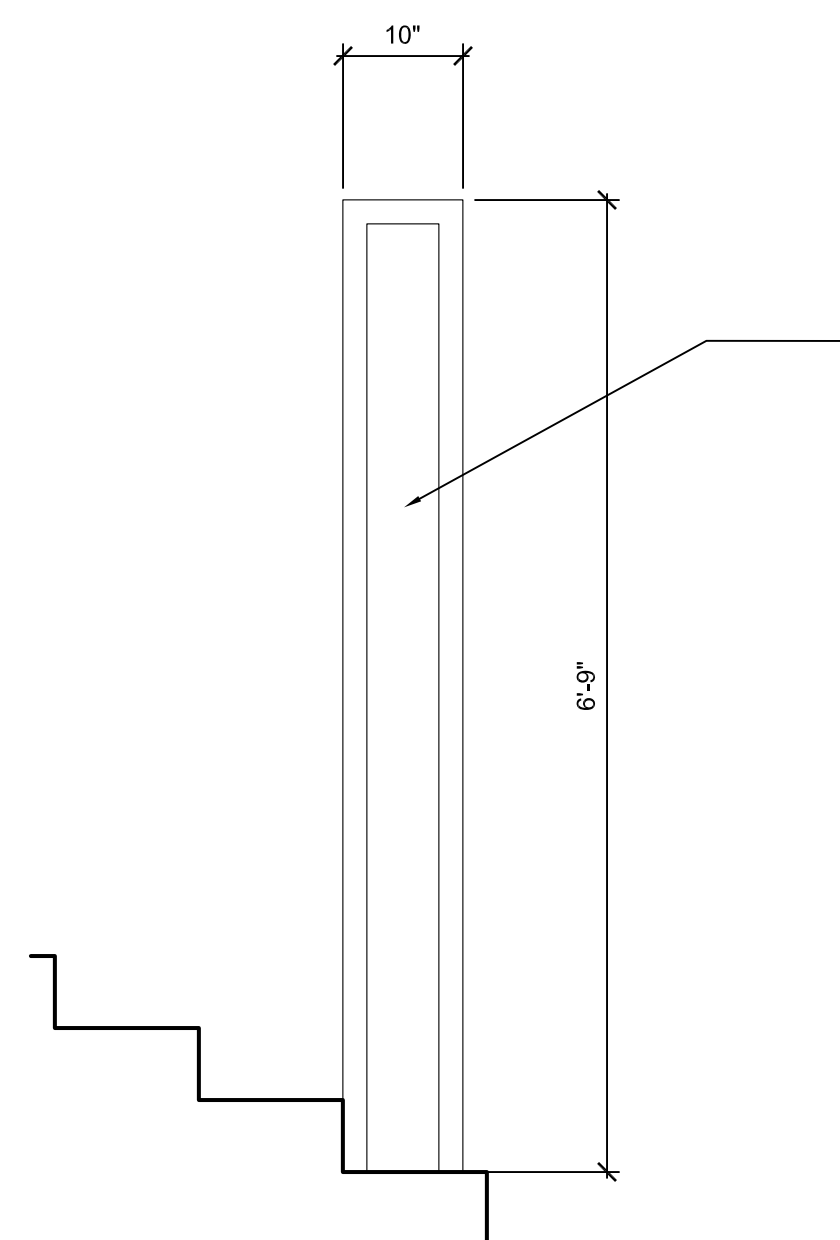
SCALE: 1/8" = 1'-0"



3 = NOTE: ROOMS THAT CONTAIN EXISTING 2'x4' CEILING GRID.

PARTIAL REFLECTED CEILING PLAN

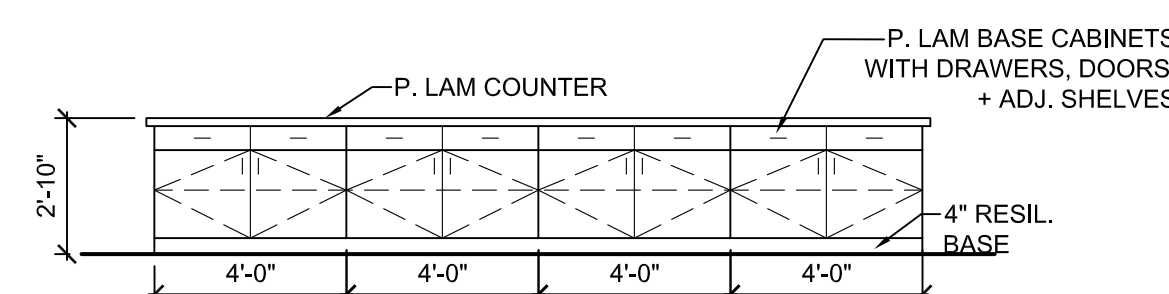
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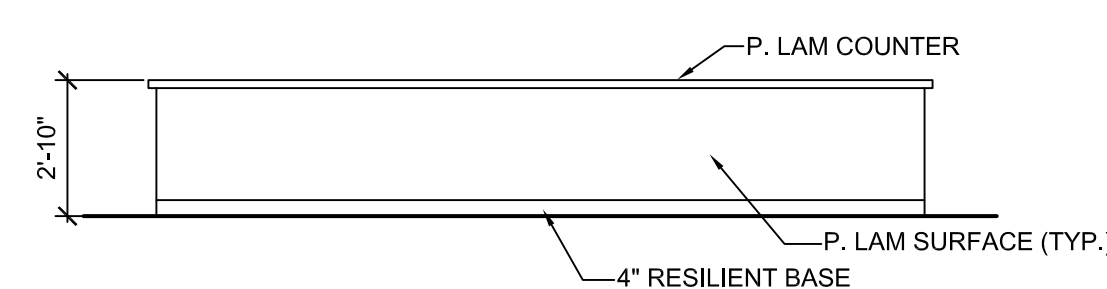
9
A5.1FH

SECURITY GATE
DETAIL AT STAIRS

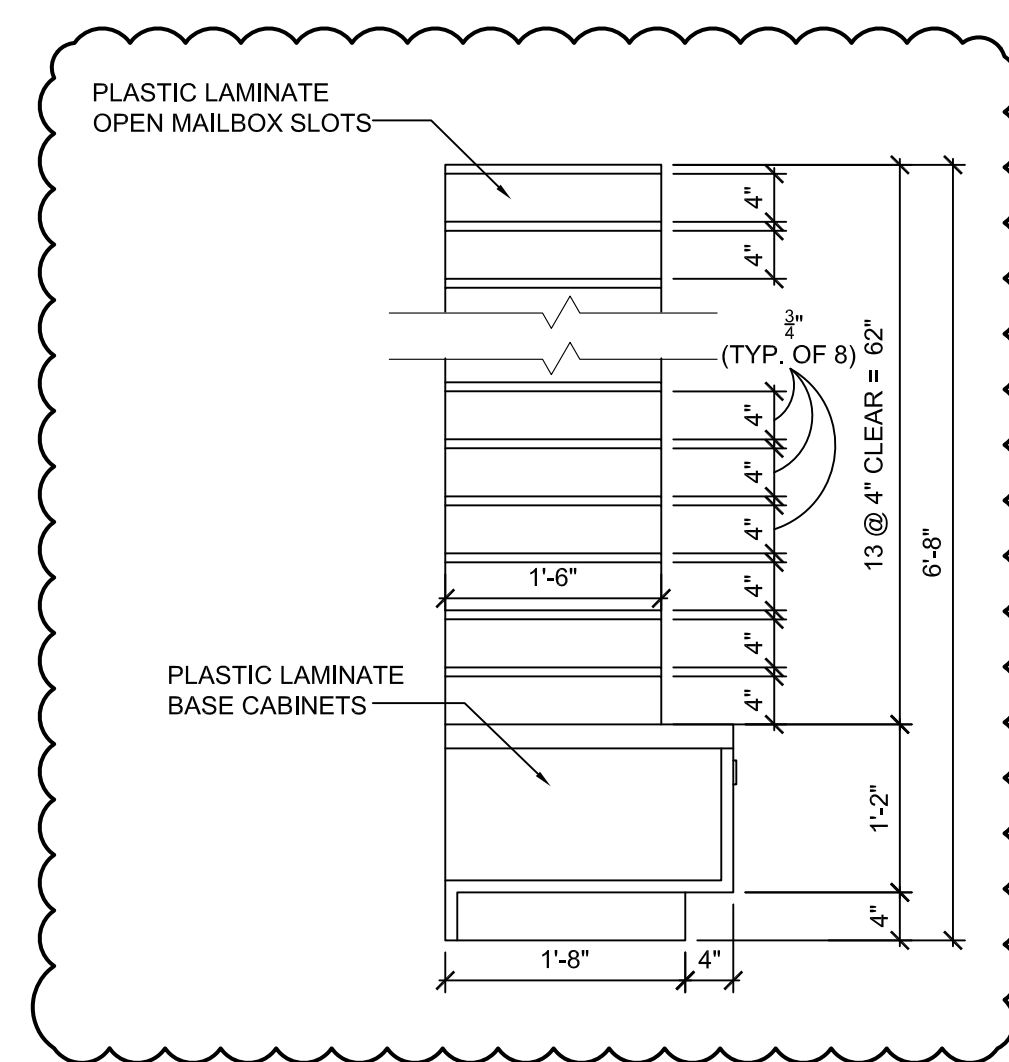
SCALE: 3/4" = 1'-0"



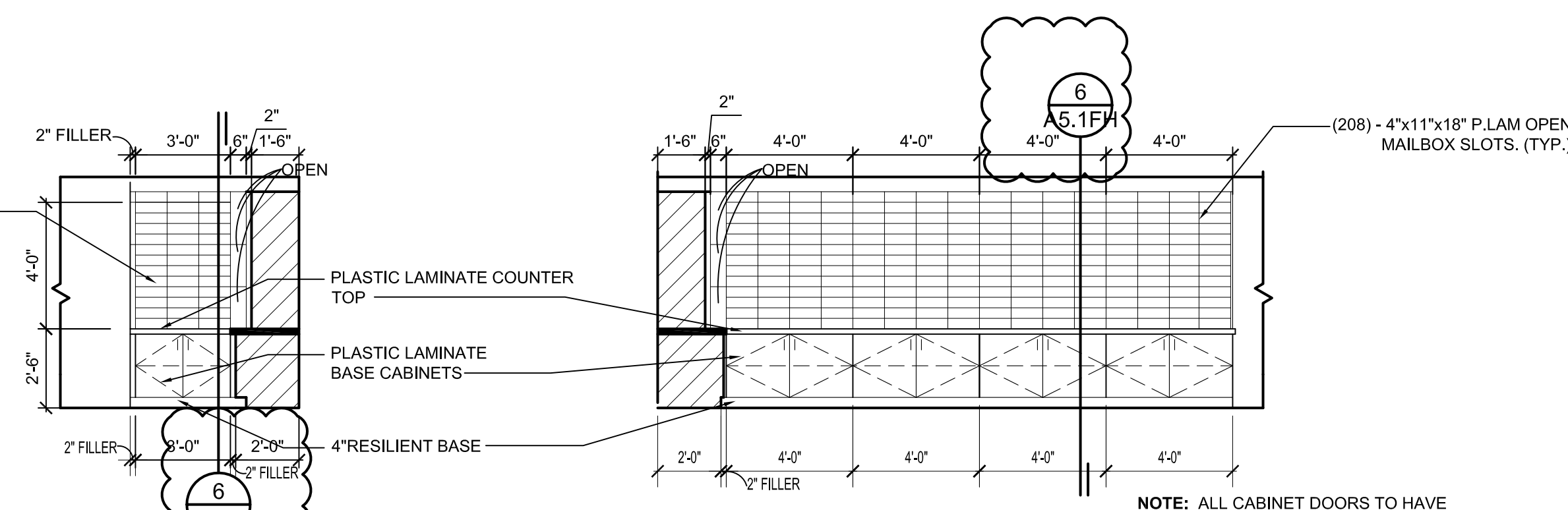
8 INTERIOR ELEVATION
A5.1FH SCALE: 1/4" = 1'-0"



7 INTERIOR ELEVATION
A5.1FH SCALE: 1/4" = 1'-0"



6 SECTION THRU MAILBOXES
A5.1FH SCALE: 3/4" = 1'-0"

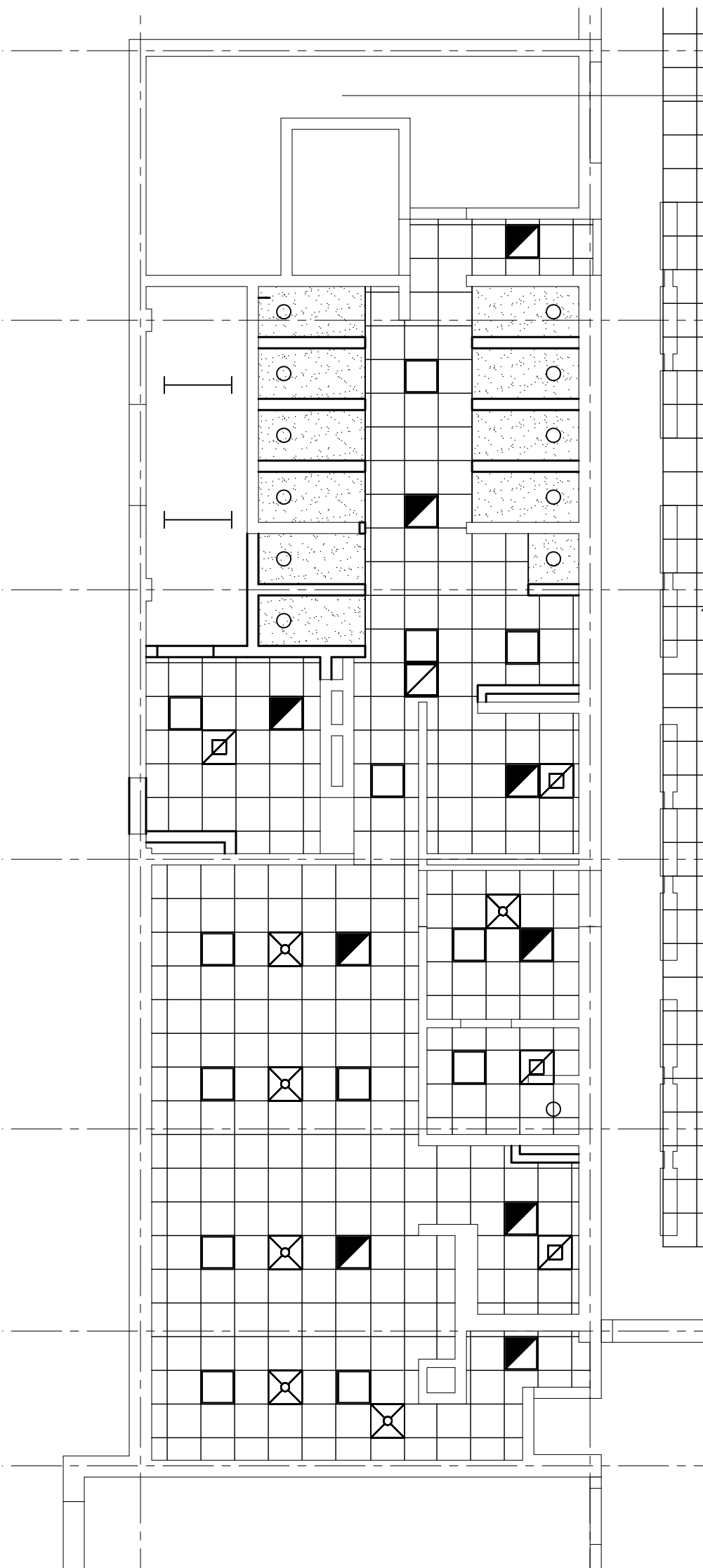


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A5.1FH

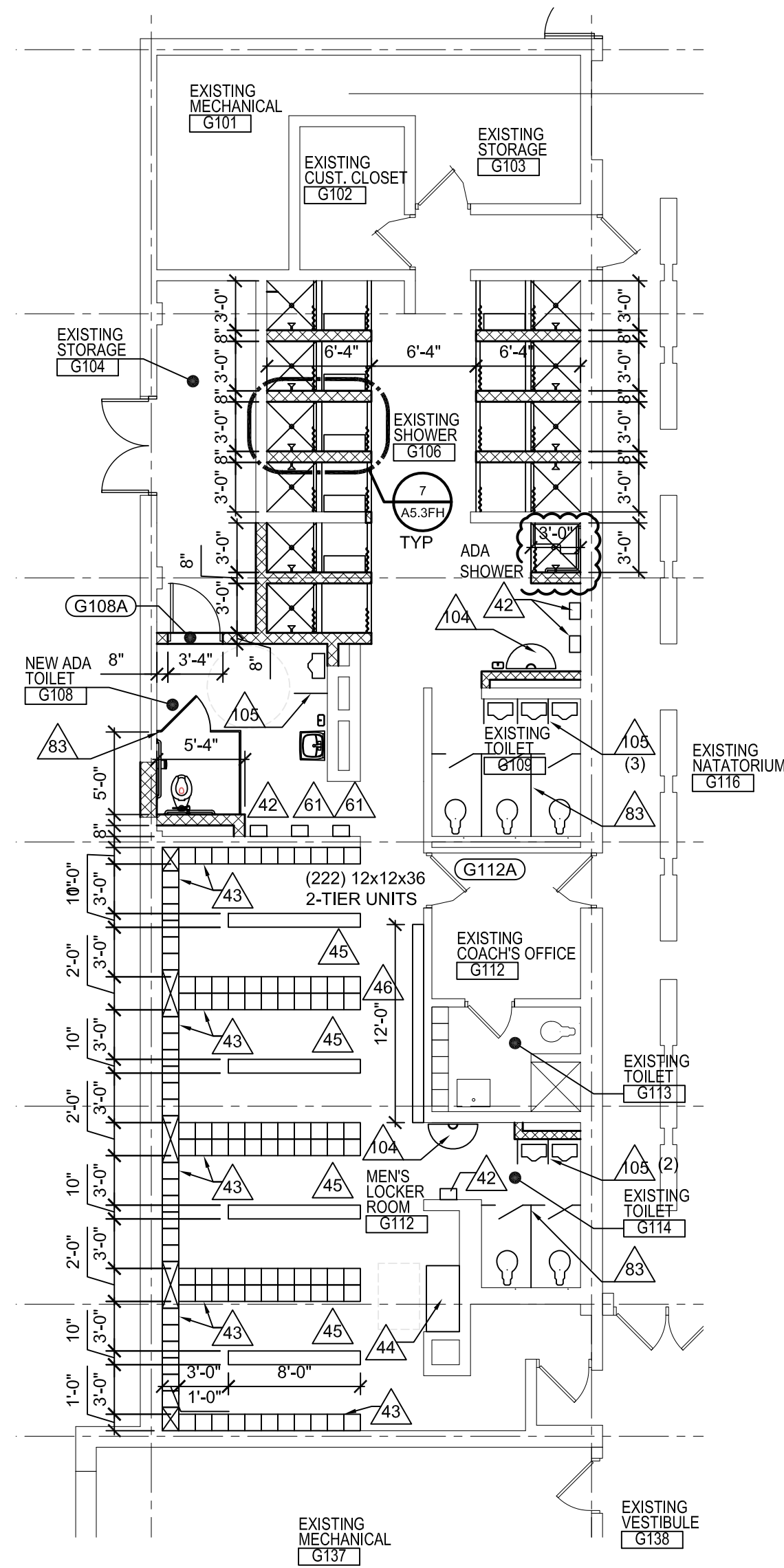
INTERIOR ELEVATION

SCALE: 1/4" = 1'-0"

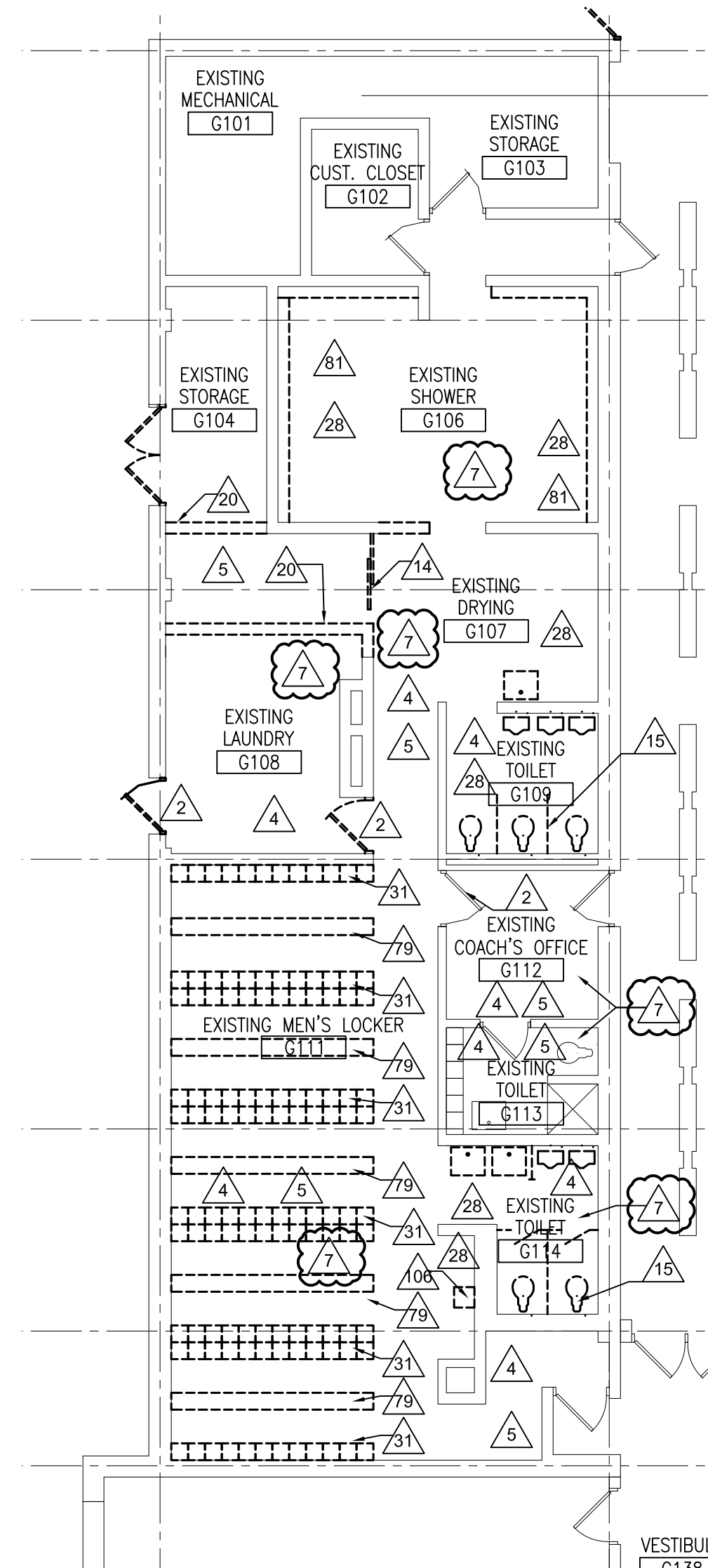
4 INTERIOR ELEVATION
A5.1FH SCALE: 1/4" = 1'-0"



3 PARTIAL REFLECTED
CEILING PLAN
A2.0FH SCALE: 1/8" = 1'-0"

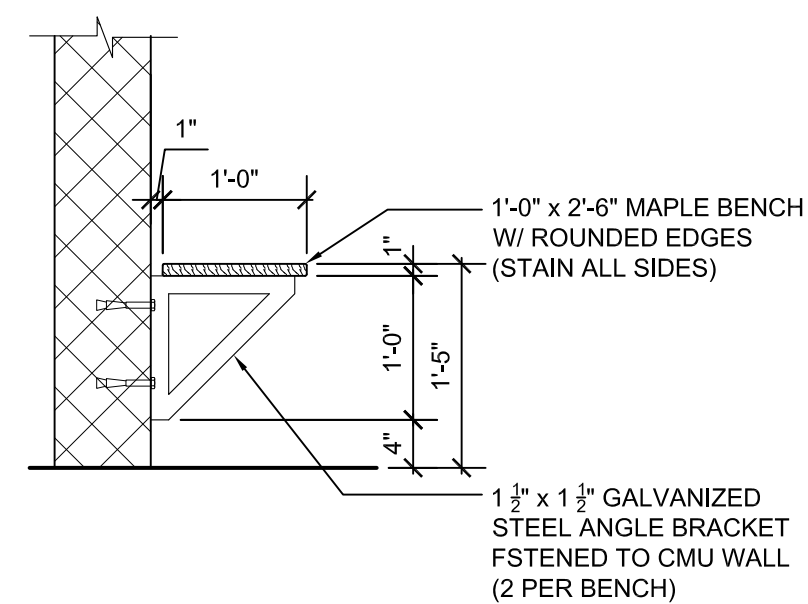


2 PARTIAL NEW WORK PLAN - POOL
A1.7FH SCALE: 1/8" = 1'-0"

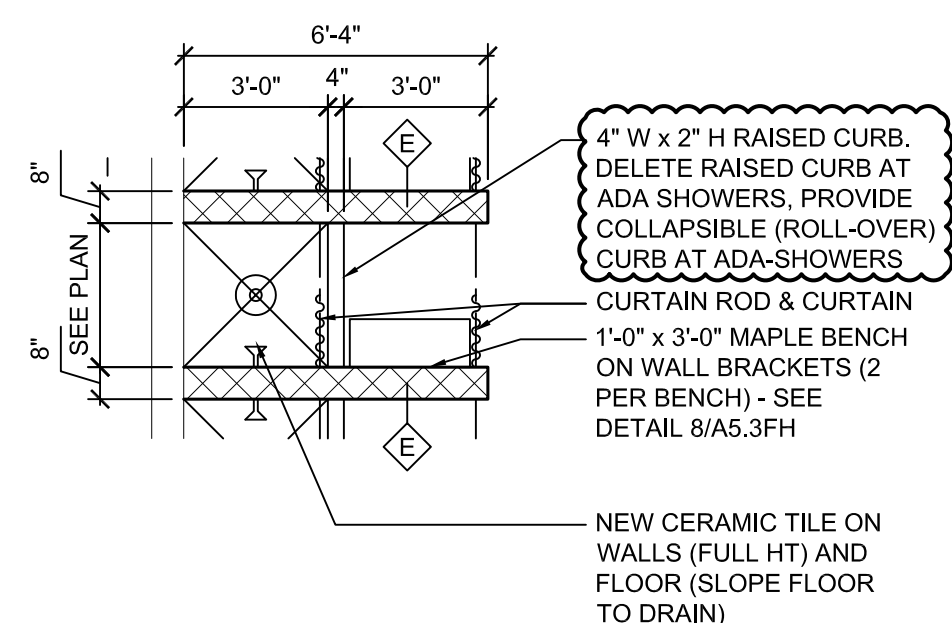


1 PARTIAL DEMOLITION PLAN - POOL
A1.7FH SCALE: 1/8" = 1'-0"

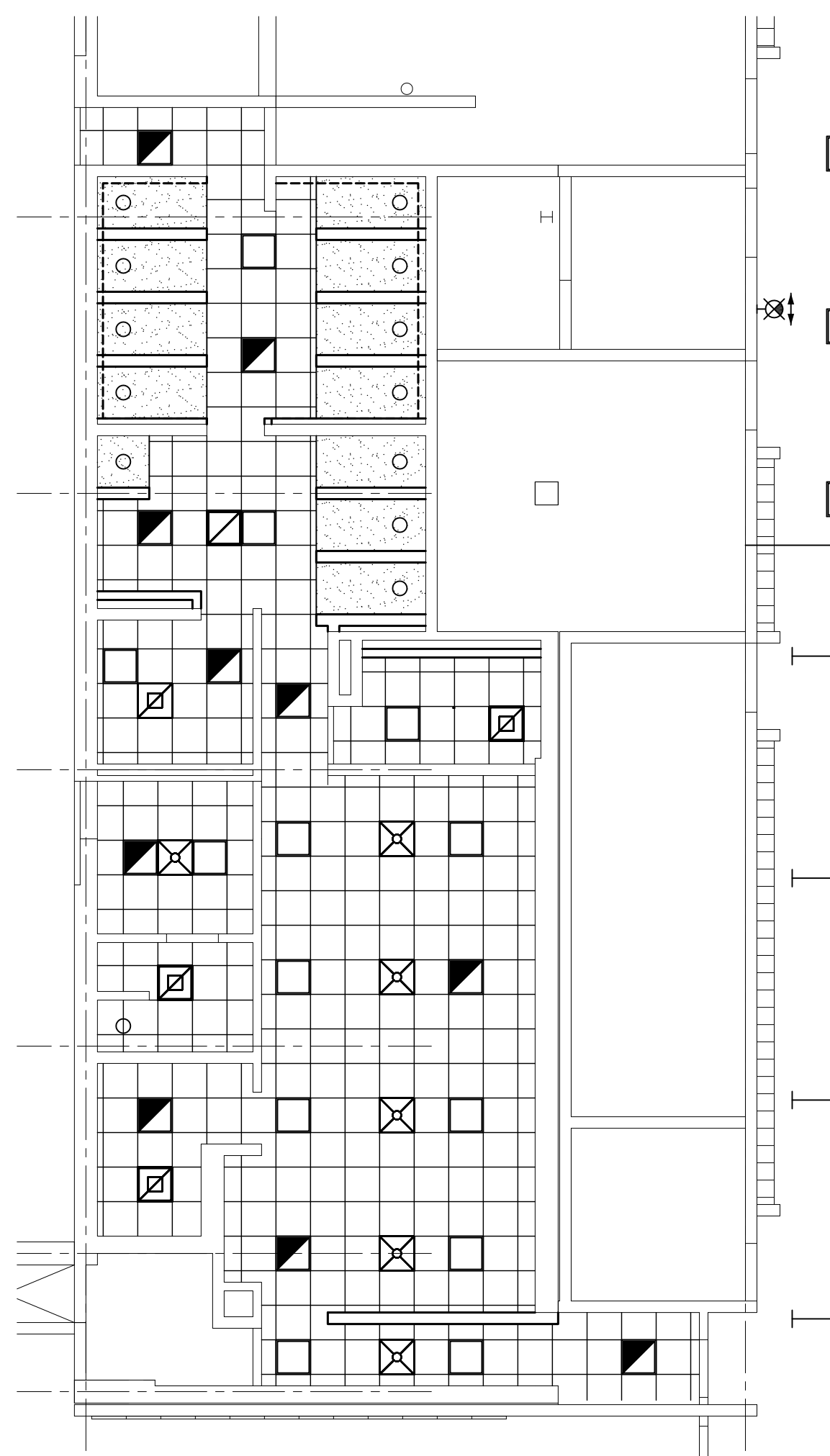
LOCKER DEMOLITION NOTE:
SALVAGE ALL LOCKERS AND
TRANSPORT TO EAST MIDDLE
SCHOOL FOR REINSTALLATION



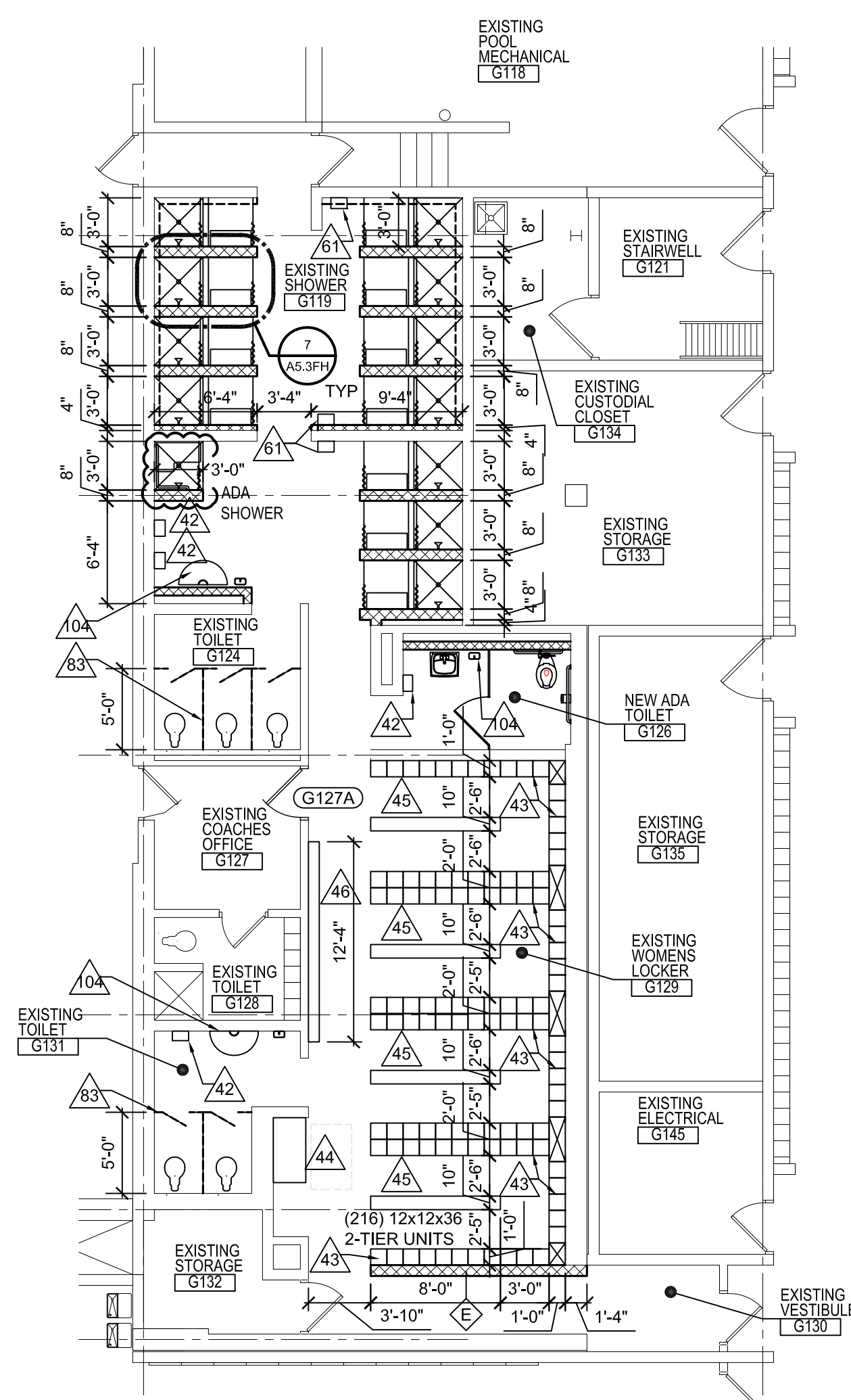
8 TYPICAL BENCH DETAIL
A5.3FH SCALE: 3/4" = 1'-0"



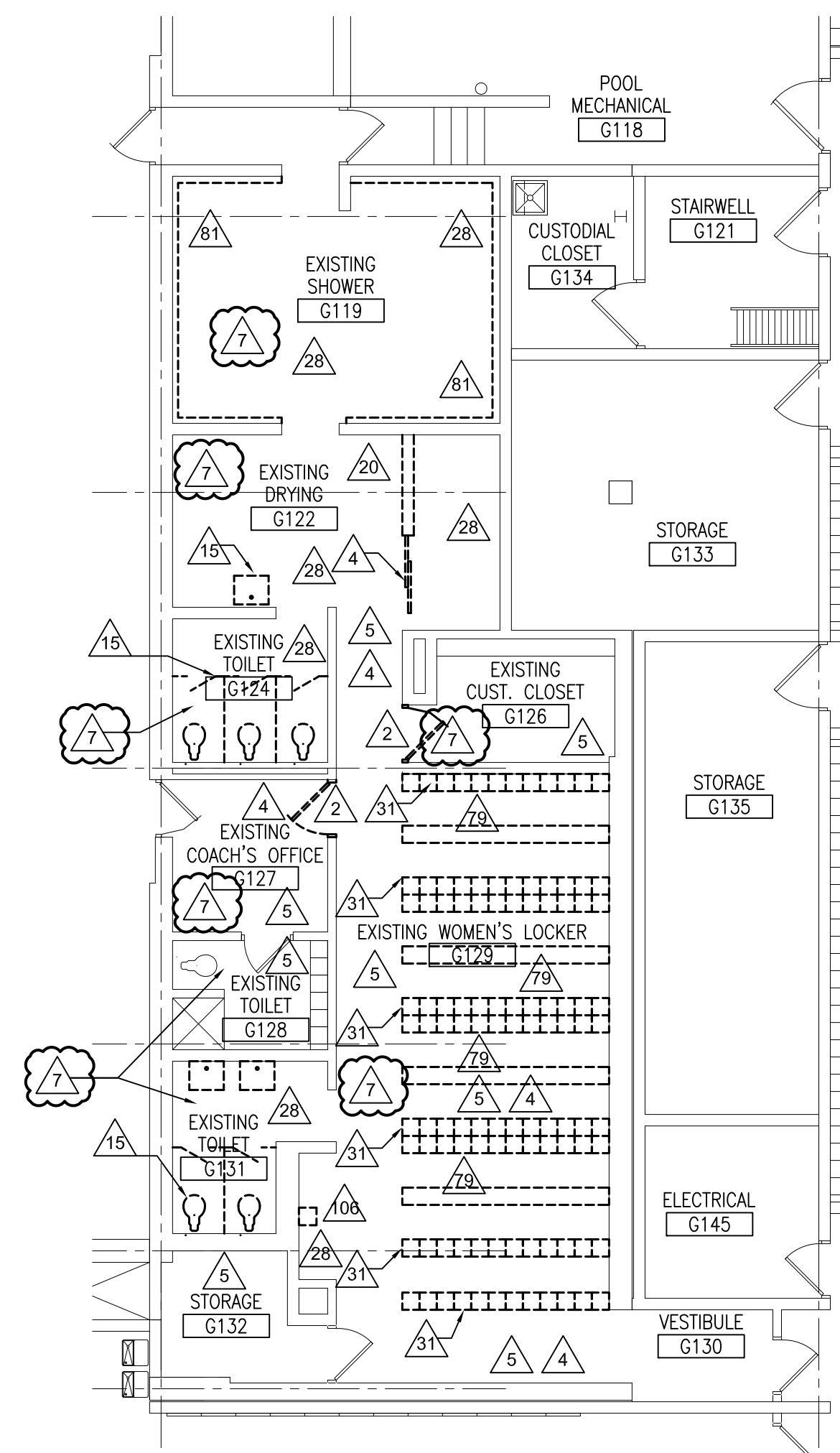
7 TYPICAL SHOWER DETAIL
A5.3FH SCALE: 1/4" = 1'-0"



6 PARTIAL REFLECTED
CEILING PLAN
A2.0FH SCALE: 1/8" = 1'-0"



5 PARTIAL NEW WORK PLAN - POOL
A1.7FH SCALE: 1/8" = 1'-0"



4 PARTIAL DEMOLITION PLAN - POOL
A1.7FH SCALE: 1/8" = 1'-0"

LOCKER DEMOLITION NOTE:
SALVAGE ALL LOCKERS AND
TRANSPORT TO EAST MIDDLE
SCHOOL FOR REINSTALLATION

FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

FARMINGTON HIGH SCHOOL

ENLARGED PLANS
INTERIOR ELEVATIONS
DETAILS

PRELIMINARY ☐
DESIGN DEVELOPMENT ☐
CONSTRUCTION ☒
FINAL RECORD ☐

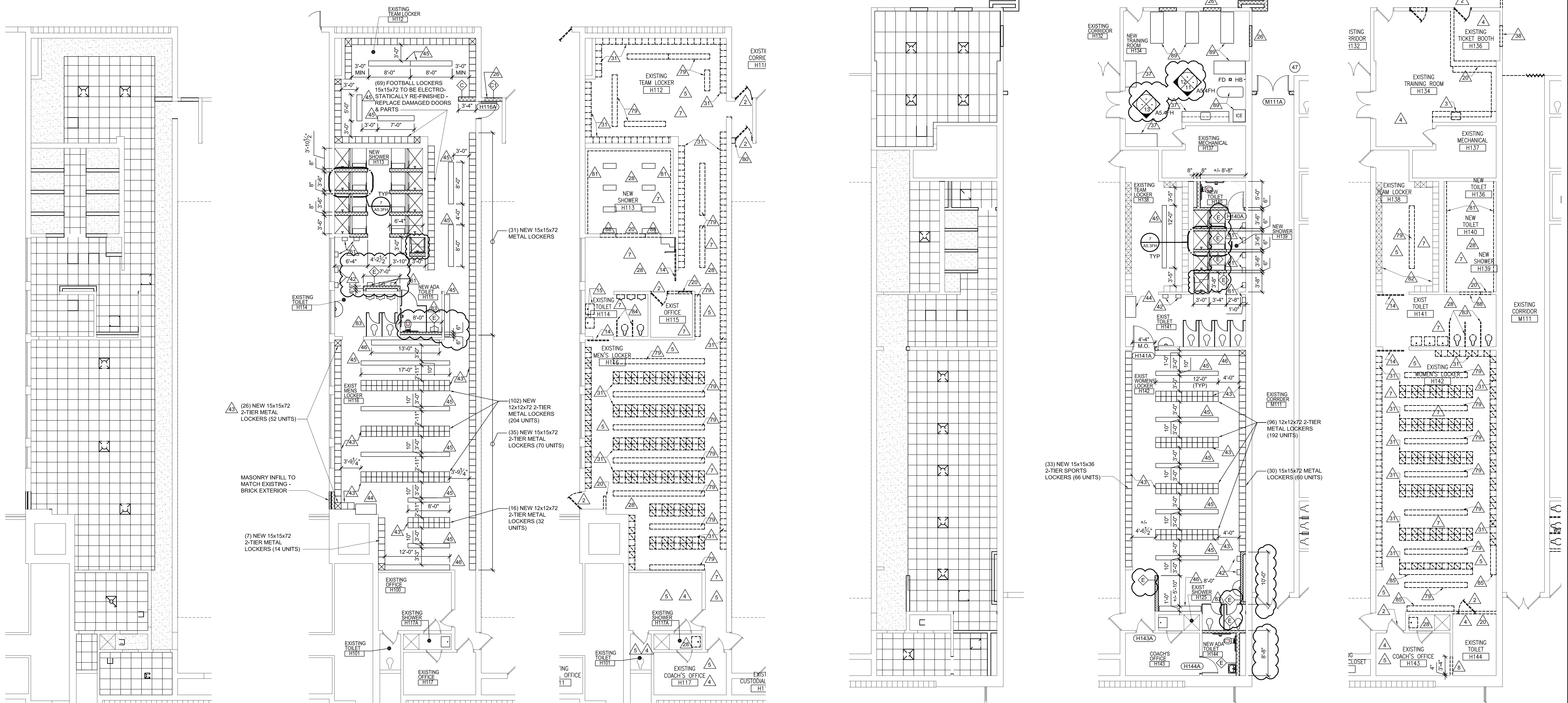
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CHECKED BY: BJS

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DATE: FEBRUARY 1, 2016
SHEET NO.

A5.3FH

JOB NO. 151626C



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A1.8FH
PARTIAL REFLECTED
CEILING PLAN
SCALE: 1/8" = 1'-0"

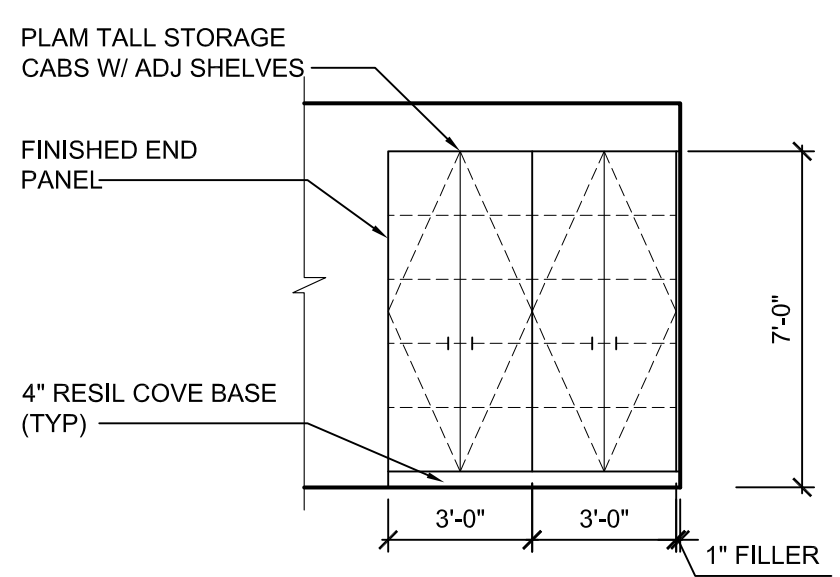
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A1.8FH
PARTIAL NEW WORK PLAN
SCALE: 1/8" = 1'-0"

4
A1.8FH
PARTIAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

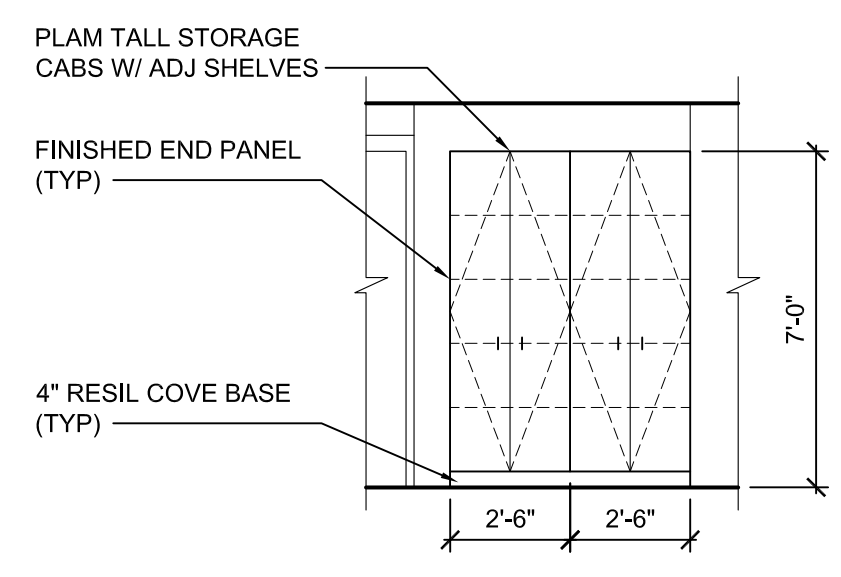
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A1.8FH
PARTIAL REFLECTED
CEILING PLAN
SCALE: 1/8" = 1'-0"

2
A1.8FH
PARTIAL NEW WORK PLAN
SCALE: 1/8" = 1'-0"

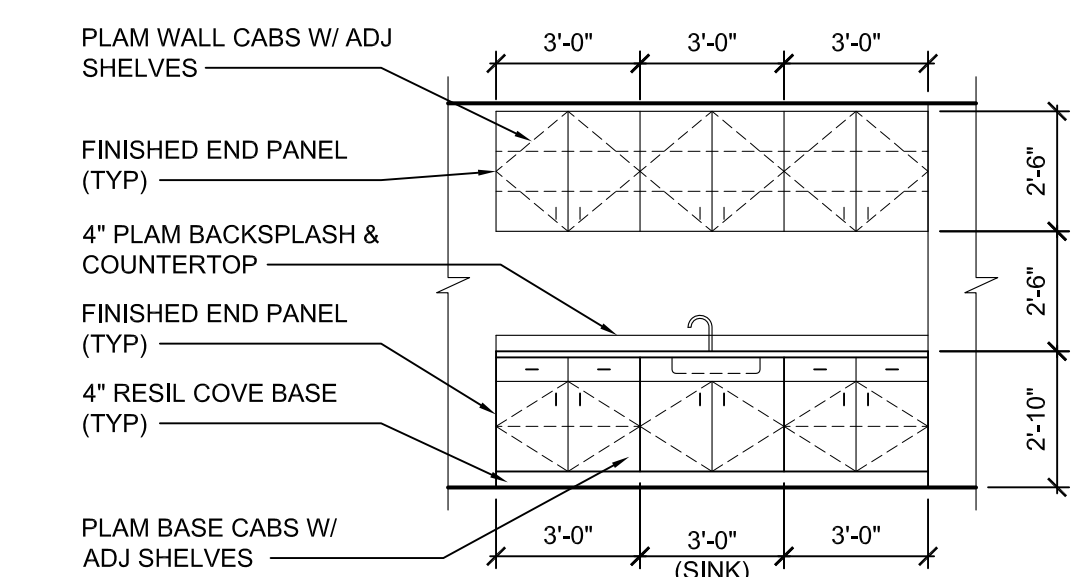
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A1.8FH
PARTIAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



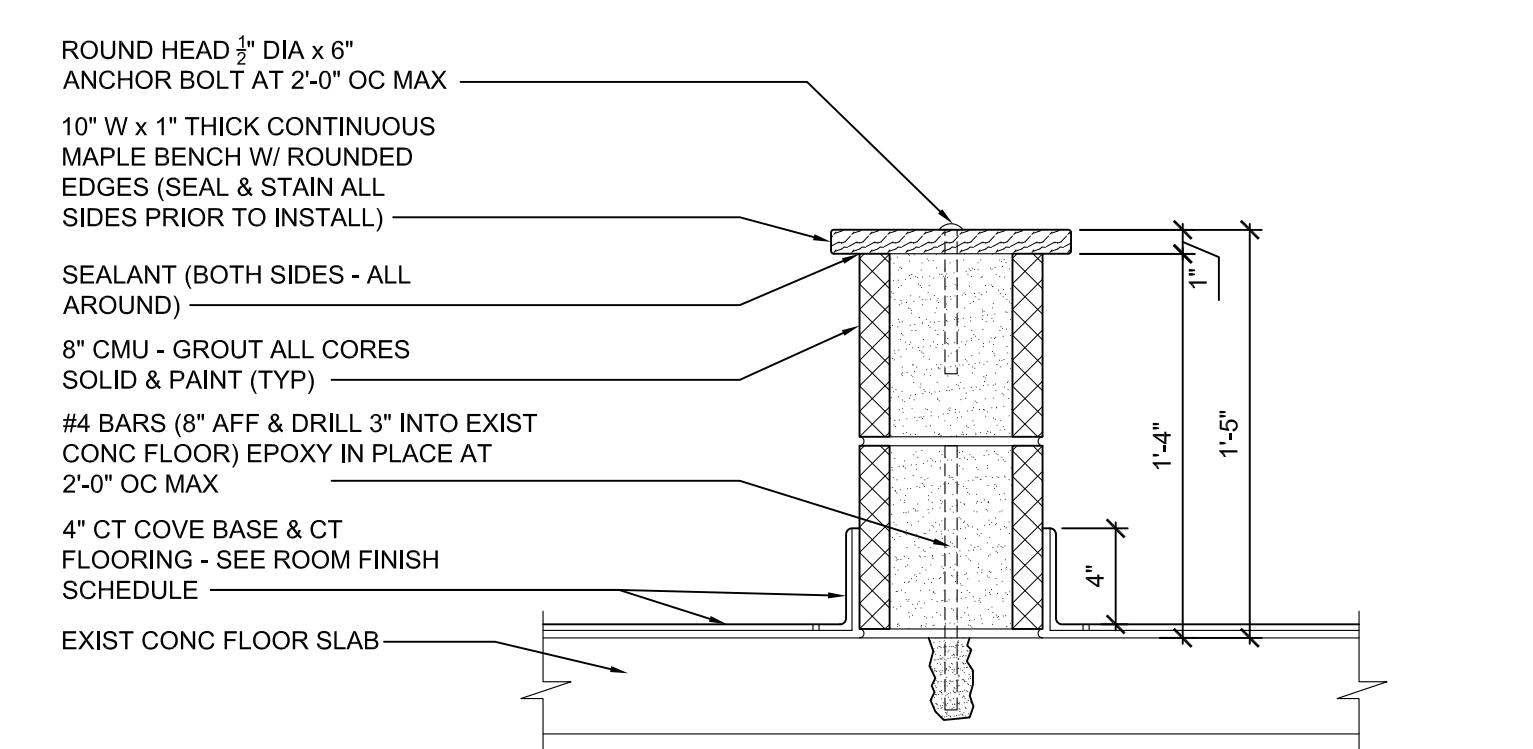
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INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



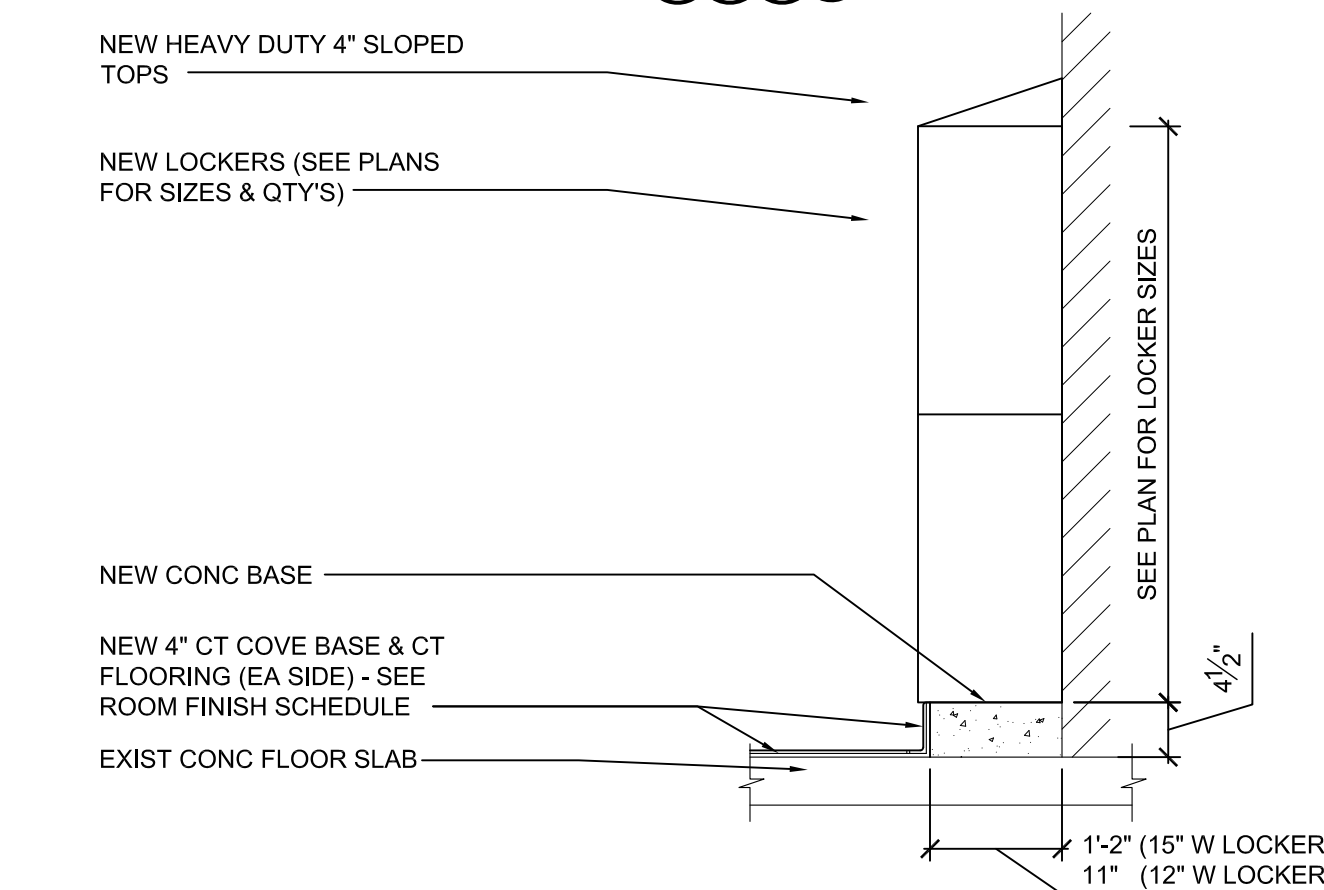
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INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



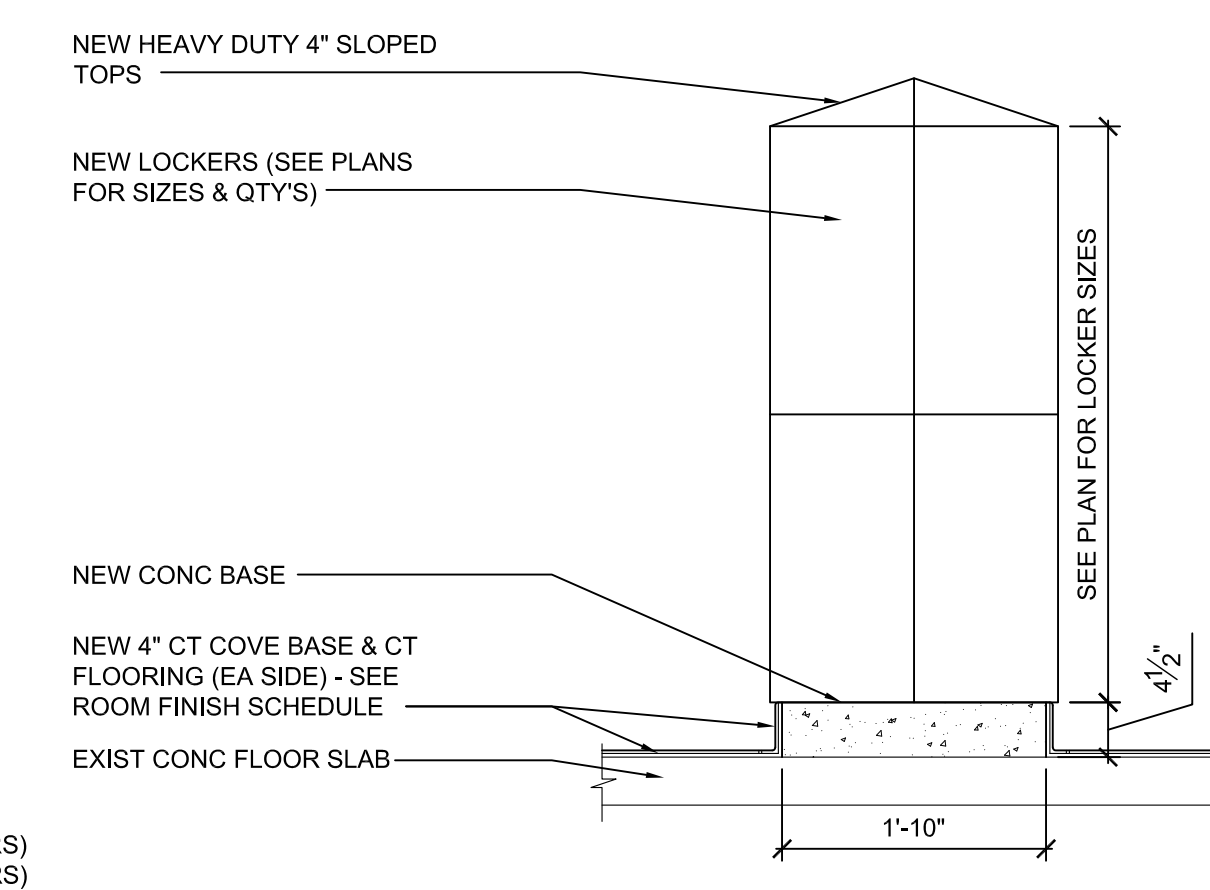
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A5.4FH
INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



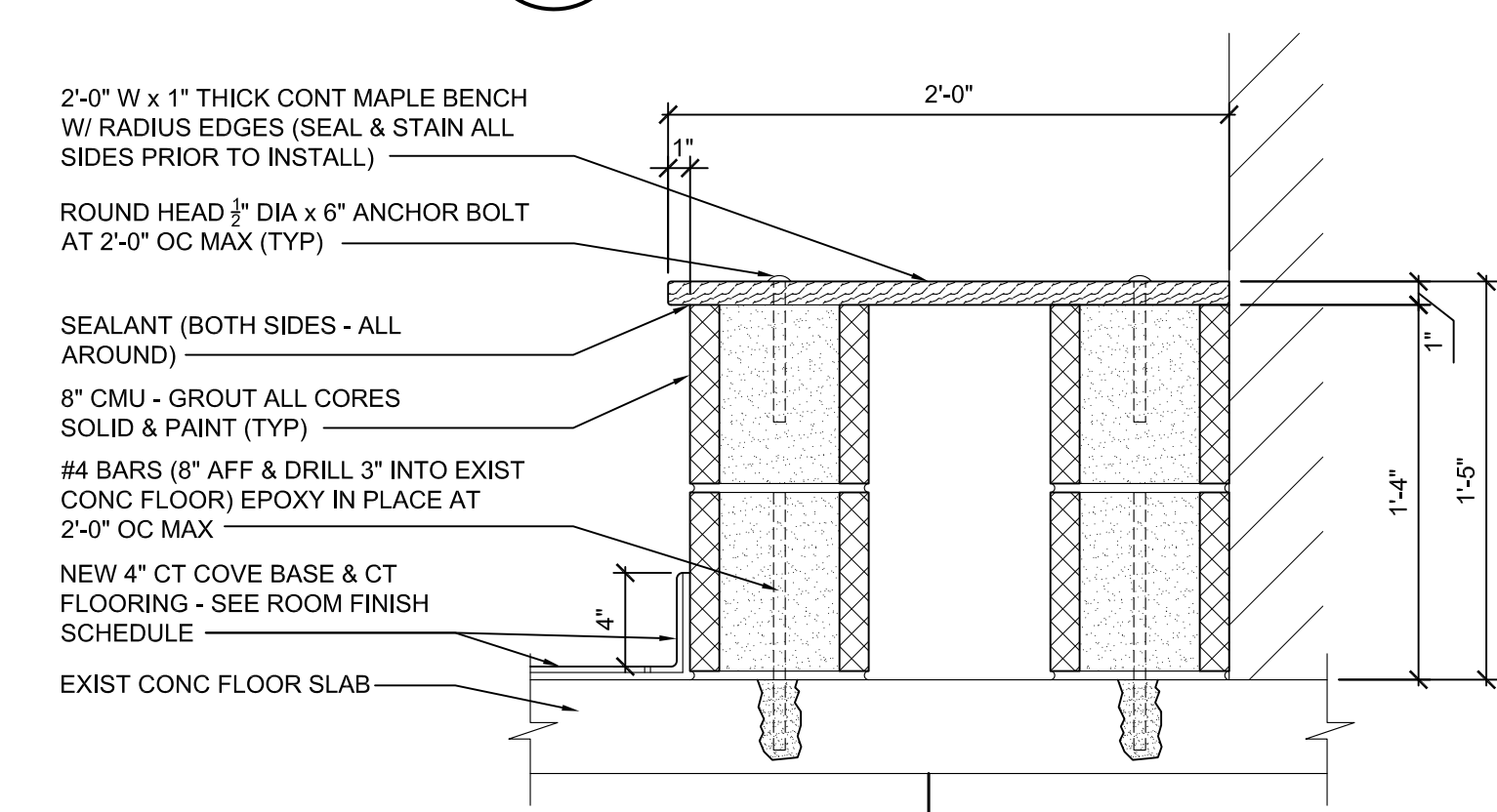
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A5.4FH
LOCKER BENCH DETAIL
SCALE: 1 1/2" = 1'-0"



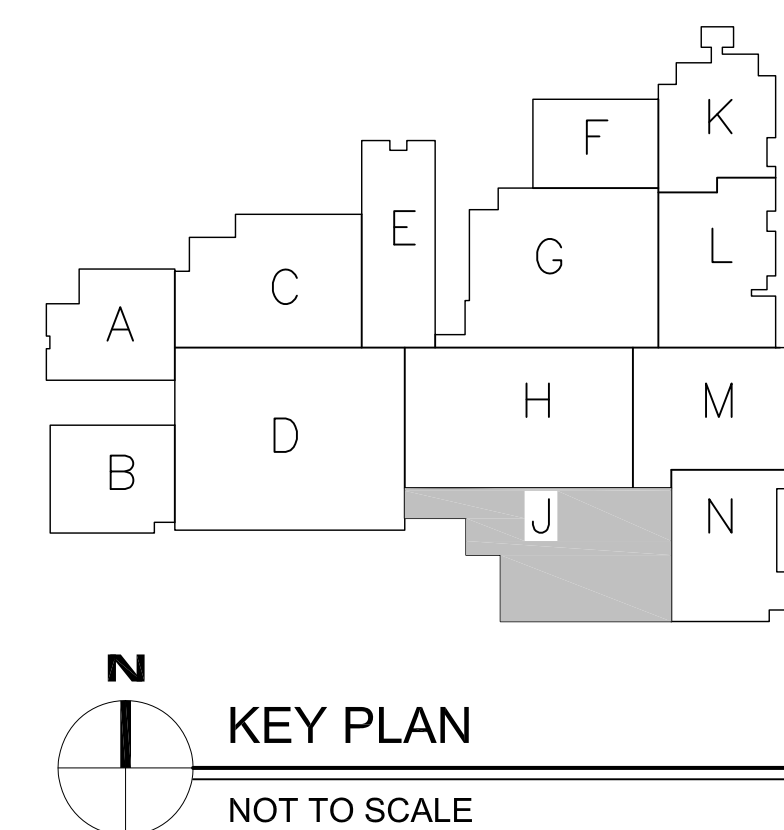
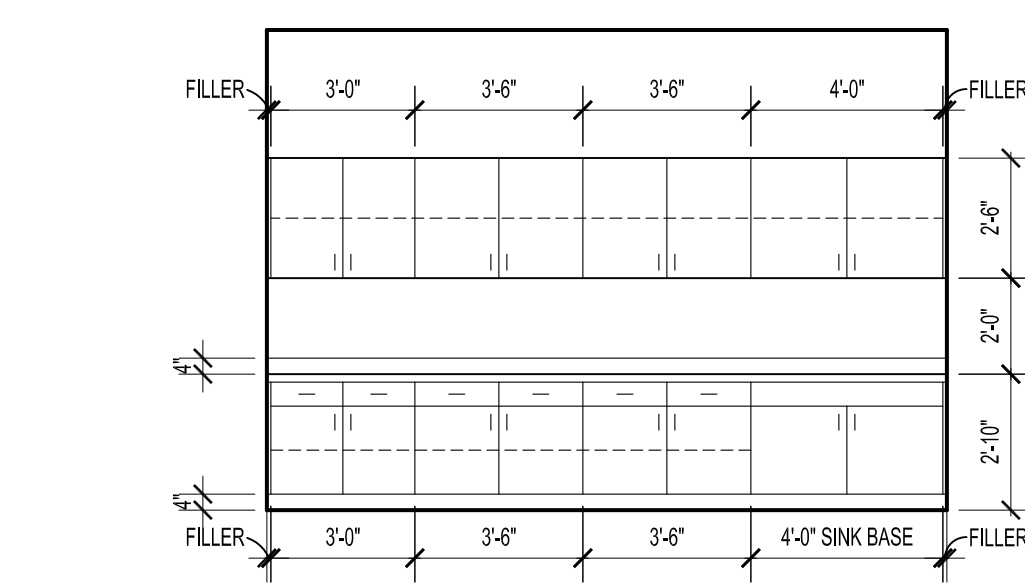
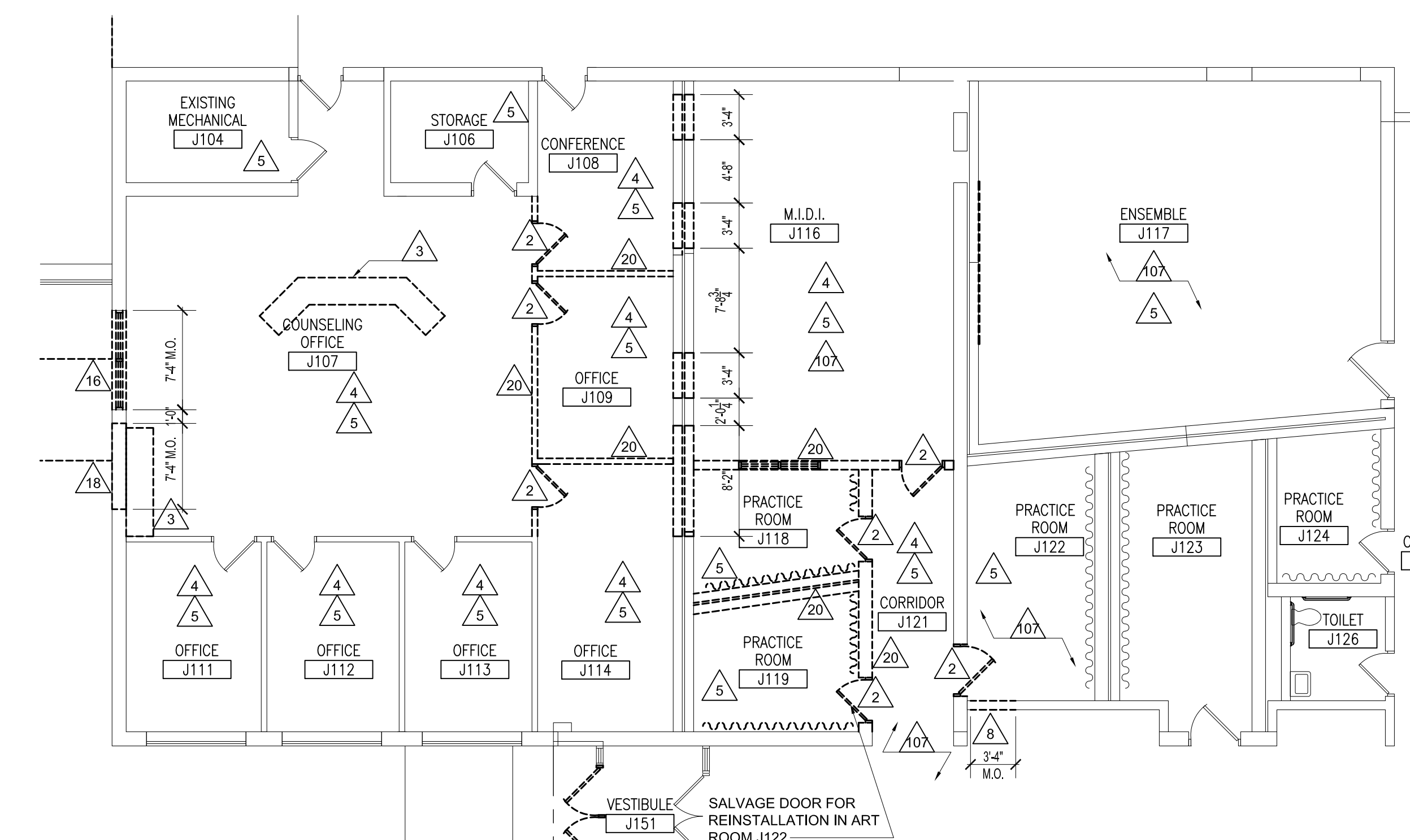
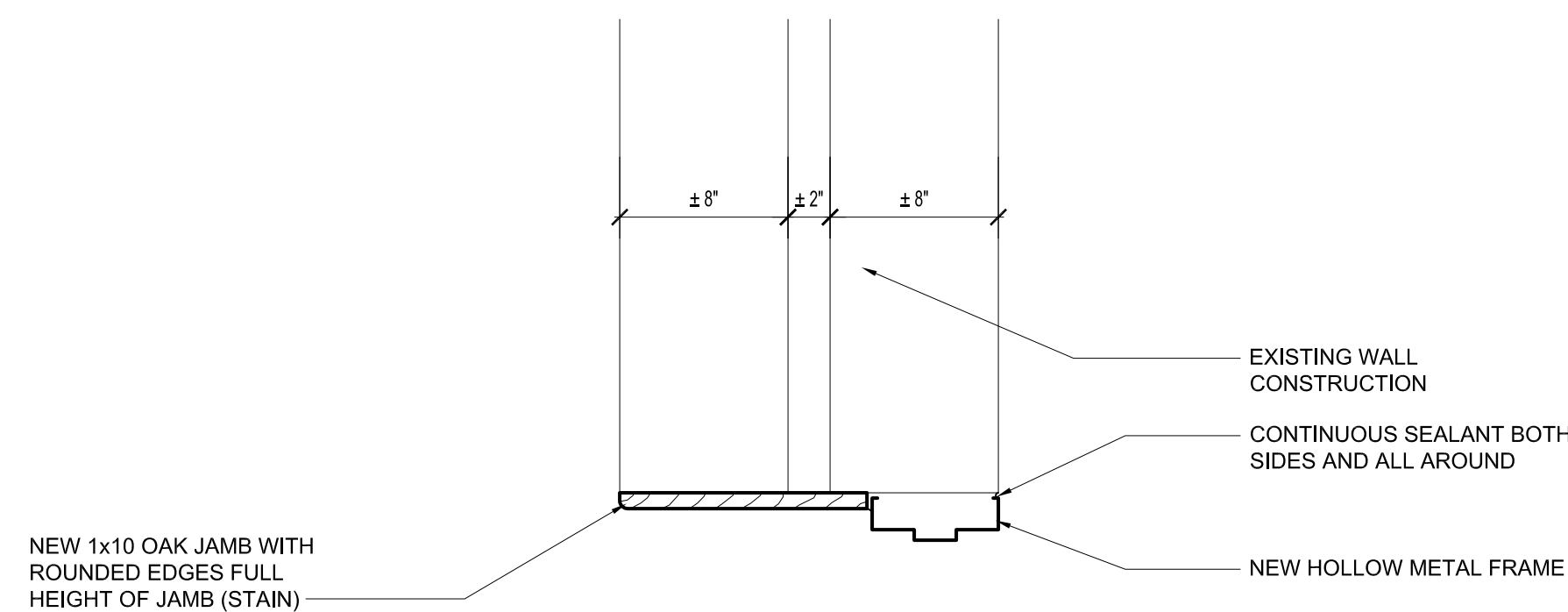
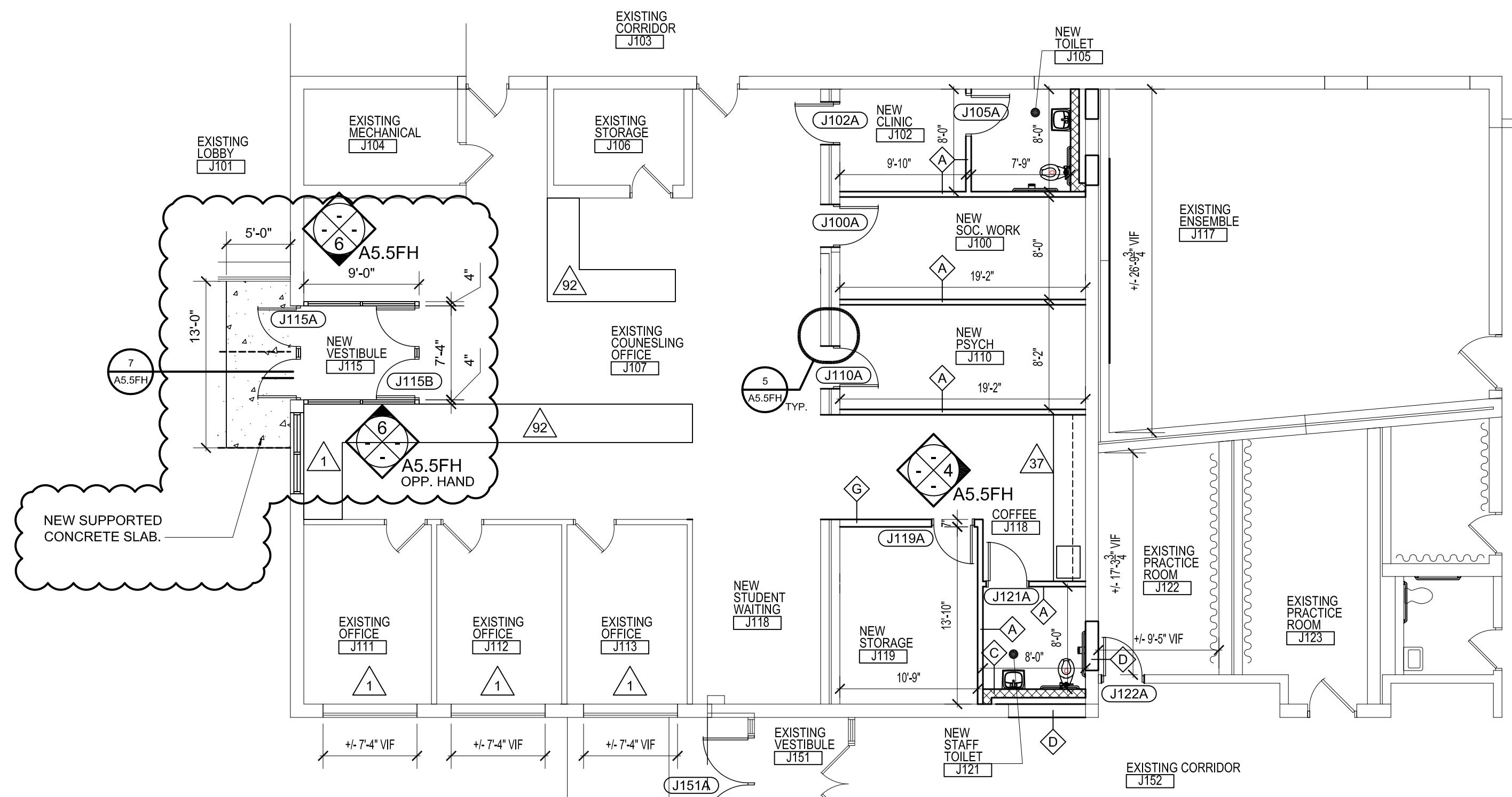
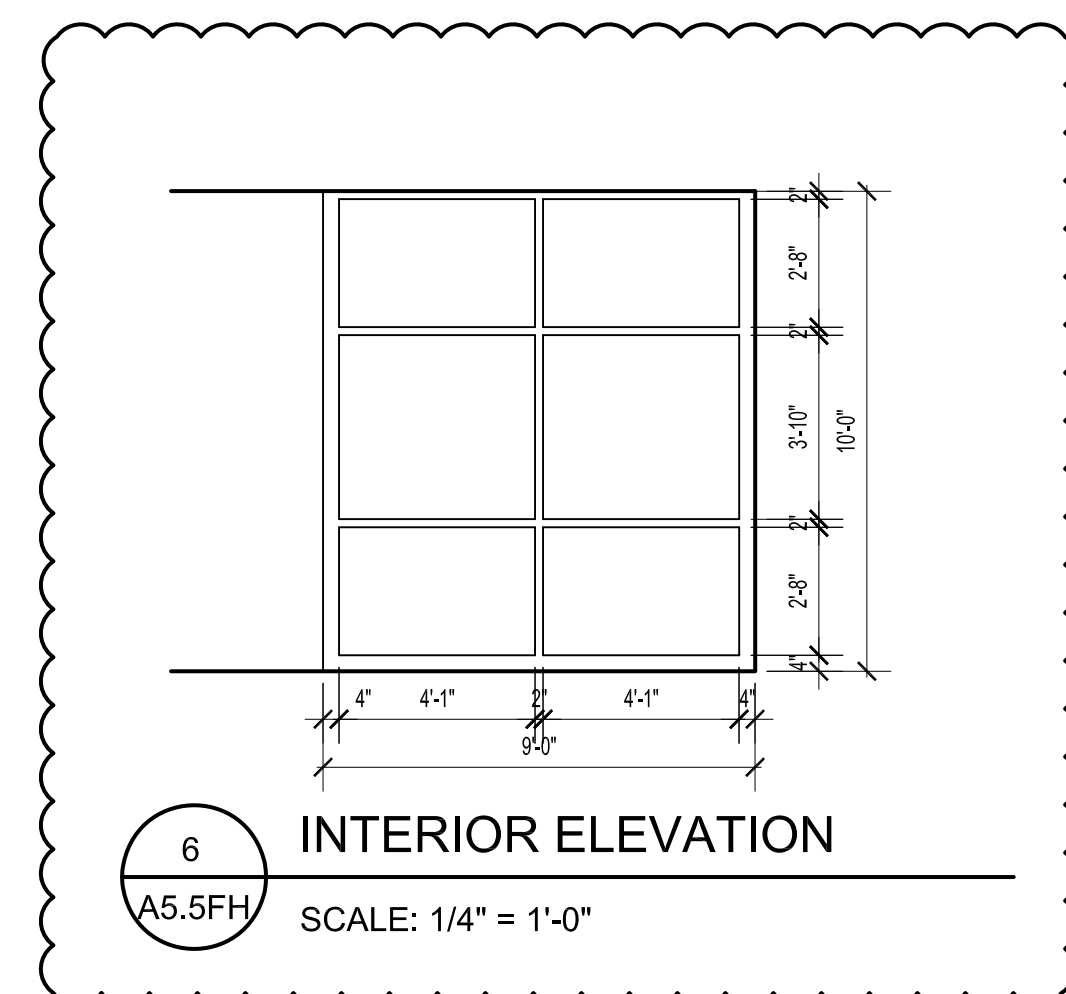
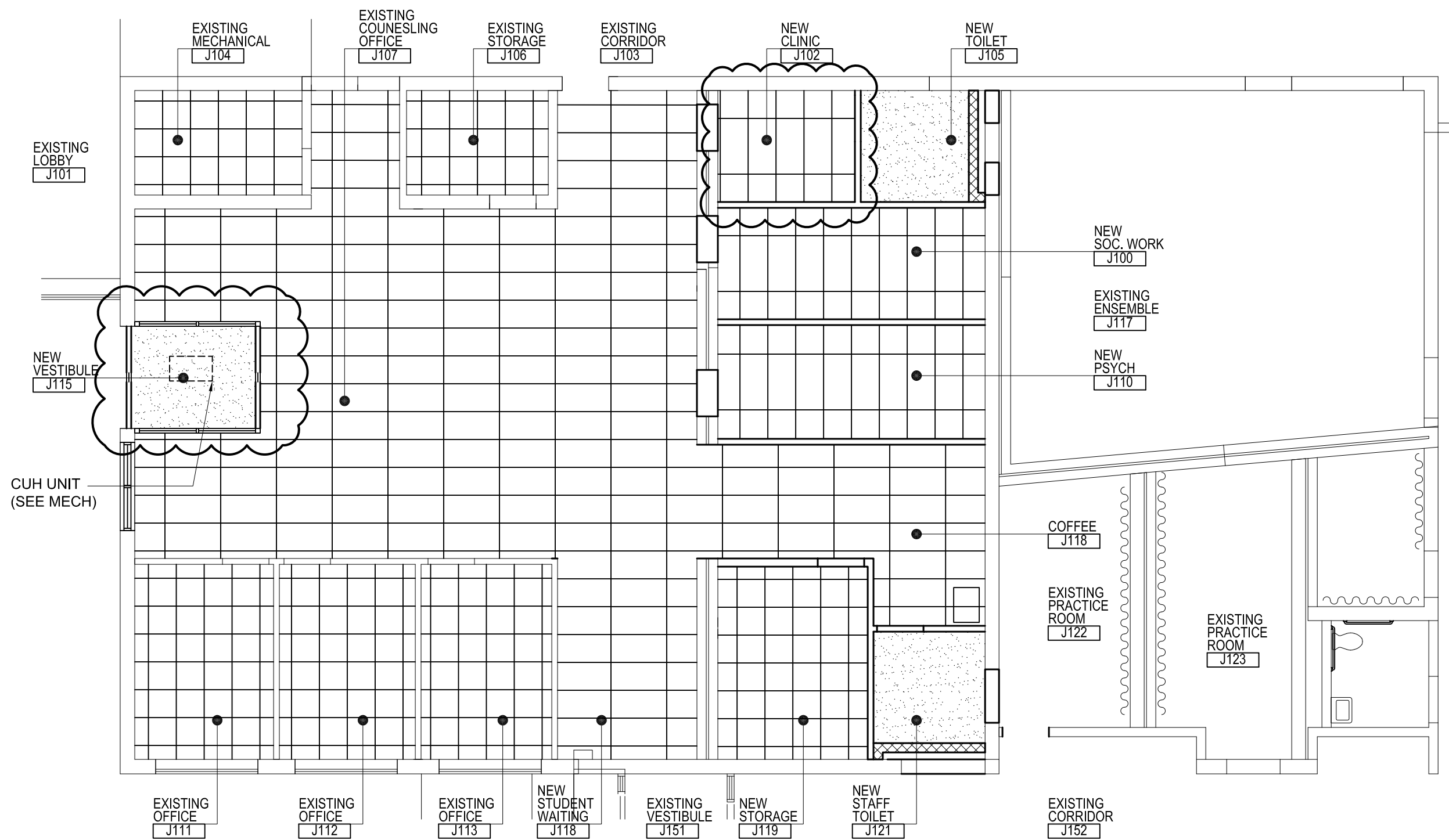
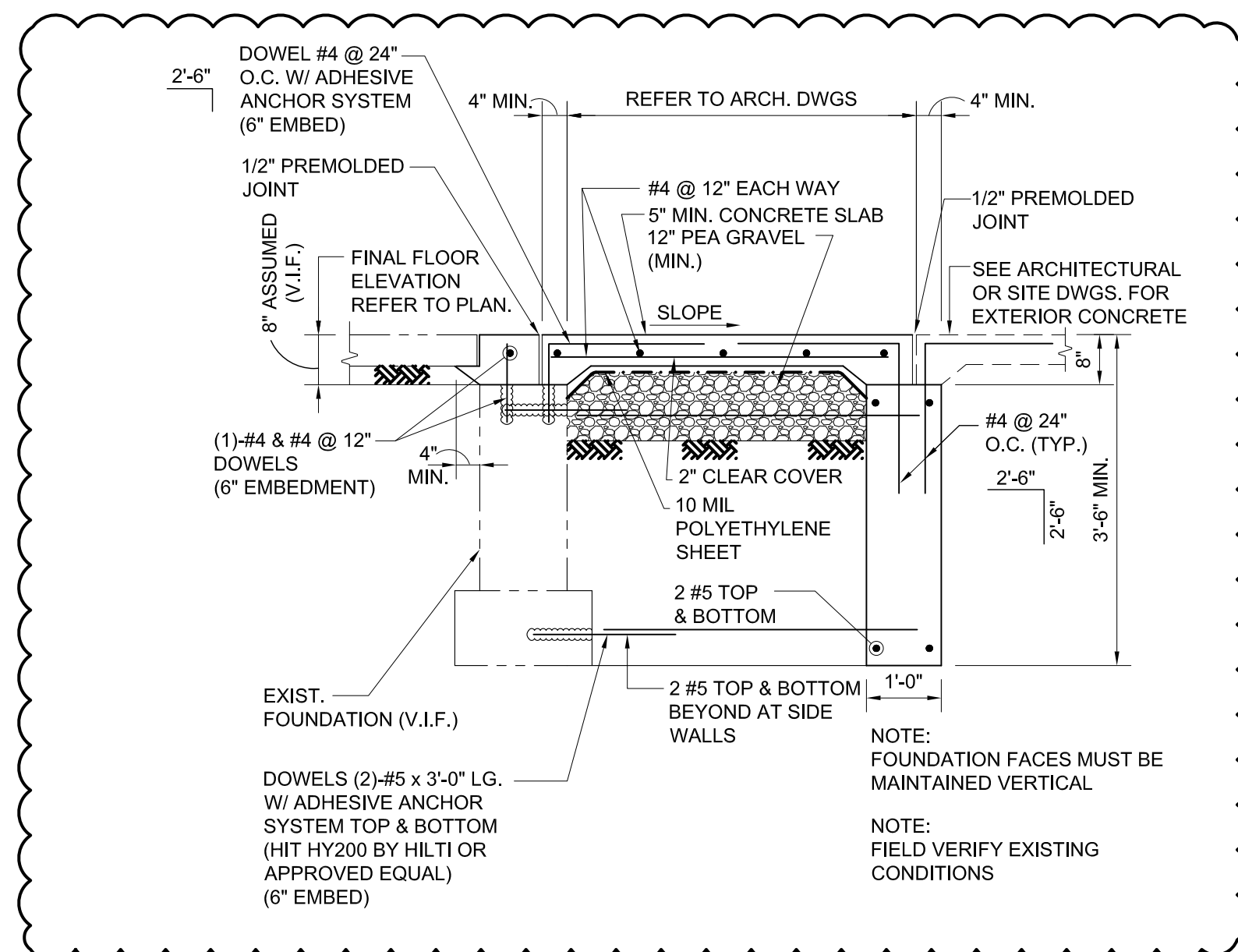
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A5.4FH
LOCKER DETAIL - WALL
SCALE: 3/4" = 1'-0"

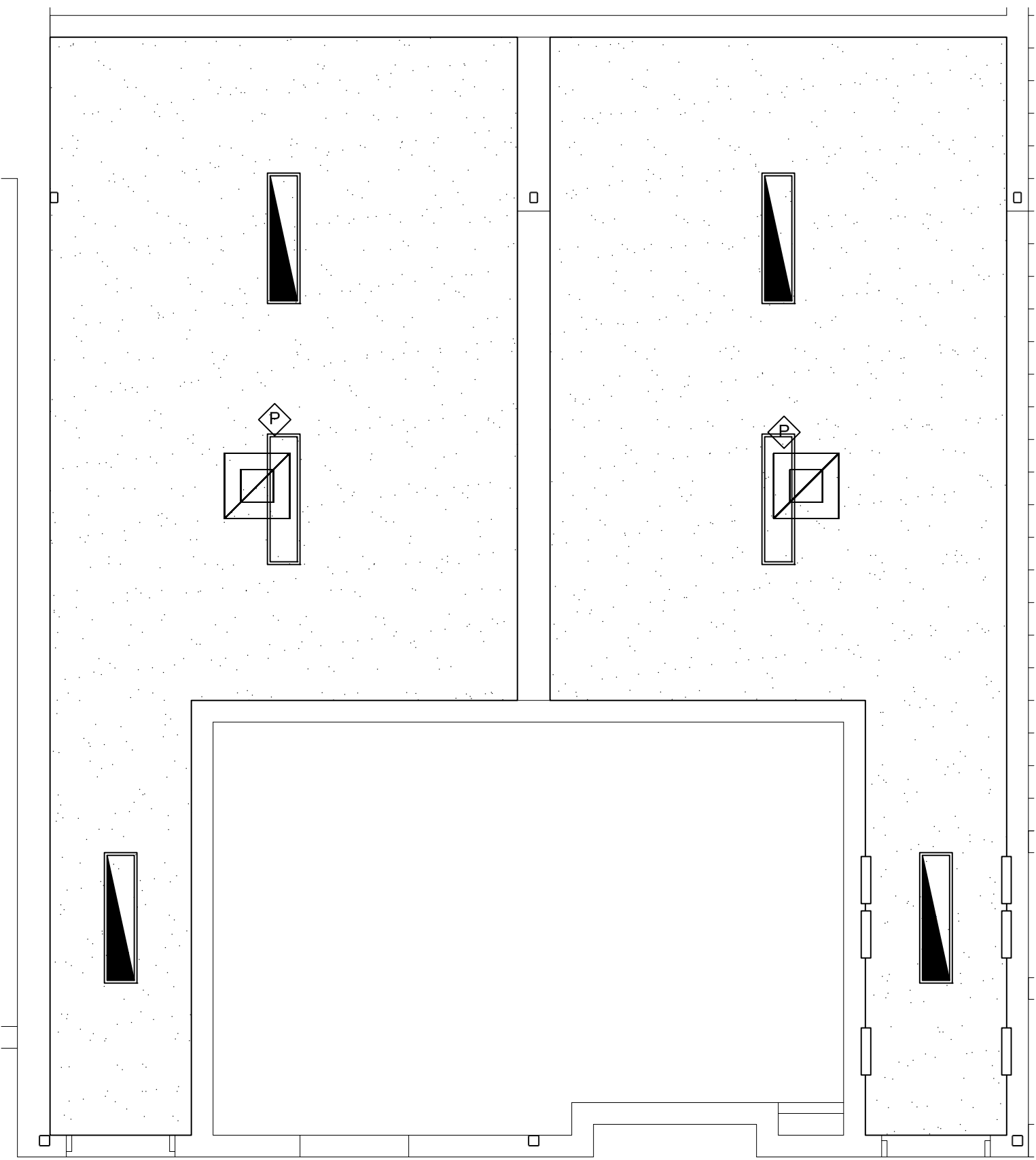


7
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LOCKER DETAIL - ISLAND
SCALE: 3/4" = 1'-0"

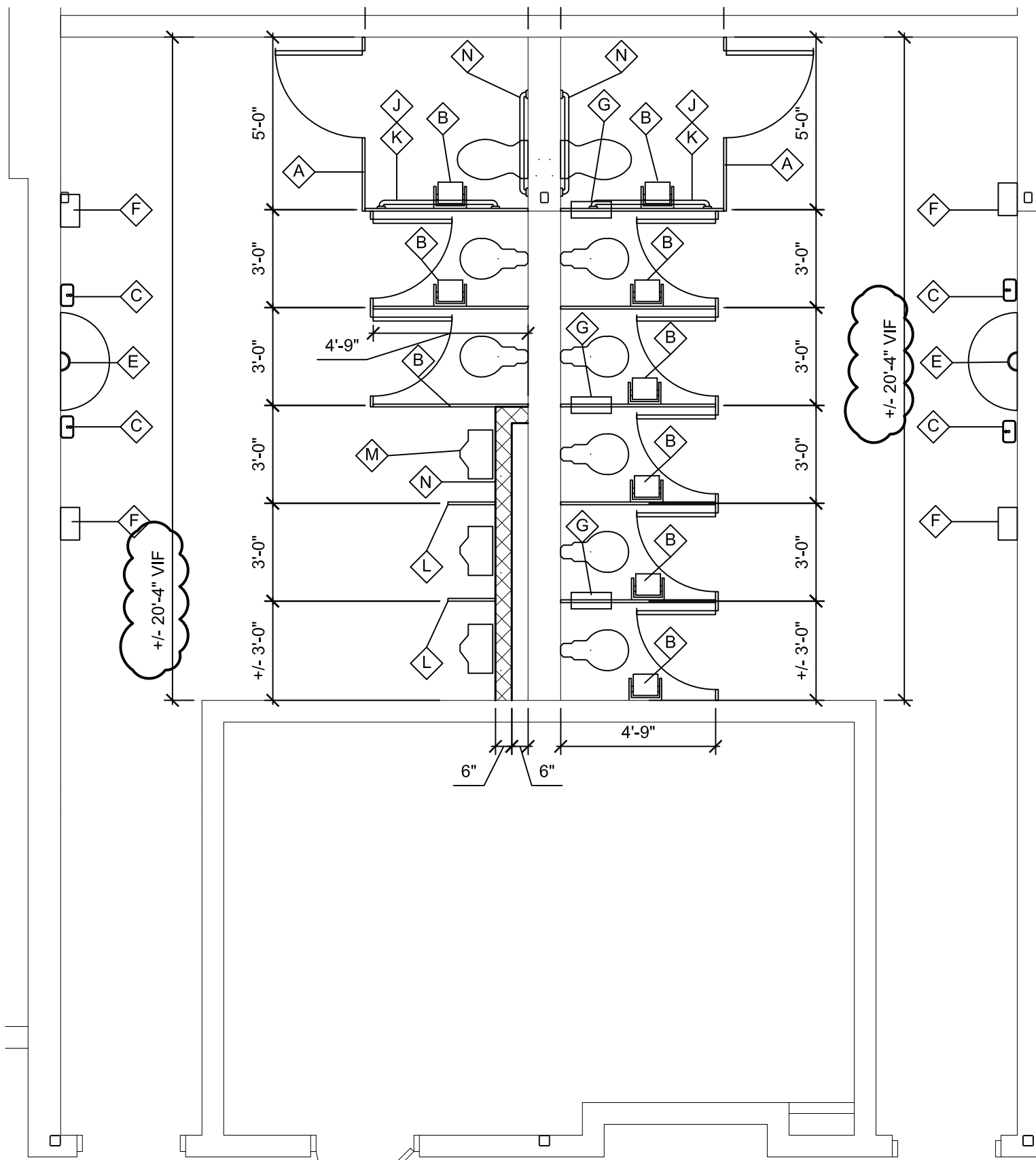


6
A5.4FH
ADA LOCKER BENCH DETAIL
SCALE: 1 1/2" = 1'-0"

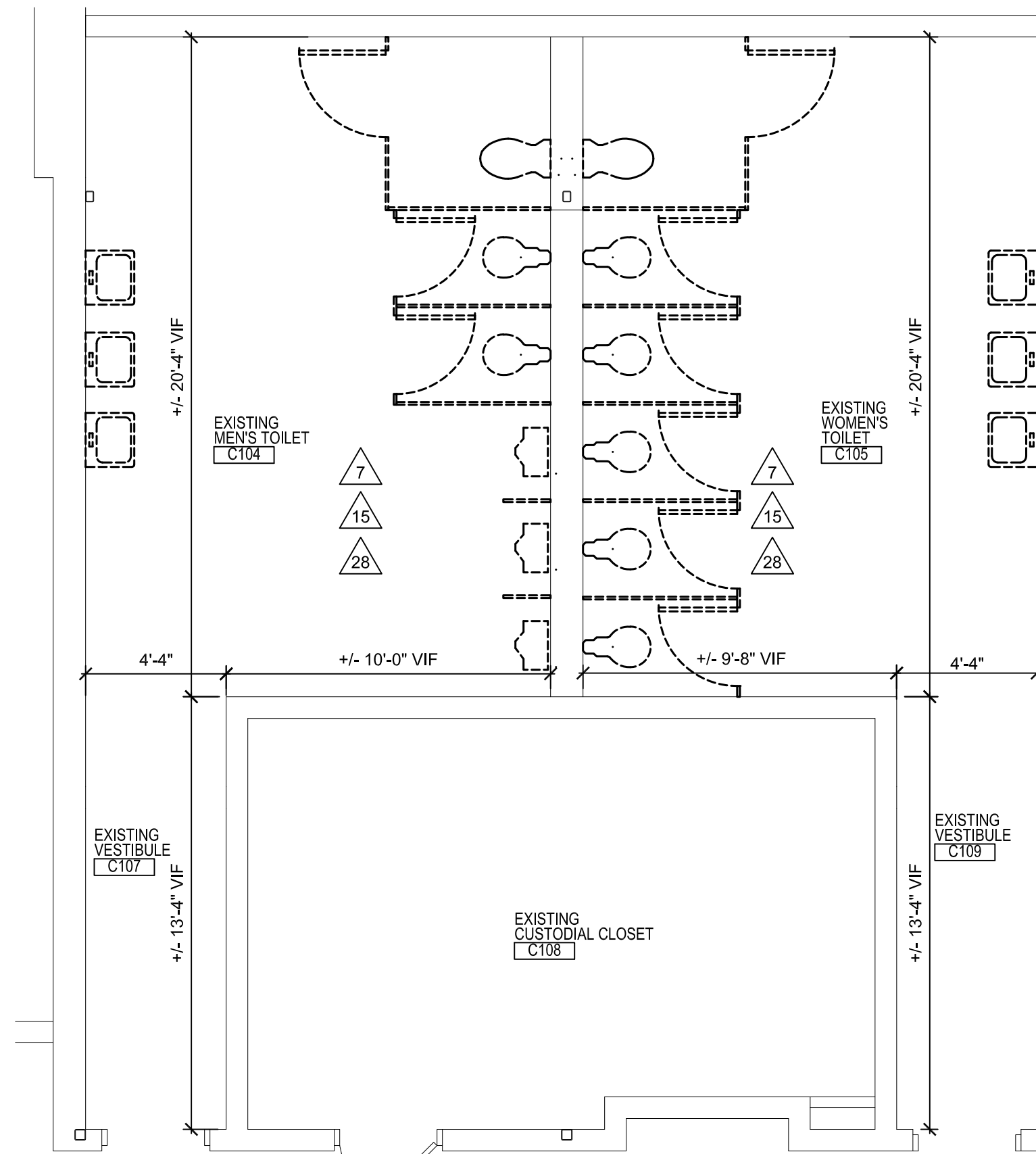




3 ENLARGED REFLECTED CEILING PLAN
A2.0FH SCALE: 1/4" = 1'-0"



2 ENLARGED NEW WORK PLAN
A1.3 FH SCALE: 1/4" = 1'-0"

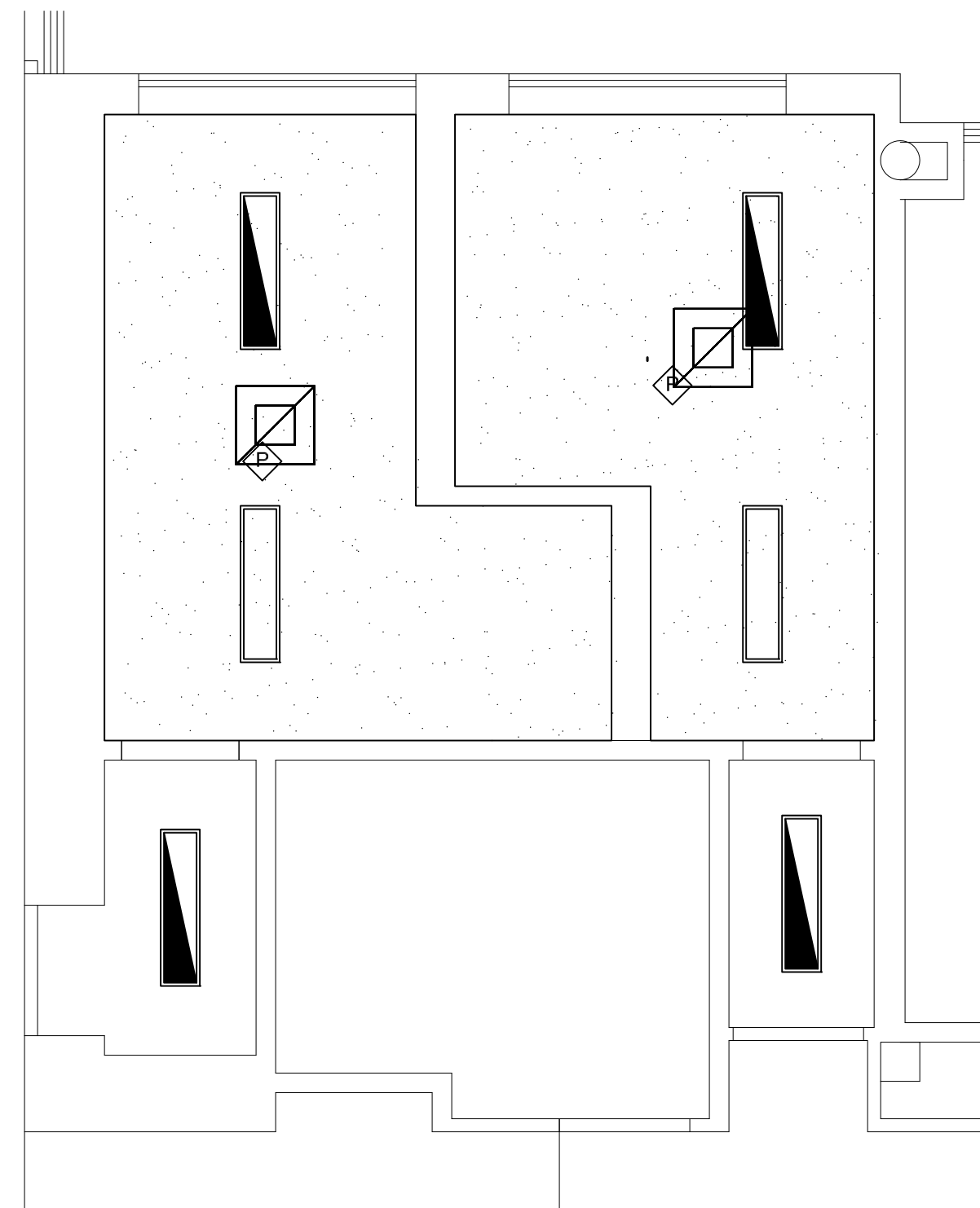


1 ENLARGED DEMO PLAN
A1.3 FH SCALE: 1/4" = 1'-0"

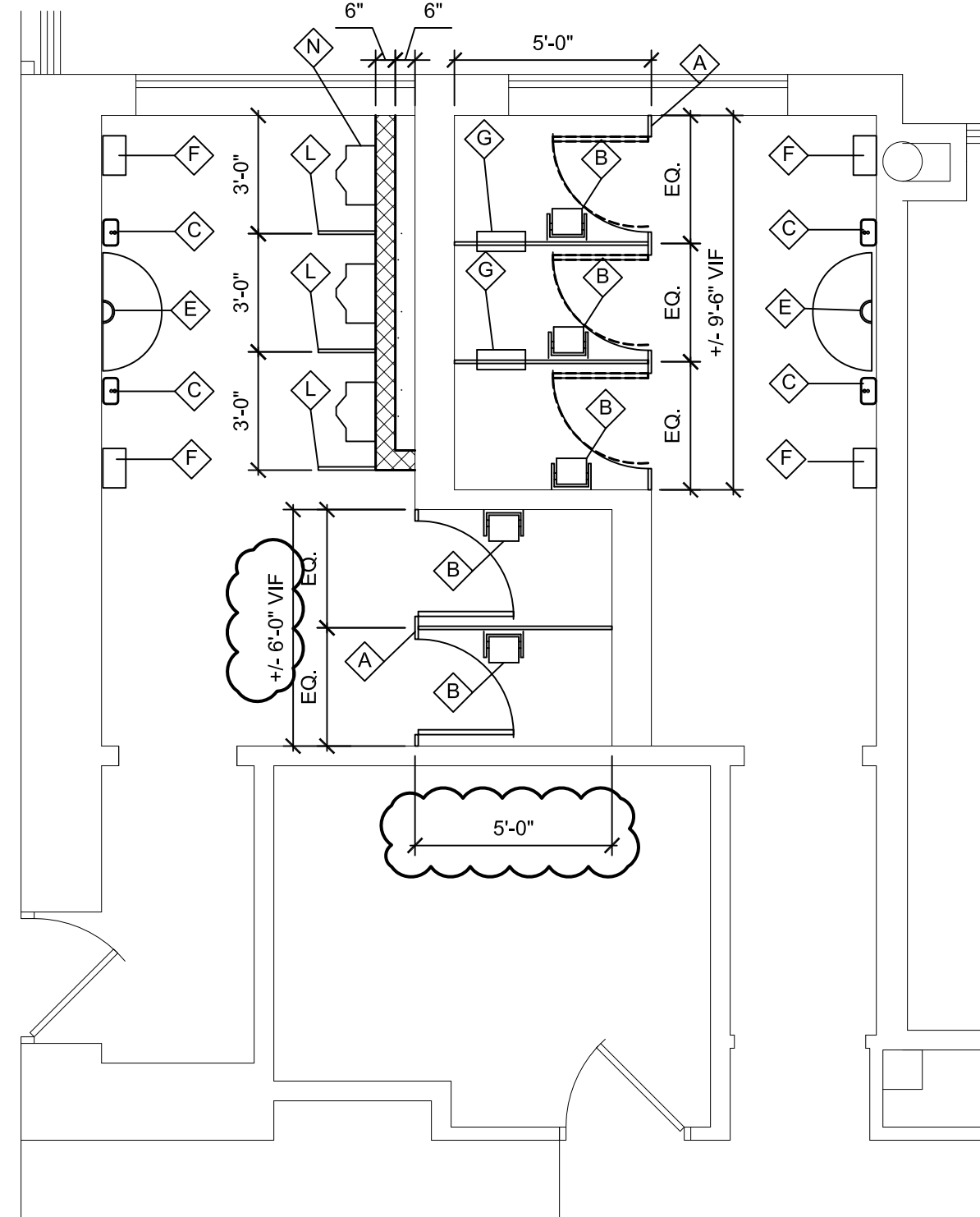
TOILET PLAN ACCESSORY LEGEND:

- A TOILET PARTITION
- B TOILET PAPER HOLDER
- C SOAP DISPENSER
- D 24"X36" MIRROR
- E 36"X36" MIRROR
- F PAPER TOWEL DISPENSER
- G SANITARY NAPKIN DISPOSAL
- H 36" GRAB BAR
- J 42" GRAB BAR
- K 18" VERTICAL GRAB BAR
- L URINAL SCREEN
- M MOUNT URINAL AT B.F.H.T.
- N NEW 6" CMU WALL UP TO CLG TO CREATE 6" PIPE CHASE BEHIND.
- P NEW GYP. BD. PAINTED CLG. (SEE ROOM FINISH SCHEDULE).

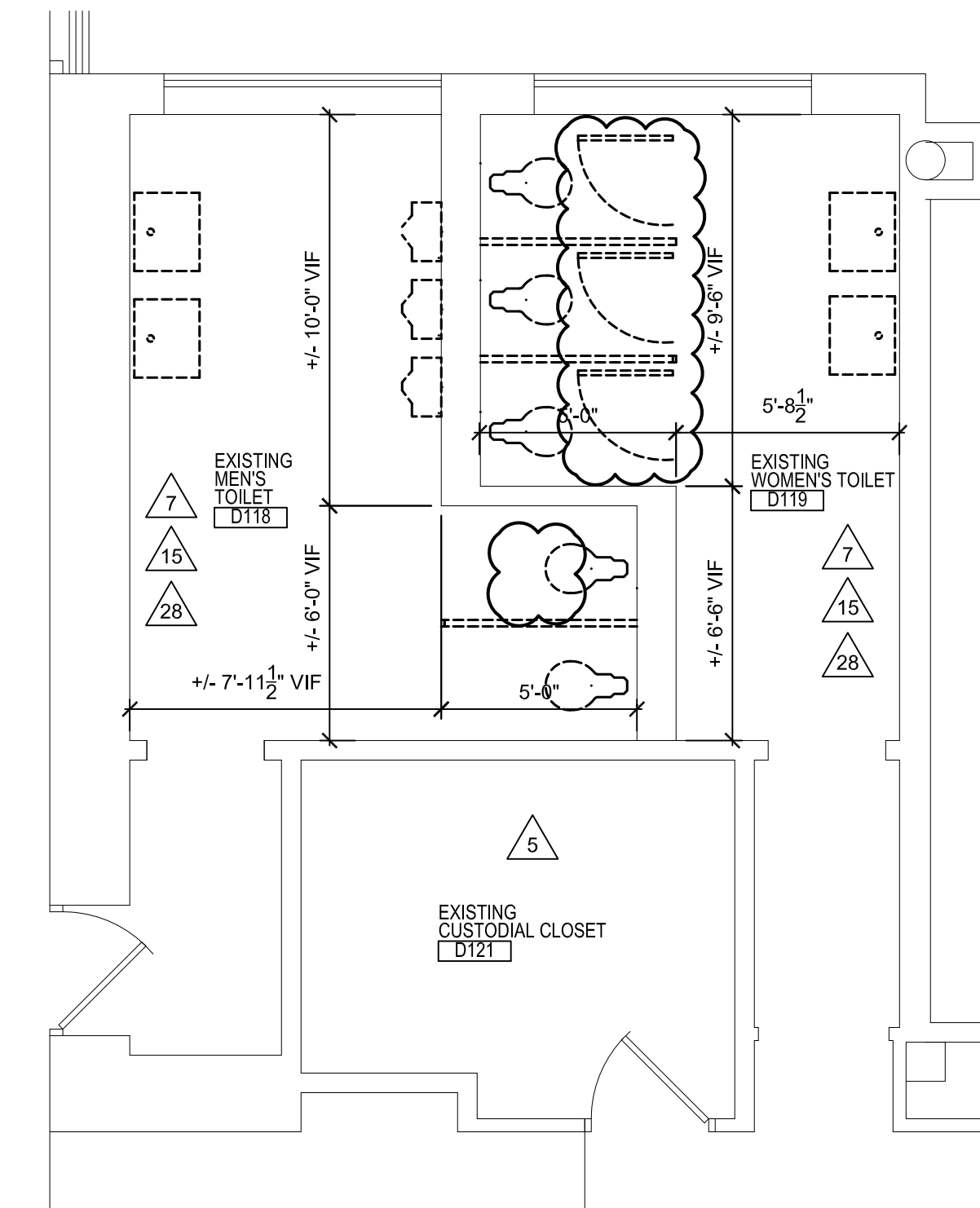
REFER TO KEY NOTES ON G4.2 FOR DEMOLITION AND NEW WORK NOTES



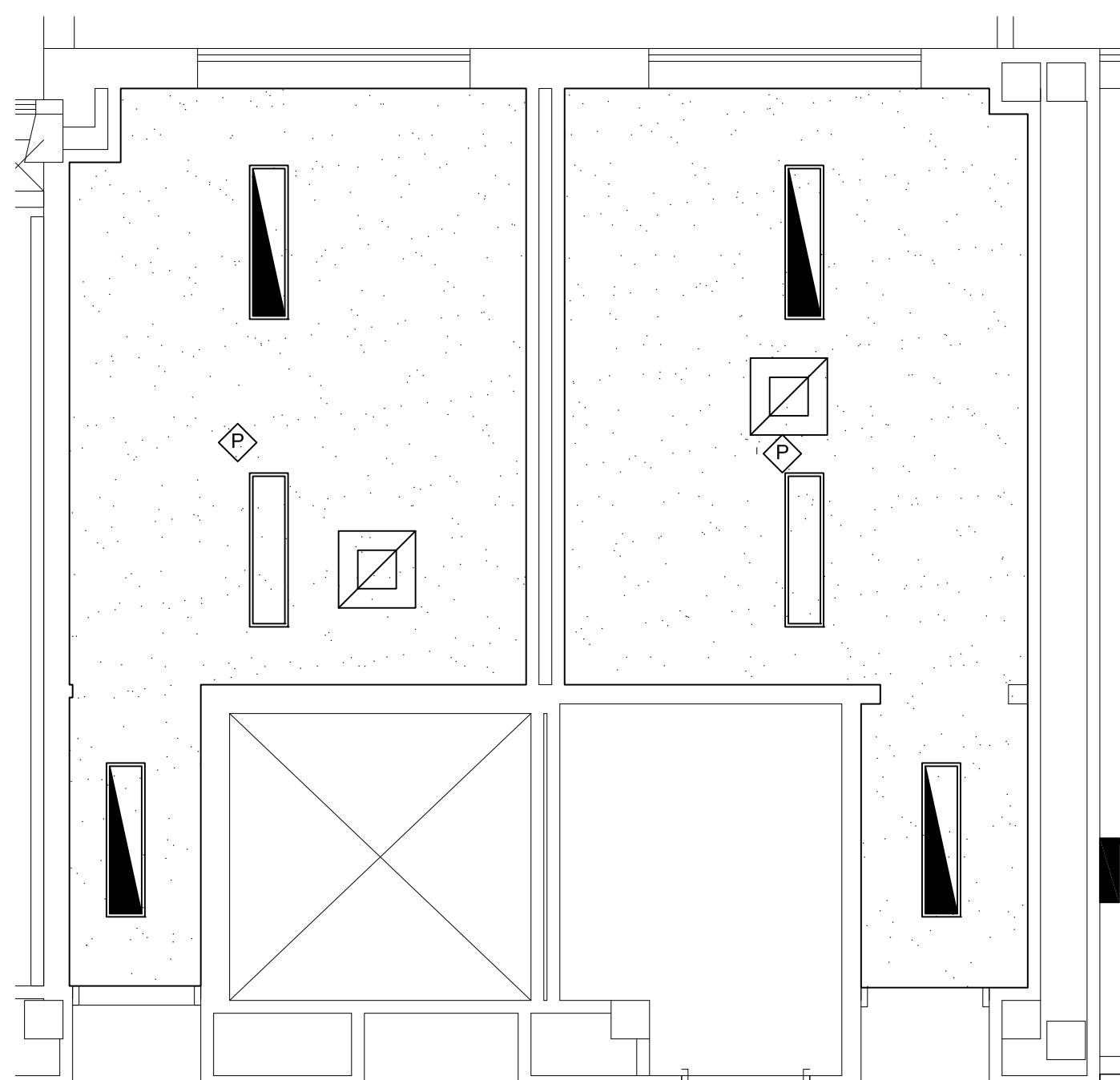
6 ENLARGED REFLECTED CEILING PLAN
A2.0FH SCALE: 1/4" = 1'-0"



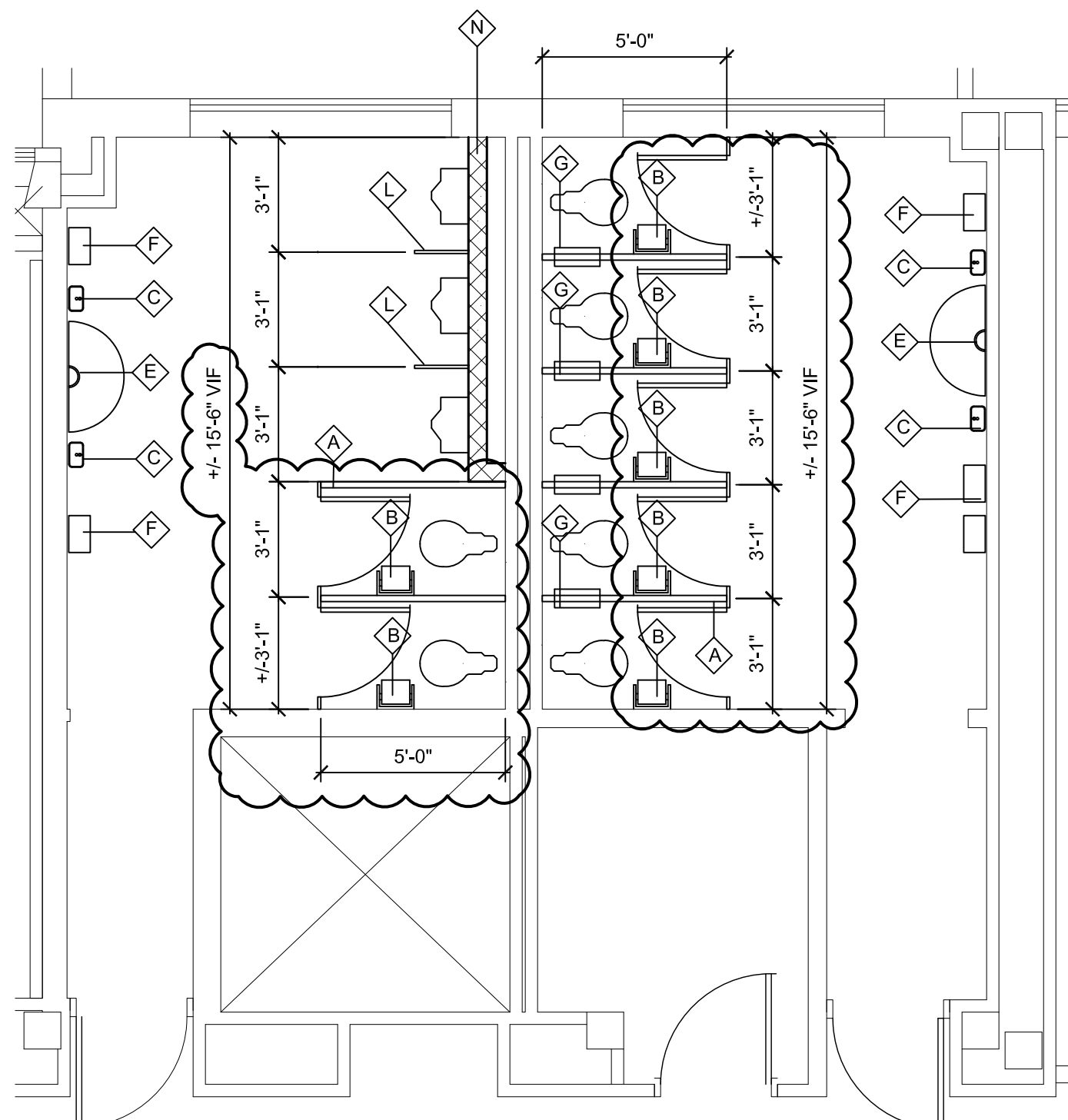
5 ENLARGED NEW WORK PLAN
A1.4 FH SCALE: 1/4" = 1'-0"



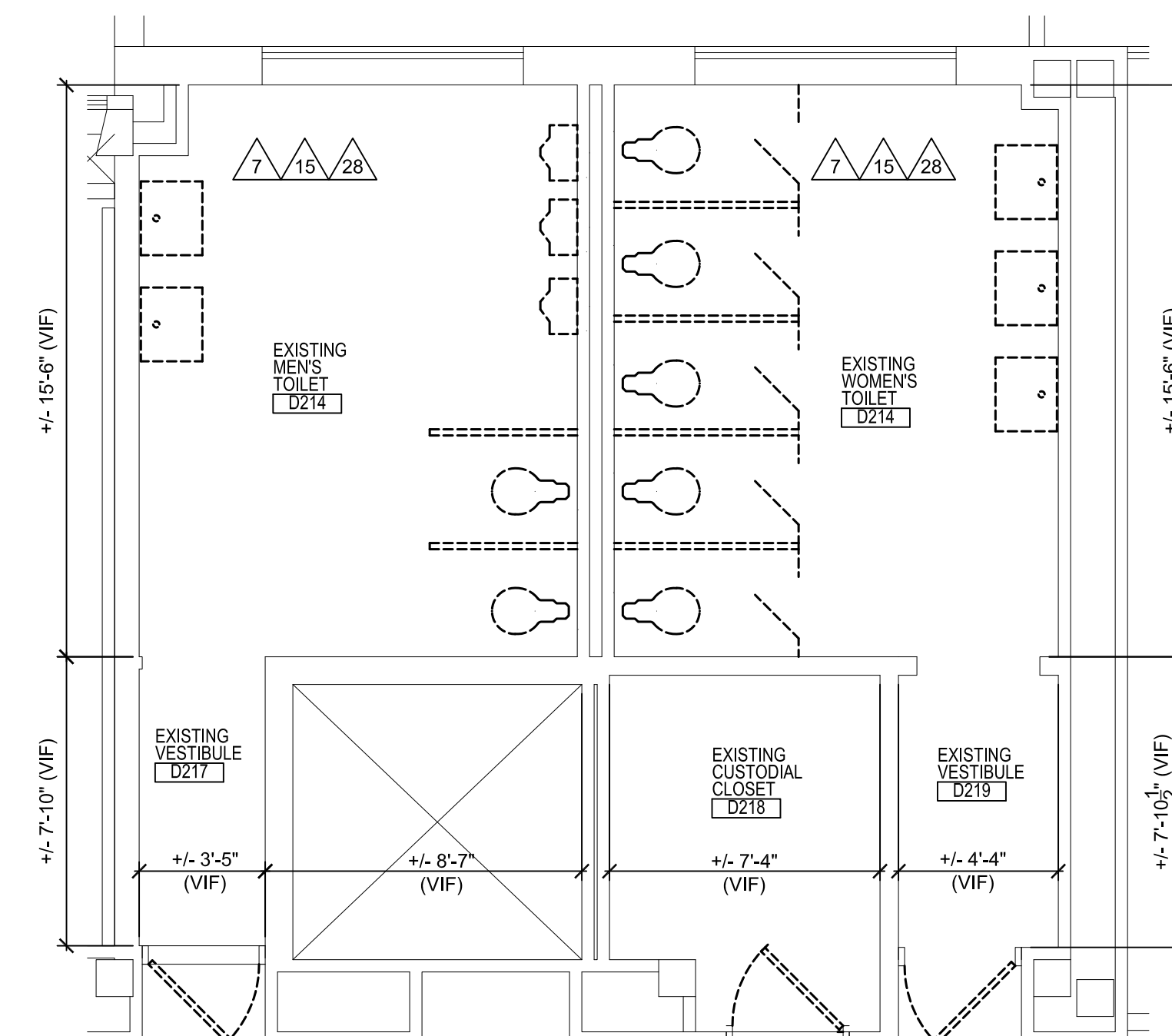
4 ENLARGED DEMO PLAN
A1.4 FH SCALE: 1/4" = 1'-0"



9 ENLARGED REFLECTED CEILING PLAN
A2.0FH SCALE: 1/4" = 1'-0"



8 ENLARGED NEW WORK PLAN
A1.24FH SCALE: 1/4" = 1'-0"



7 ENLARGED DEMO PLAN
A1.24FH SCALE: 1/4" = 1'-0"

FARMINGTON PUBLIC SCHOOLS 2015 RENOVATIONS FARMINGTON HIGH SCHOOL

FARMINGTON HIGH SCHOOL

ENLARGED PLANS
INTERIOR ELEVATIONS
DETAILS

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CONSTRUCTION ☒
FINAL RECORD ☐

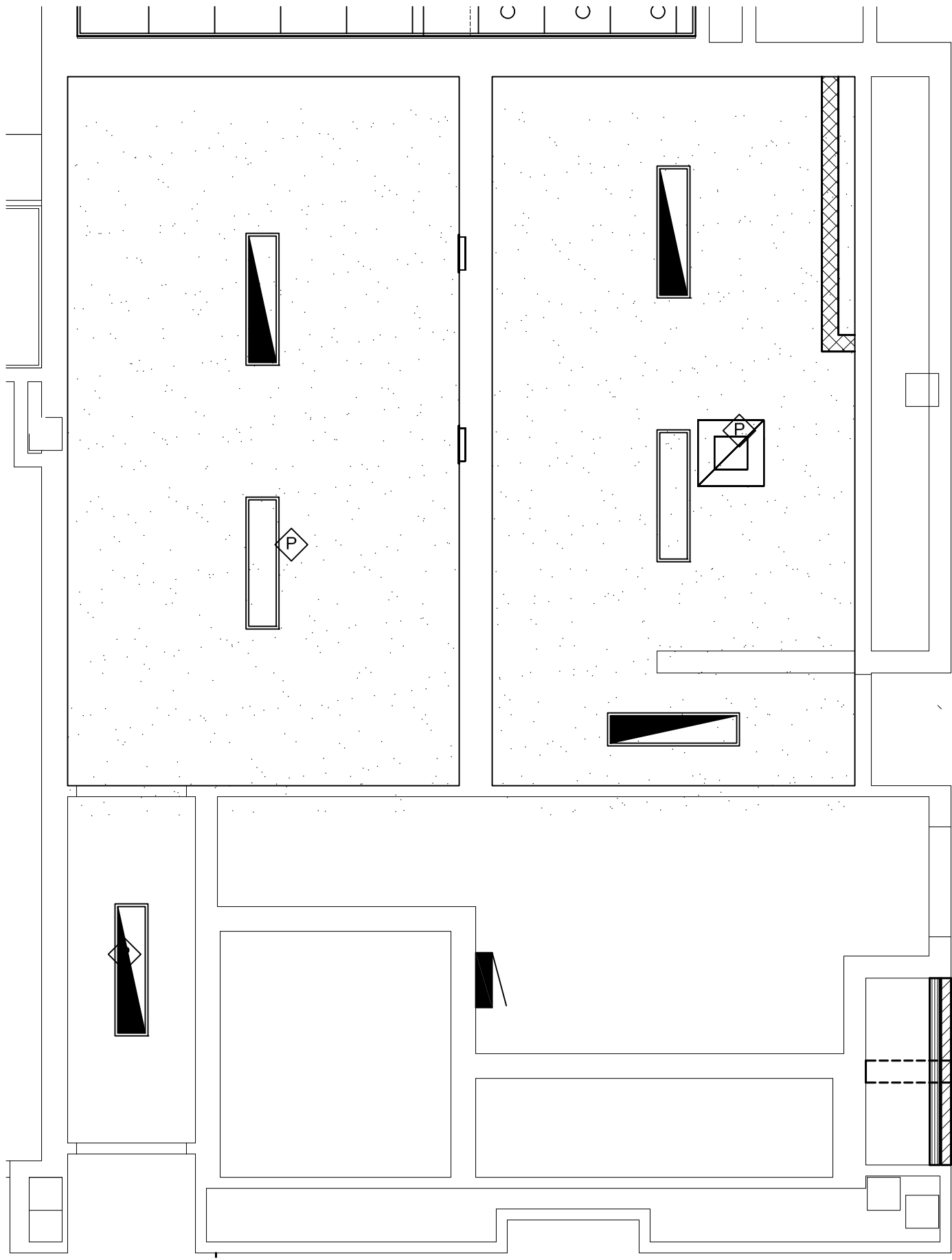
DRAWN BY JMS, NJL
CHECKED BY BJS

REVISIONS
ADD NO 01 2-8-16
ADD NO 02 2-17-16

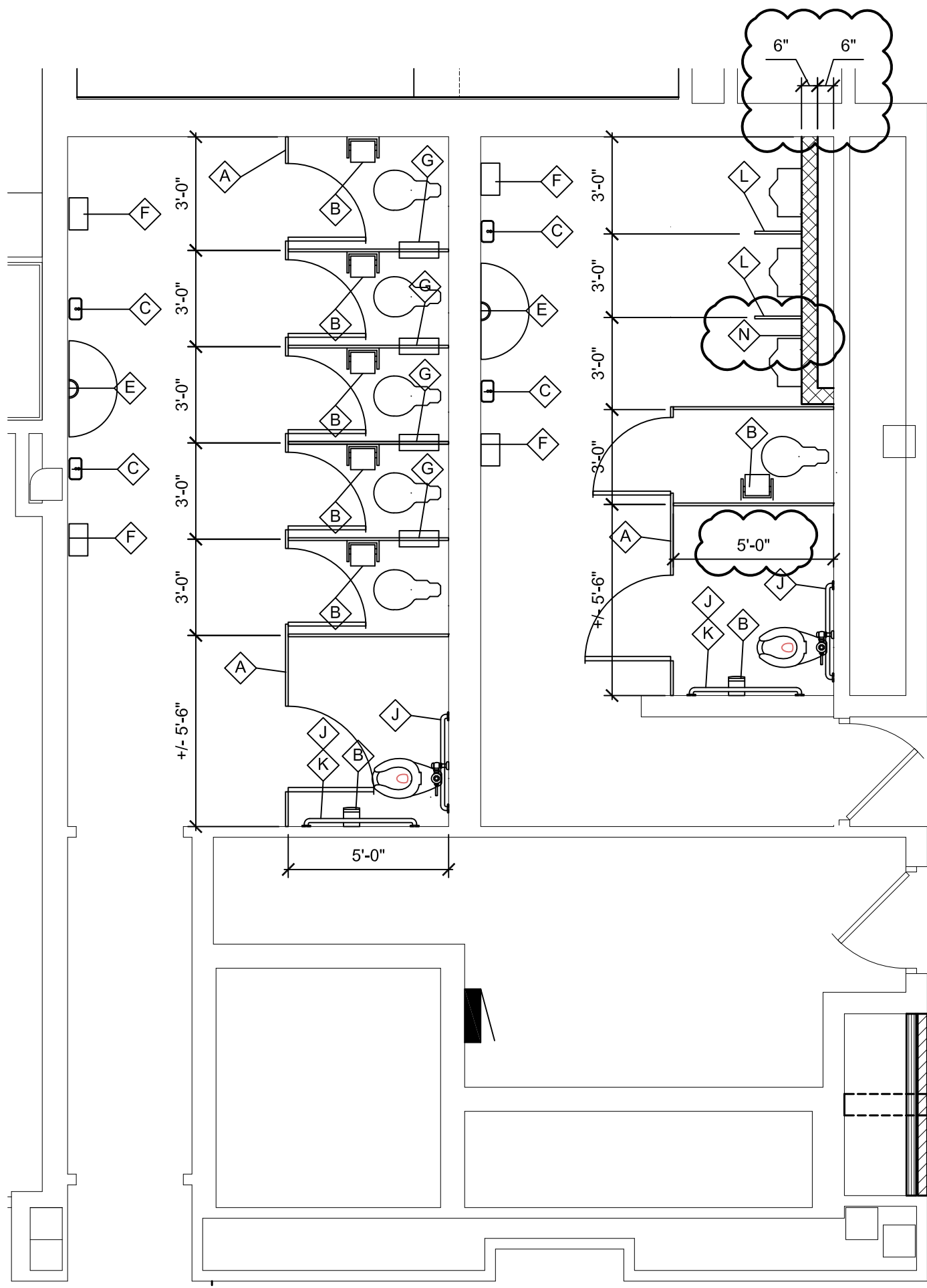
DATE: FEBRUARY 1, 2016
SHEET NO.

A5.6FH

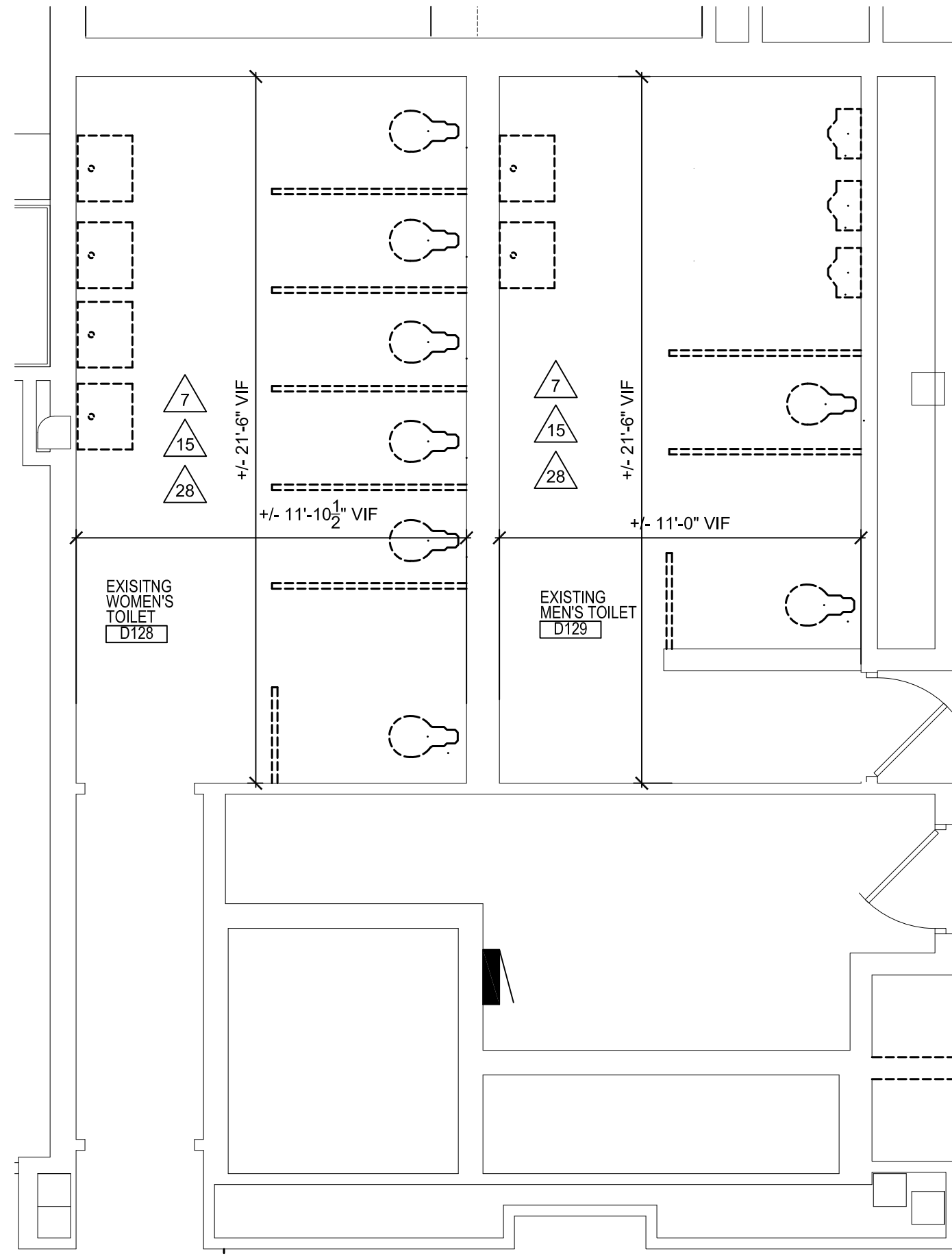
JOB NO. 151626C



3 ENLARGED REFLECTED CEILING PLAN
SCALE: 1/4" = 1'-0"
A2.0FH



2 ENLARGED NEW WORK PLAN
SCALE: 1/4" = 1'-0"
A1.4 FH

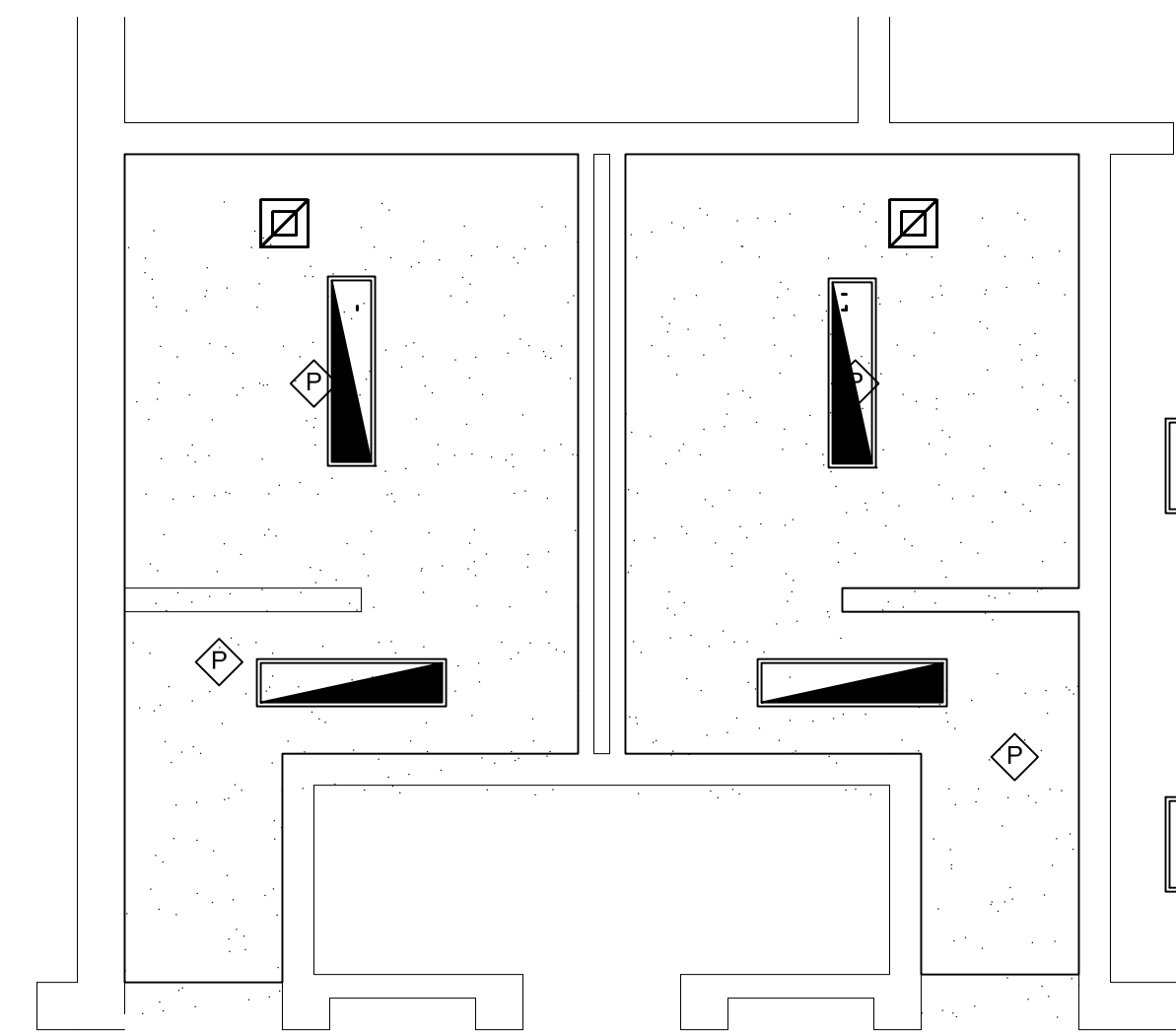


1 ENLARGED DEMO PLAN
SCALE: 1/4" = 1'-0"
A1.4 FH

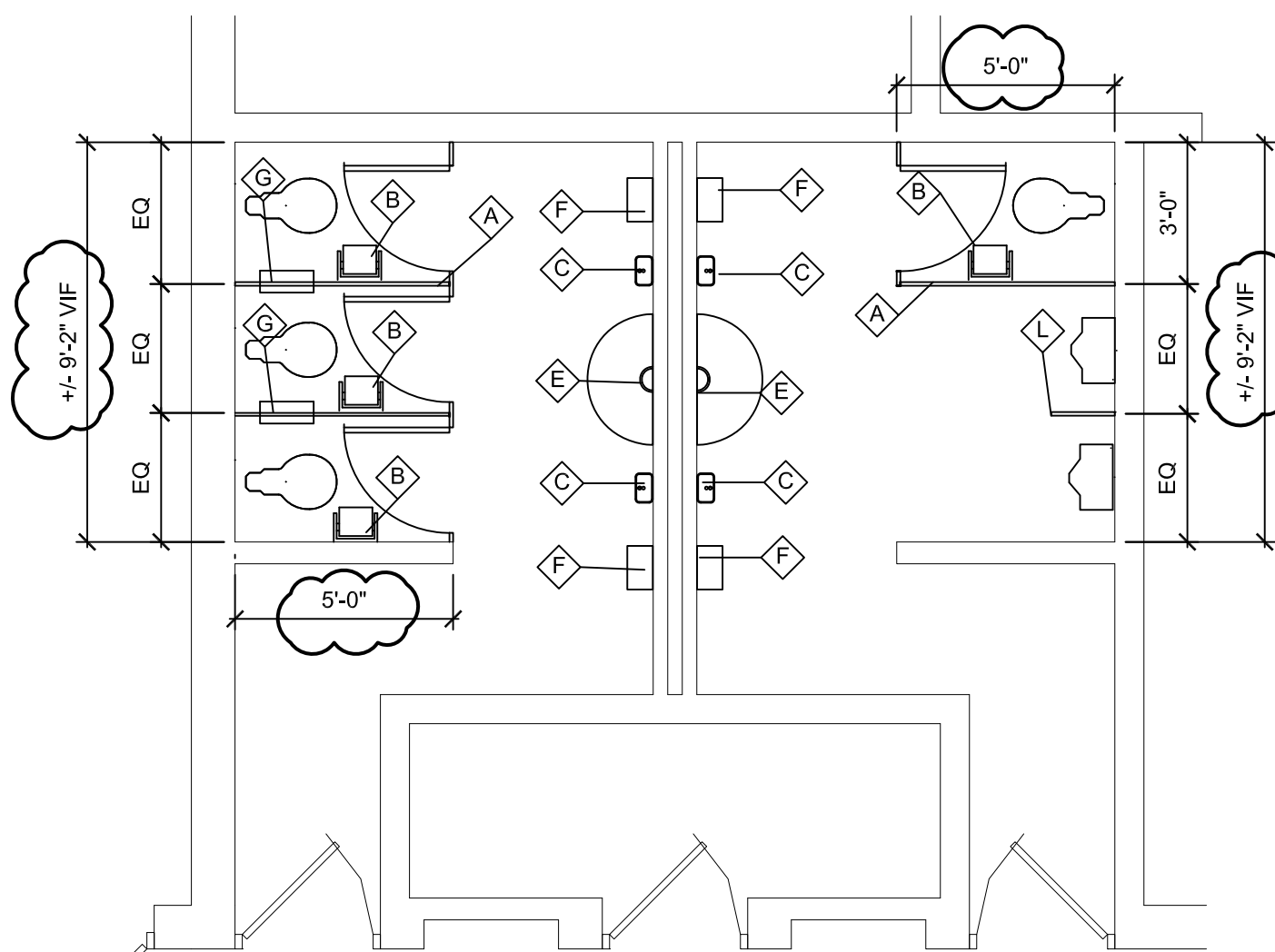
TOILET PLAN ACCESSORY LEGEND:

- A TOILET PARTITION
- B TOILET PAPER HOLDER
- C SOAP DISPENSER
- D 24"X36" MIRROR
- E 36"X36" MIRROR
- F PAPER TOWEL DISPENSER
- G SANITARY NAPKIN DISPOSAL
- H 36" GRAB BAR
- I 42" GRAB BAR
- J 18" VERTICAL GRAB BAR
- K URINAL SCREEN
- L MOUNT URINAL AT B.F.HT.
- N NEW 6" CMU WALL UP TO CLG TO CREATE 6" PIPE CHASE BEHIND.
- P NEW GYP. BD. PAINTED CLG. (SEE ROOM FINISH SCHEDULE).

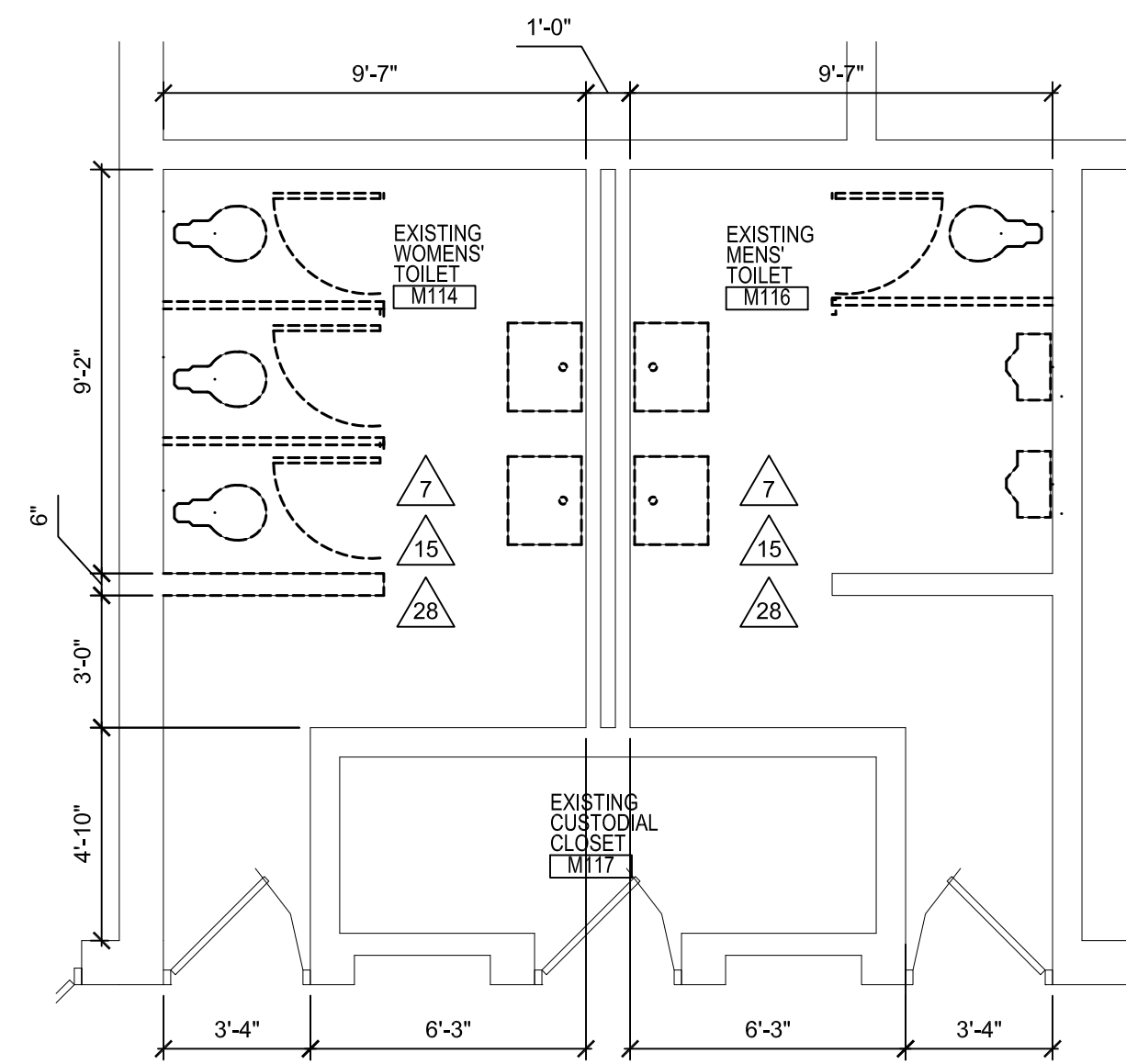
REFER TO KEY NOTES ON G4.2 FOR DEMOLITION AND NEW WORK NOTES



6 ENLARGED REFLECTED CEILING PLAN
SCALE: 1/4" = 1'-0"
A2.0 FH



5 ENLARGED NEW WORK PLAN
SCALE: 1/4" = 1'-0"
A1.12 FH



4 ENLARGED DEMO PLAN
SCALE: 1/4" = 1'-0"
A1.12 FH



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FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

FARMINGTON HIGH SCHOOL

ENLARGED PLANS
INTERIOR ELEVATIONS
DETAILS

PRELIMINARY ☐
DESIGN DEVELOPMENT ☐
CONSTRUCTION ☒
FINAL RECORD ☐

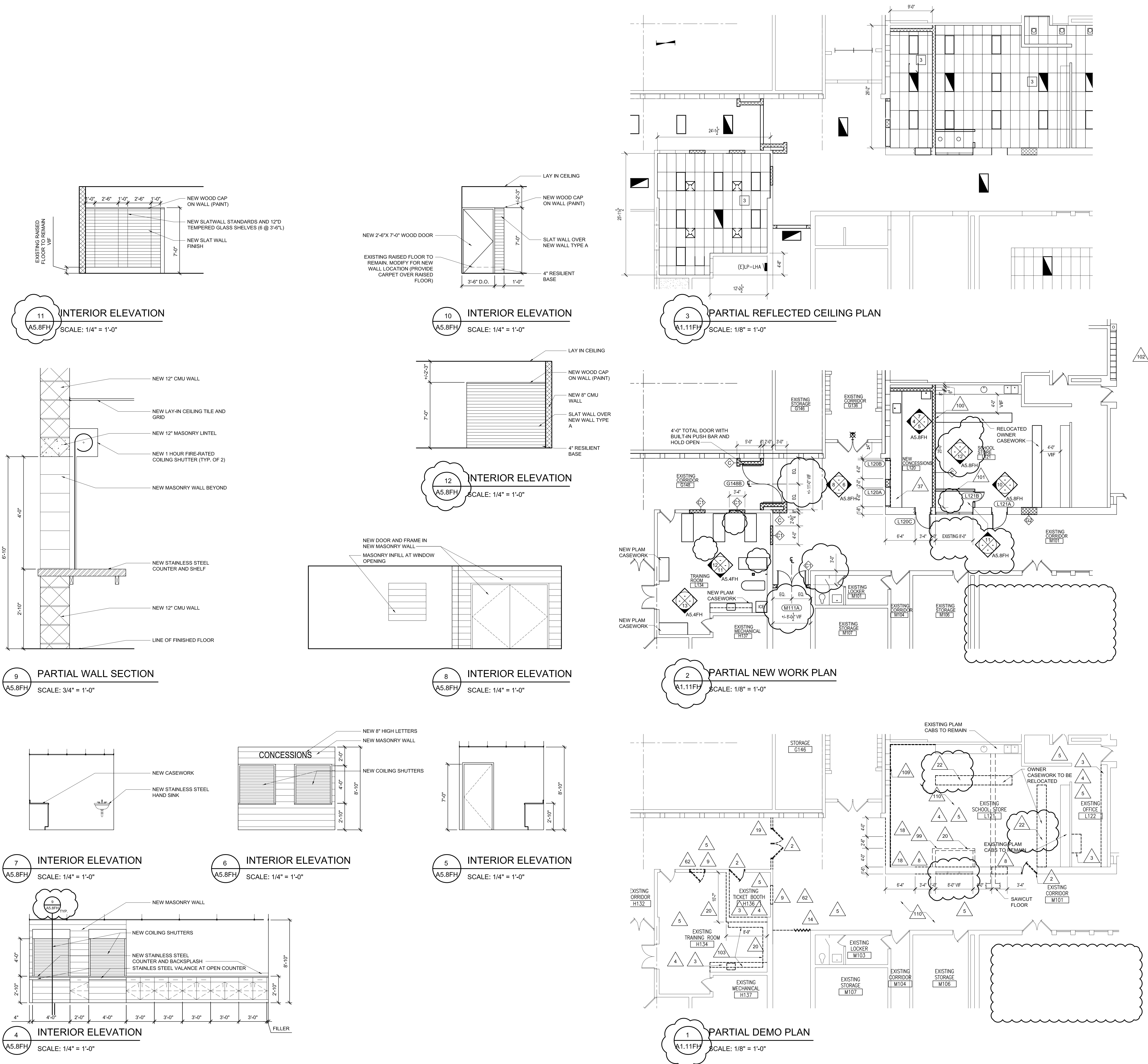
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SHEET NO.

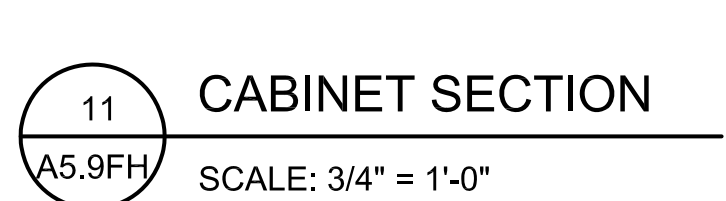
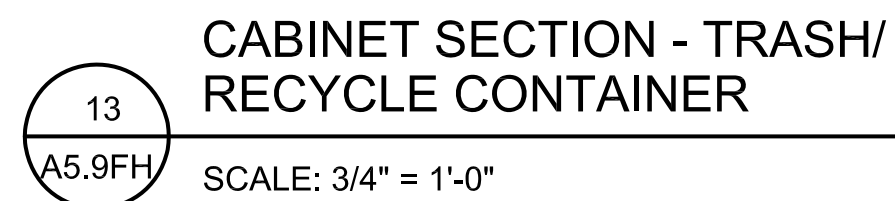
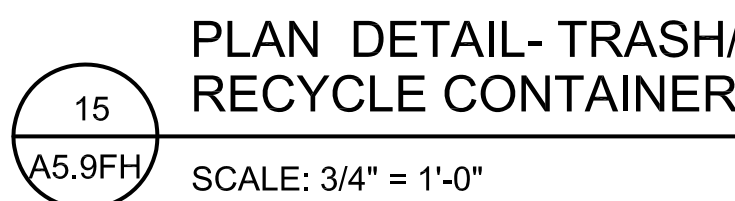
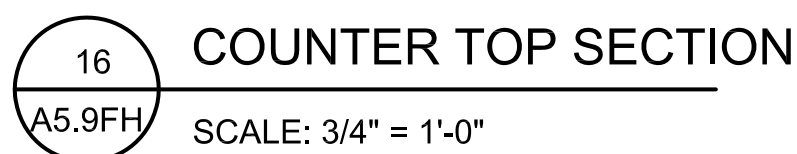
A5.7FH

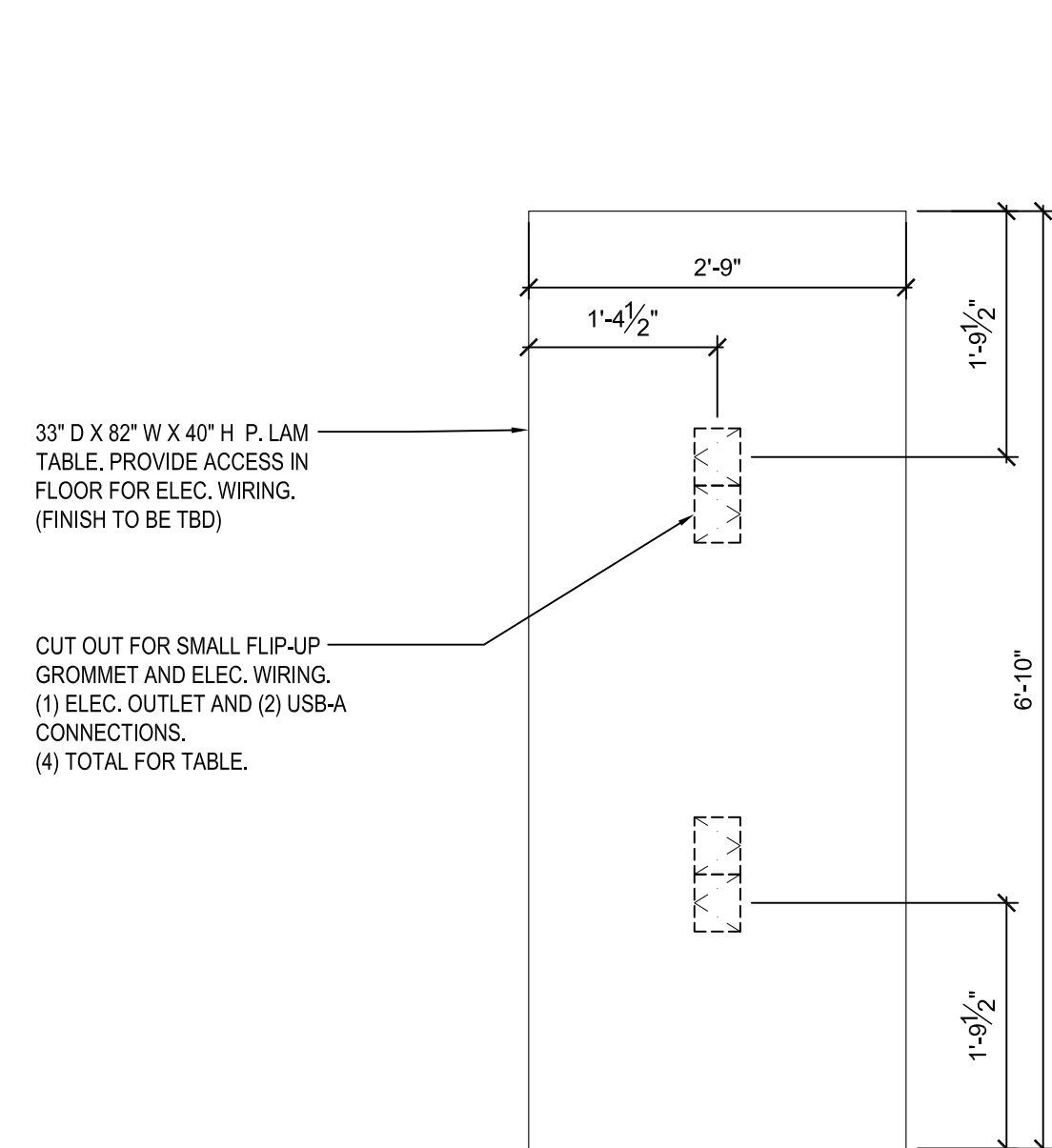
JOB NO. 151626C



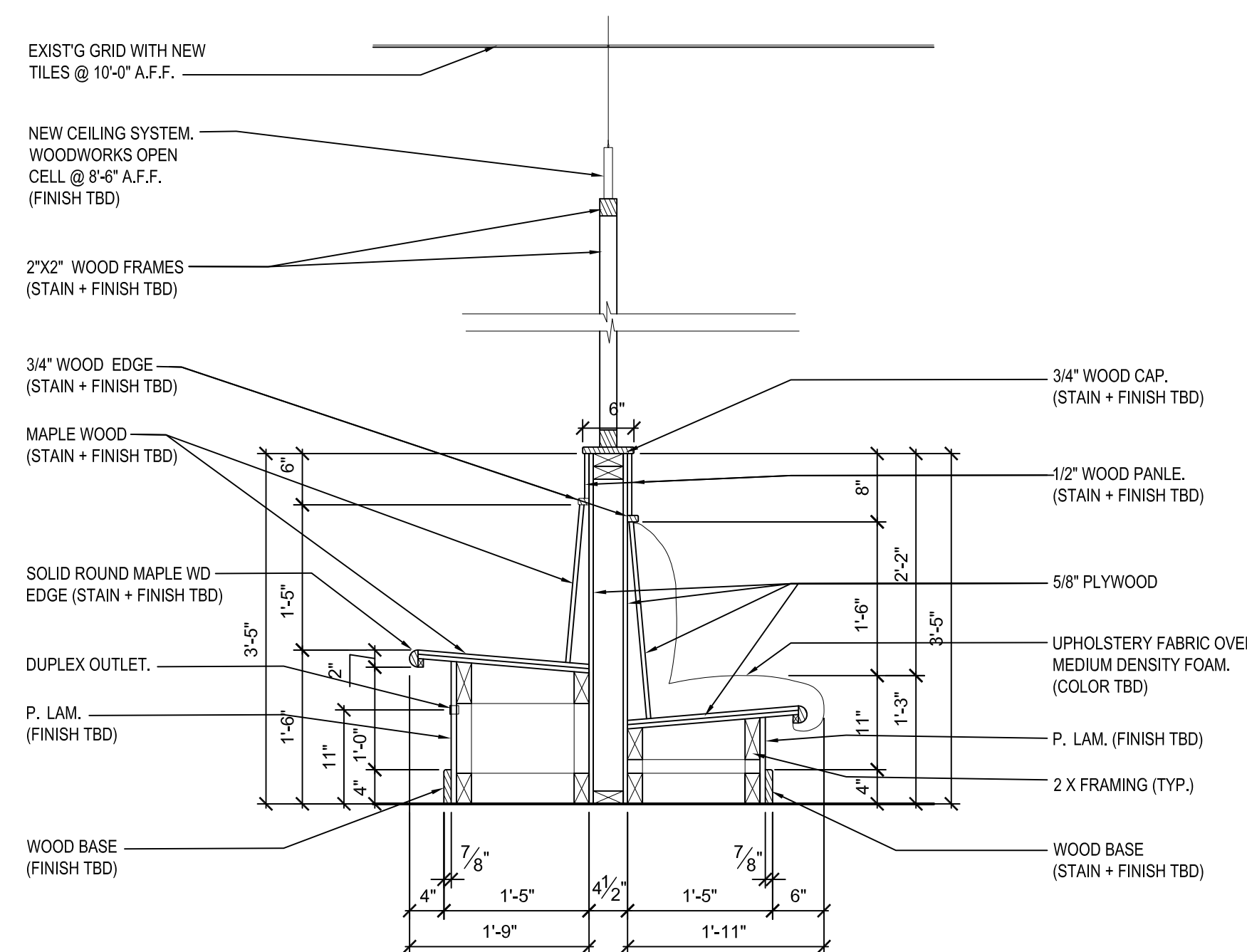


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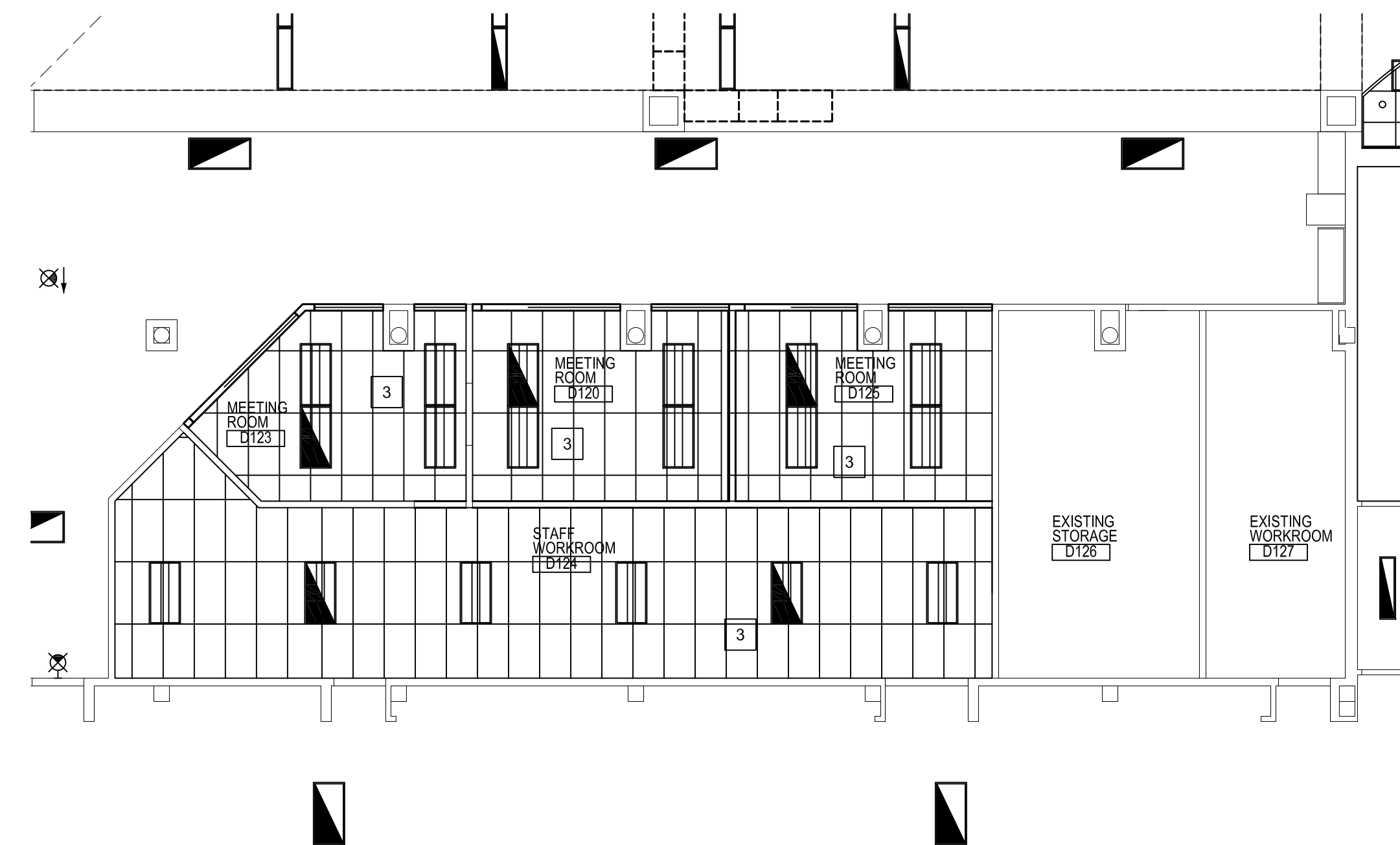




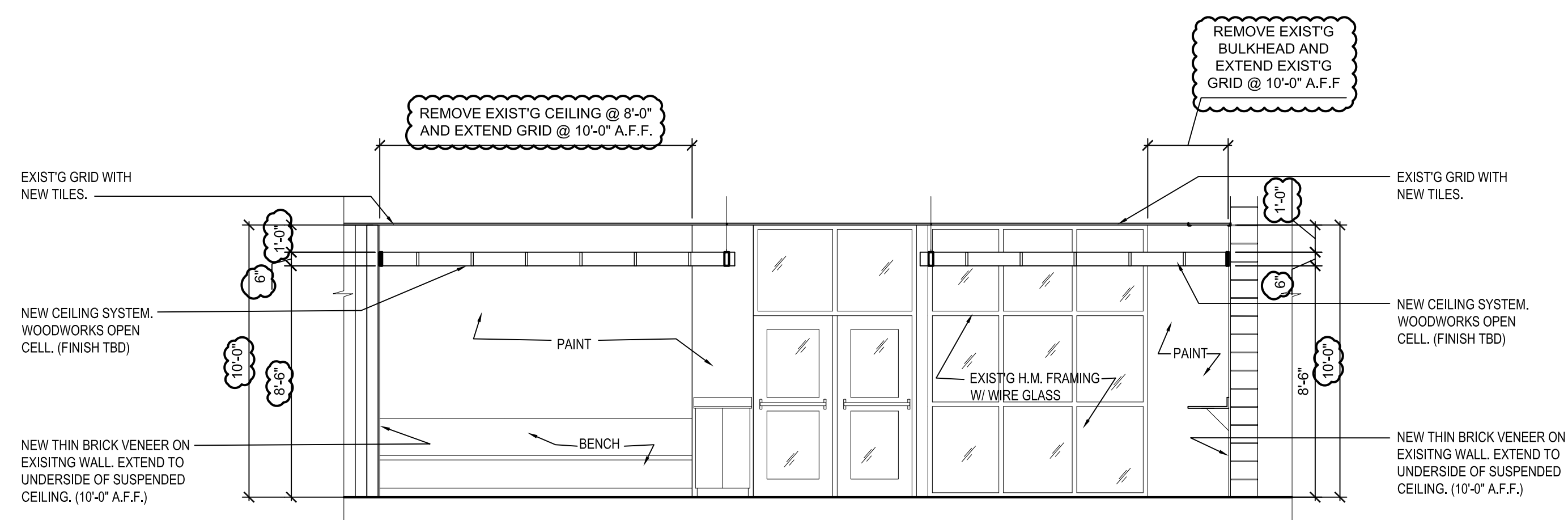
8 TABLE PLAN DETAIL
A5.9FH SCALE: 3/4" = 1'-0"



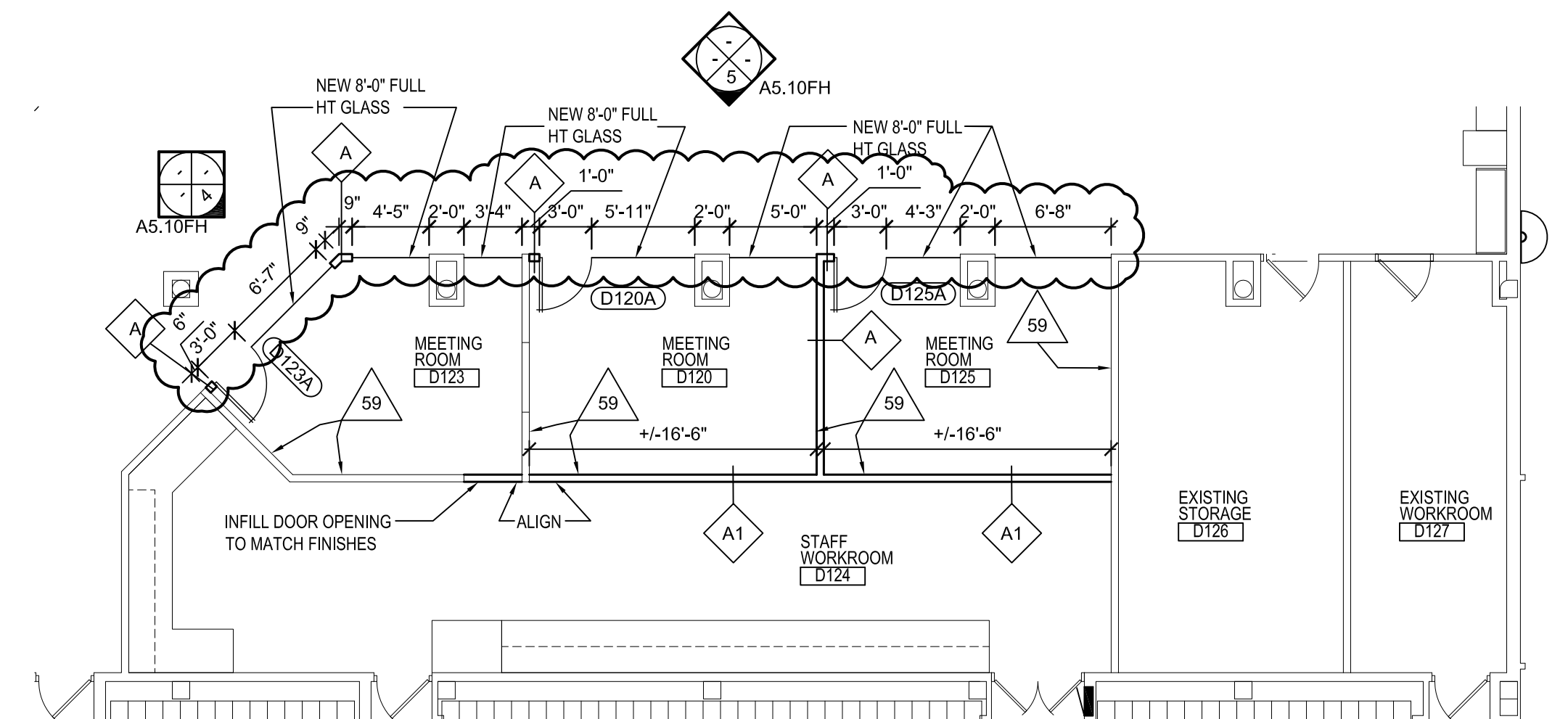
7 BENCH SECTION
A5.9FH SCALE: 3/4" = 1'-0"



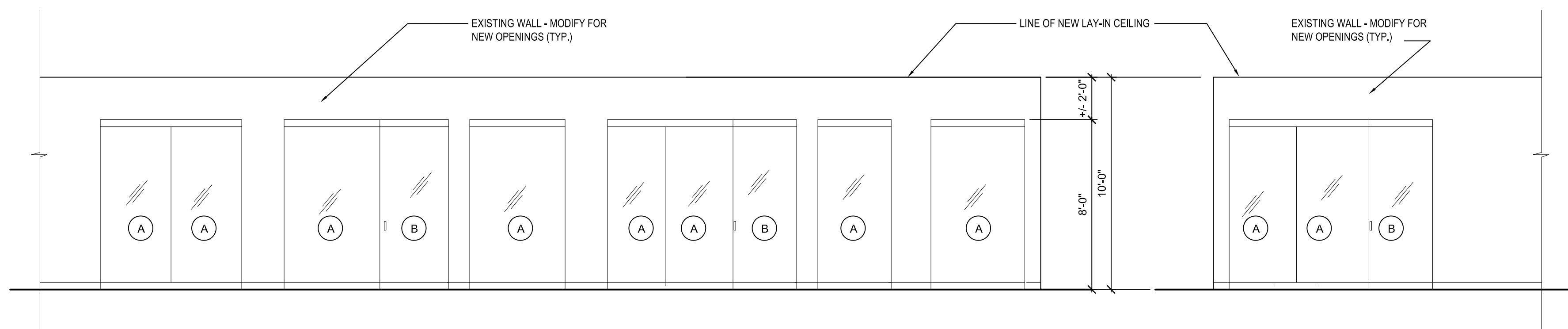
3 PARTIAL REFLECTED CEILING PLAN
A2.0FH SCALE: 1/8" = 1'-0"



6 BUILDING SECTION
A5.9FH SCALE: 1/4" = 1'-0"



2 PARTIAL NEW WORK PLAN
A1.4FH SCALE: 1/8" = 1'-0"

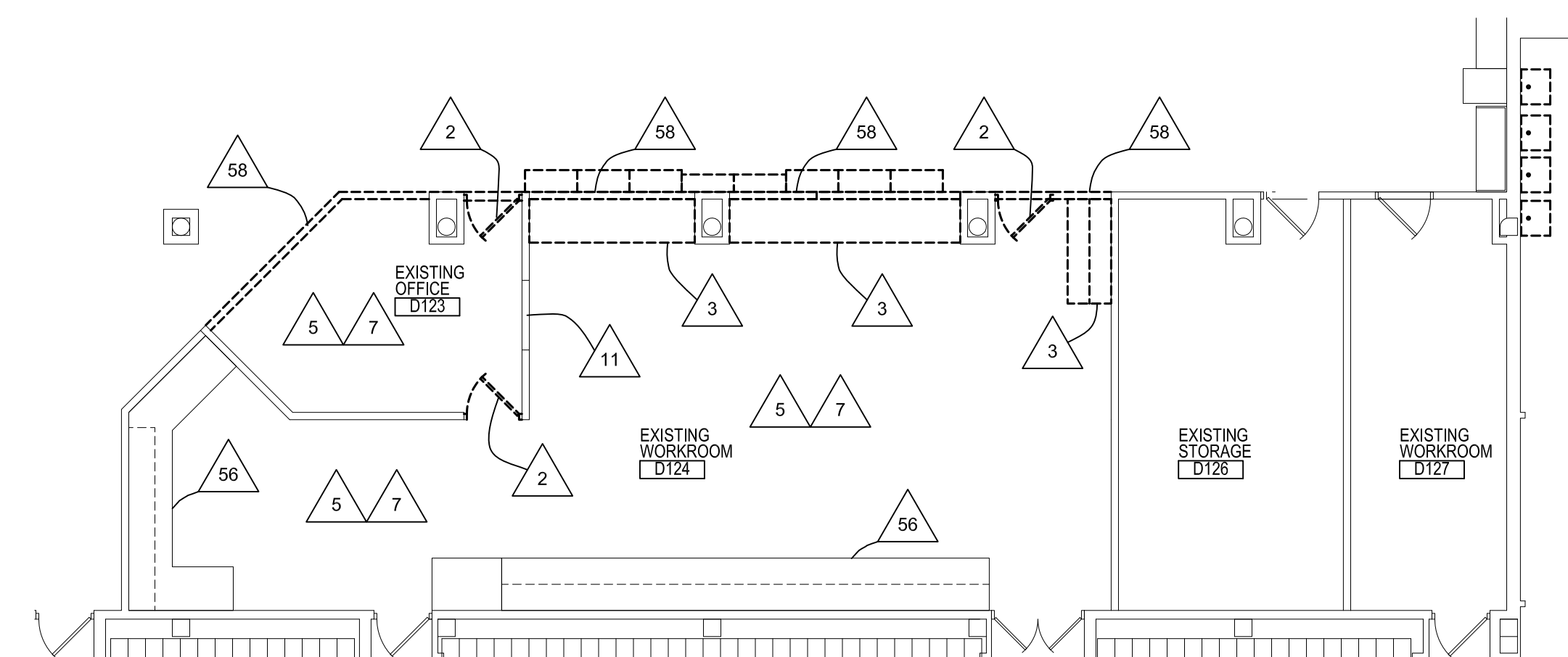


5 INTERIOR ELEVATION
A5.10FH SCALE: 1/4" = 1'-0"

NOTES:

- (A) NEW 8'-0" H 1/2" BUTT GLAZED GLASS IN ALUM FRAMES.
(B) NEW 8'-0" H X 3'-0" W 1/2" GLASS DOOR WITH PULL + PRIVIT HINGE TOP + BOTTOM.

4 INTERIOR ELEVATION
A5.10FH SCALE: 1/4" = 1'-0"



1 PARTIAL DEMO PLAN
A1.4FH SCALE: 1/8" = 1'-0"

FARMINGTON PUBLIC SCHOOLS
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ENLARGED PLANS
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DESIGN DEVELOPMENT ☐
CONSTRUCTION ☒
FINAL RECORD ☐

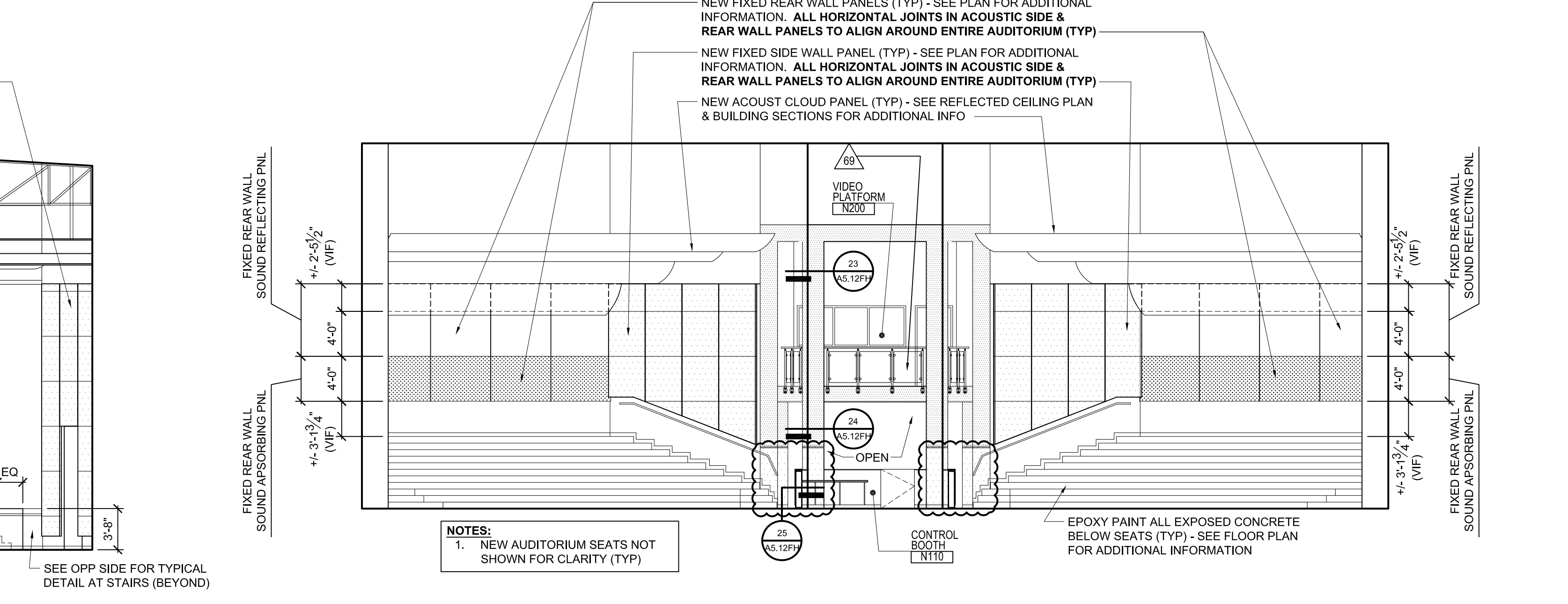
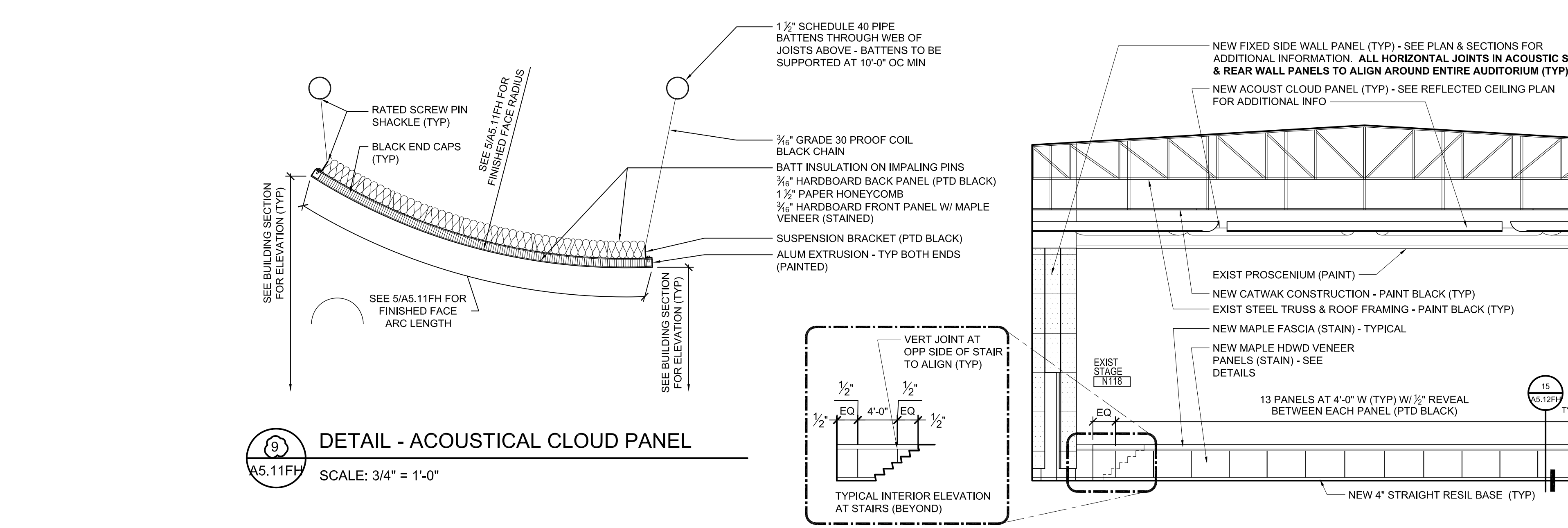
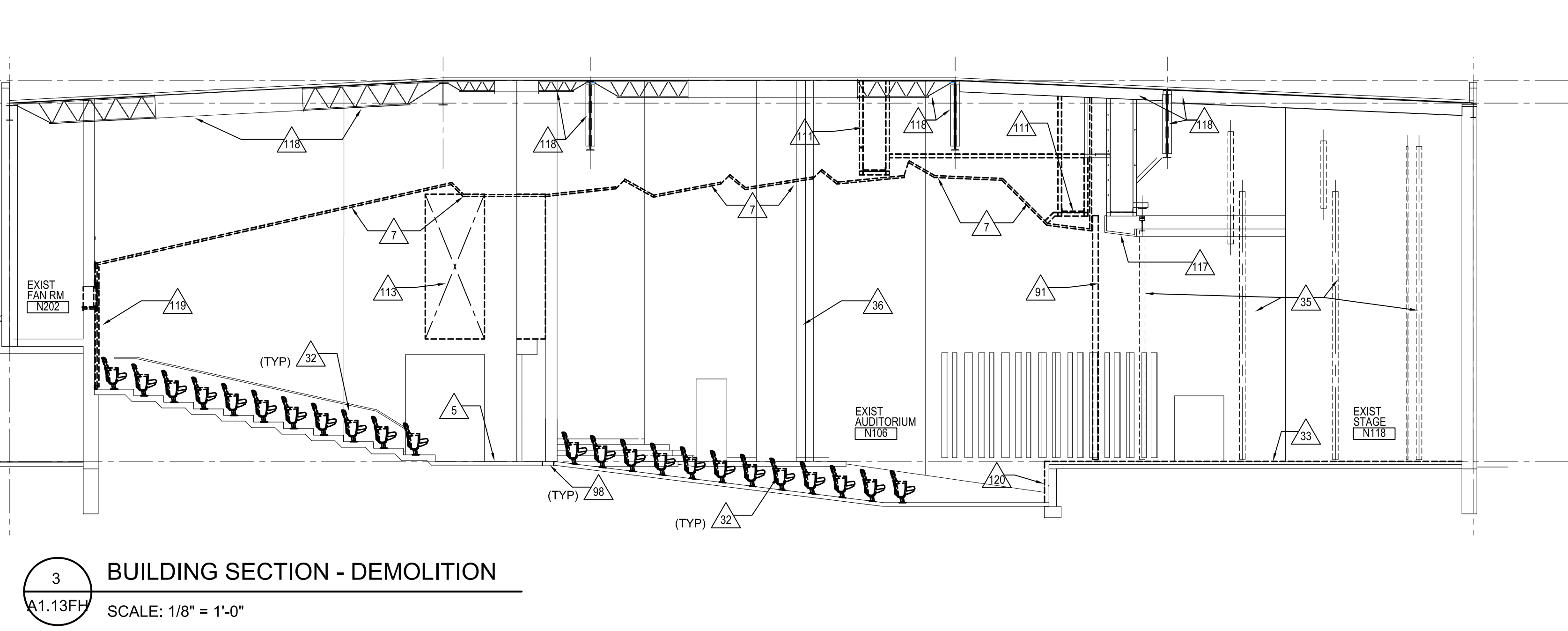
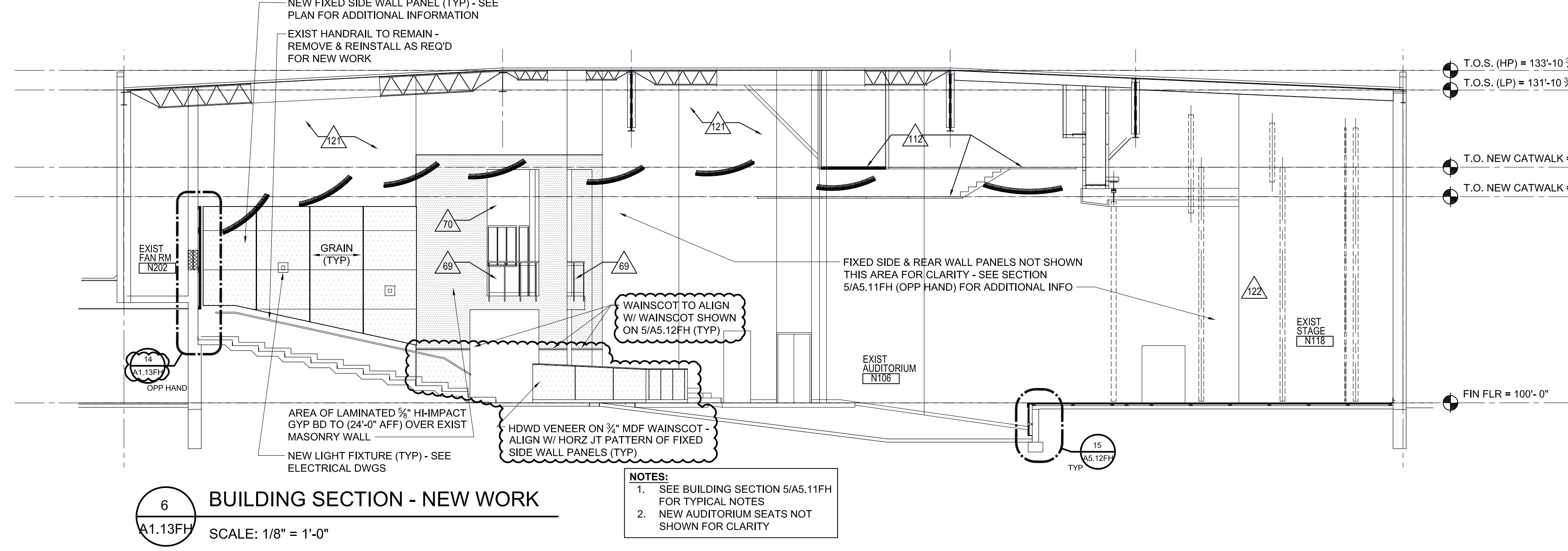
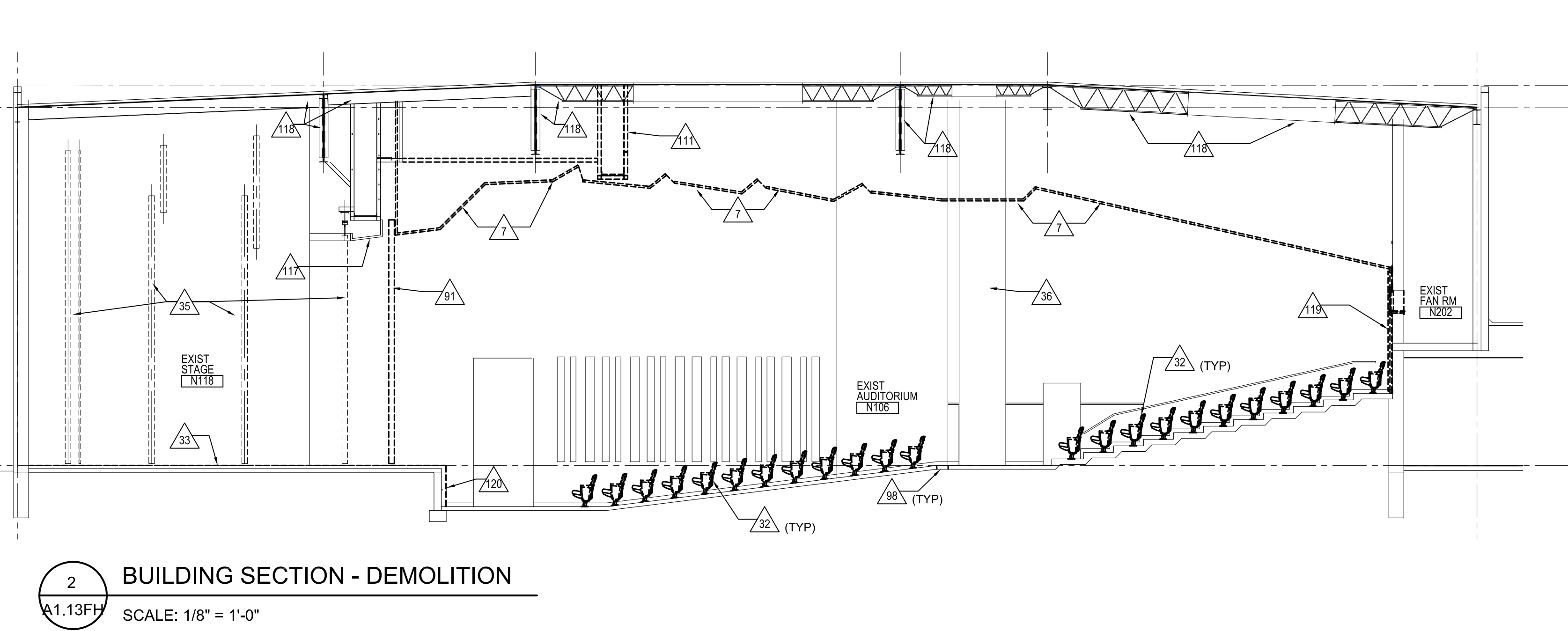
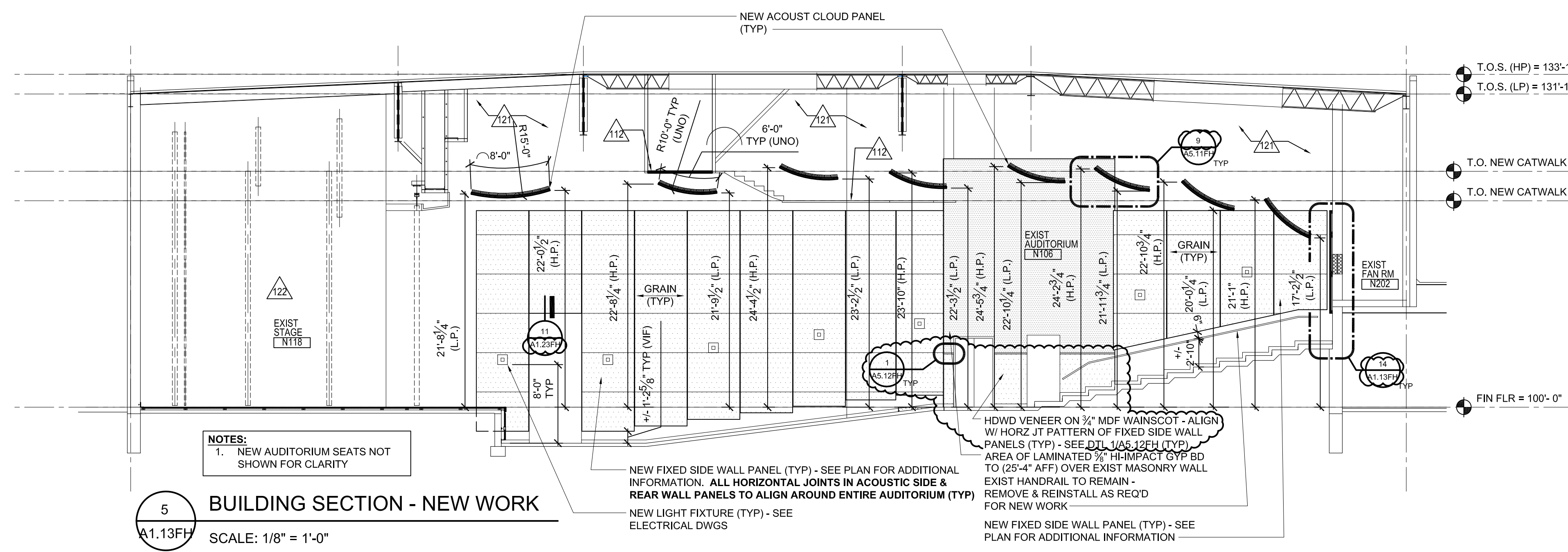
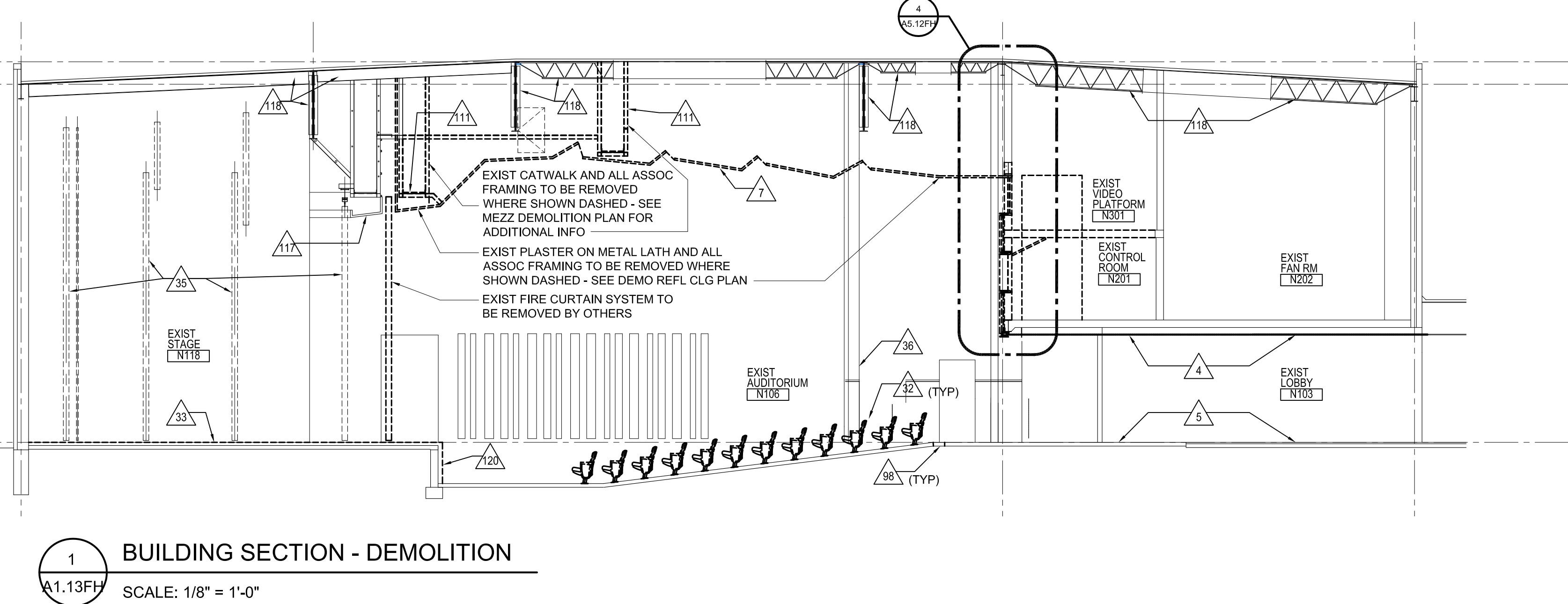
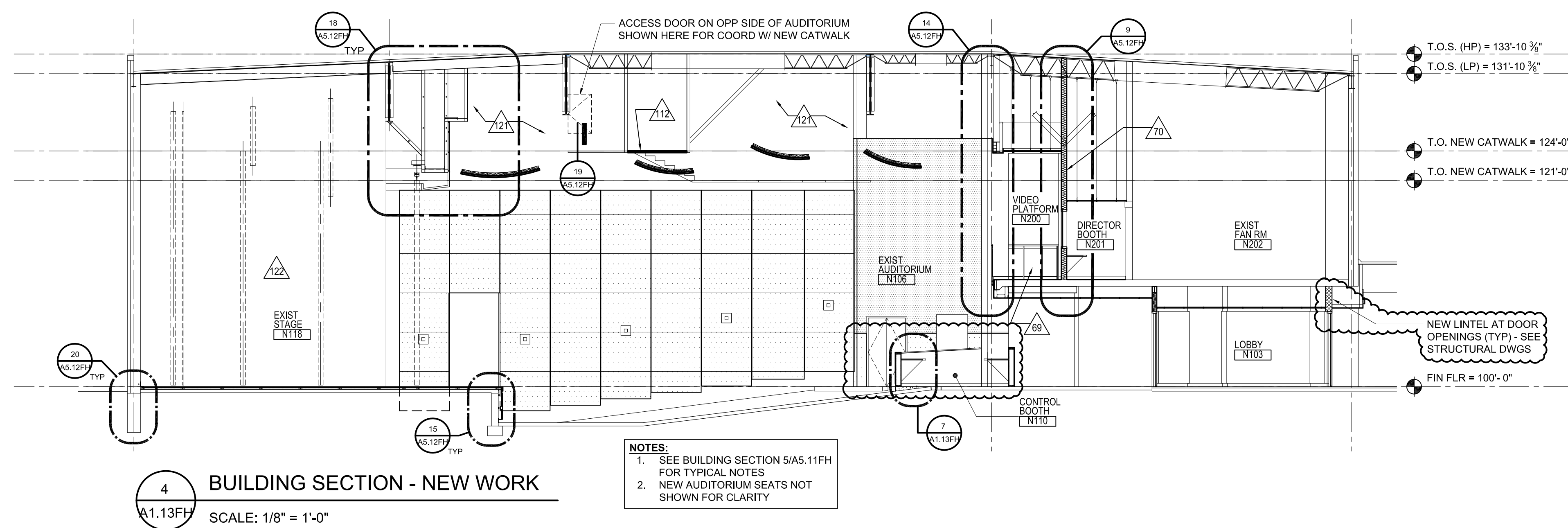
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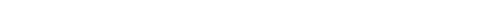
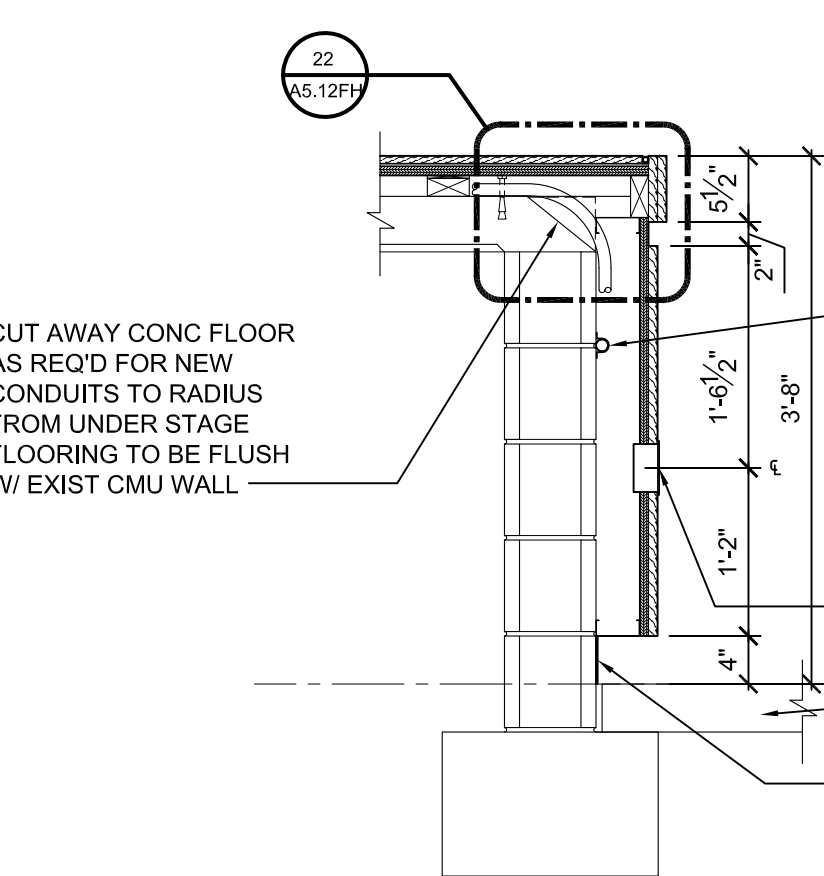
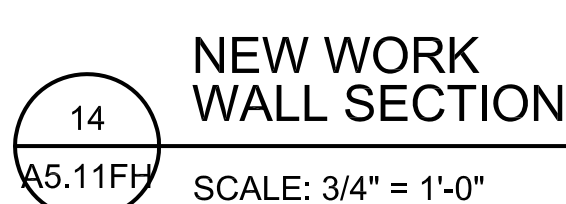
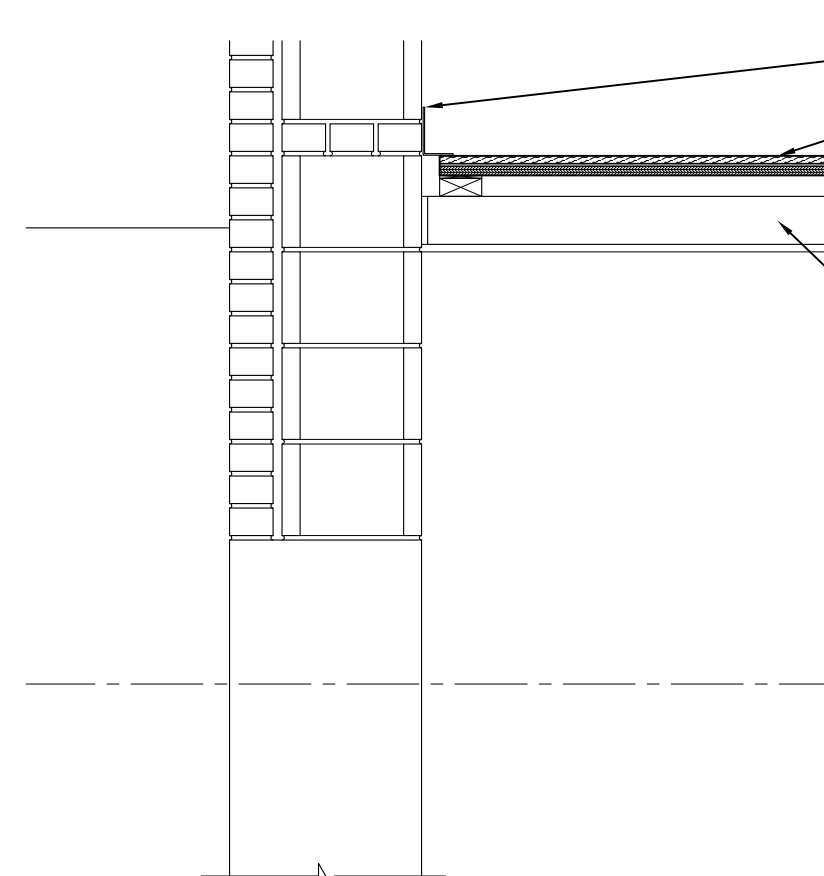
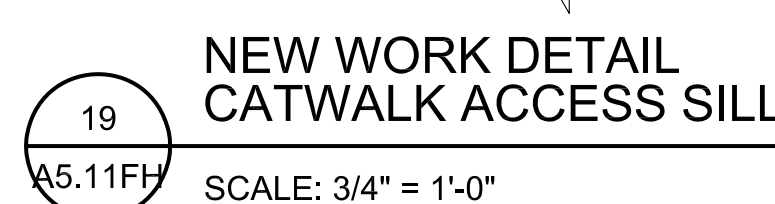
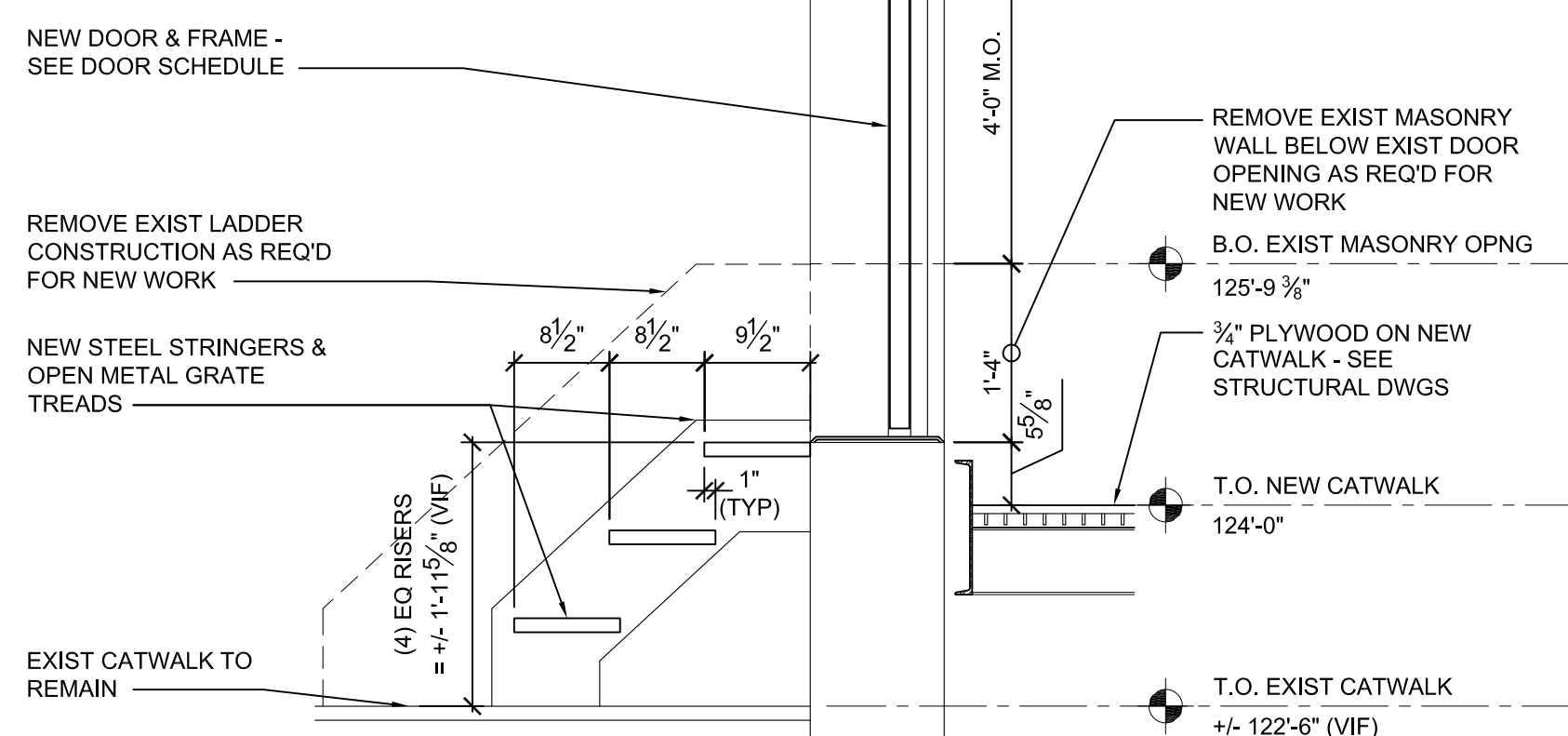
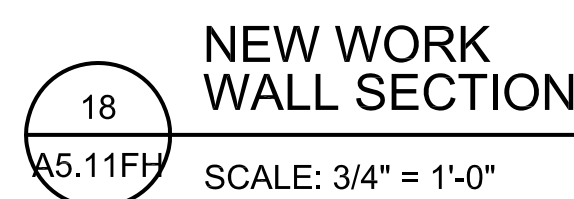
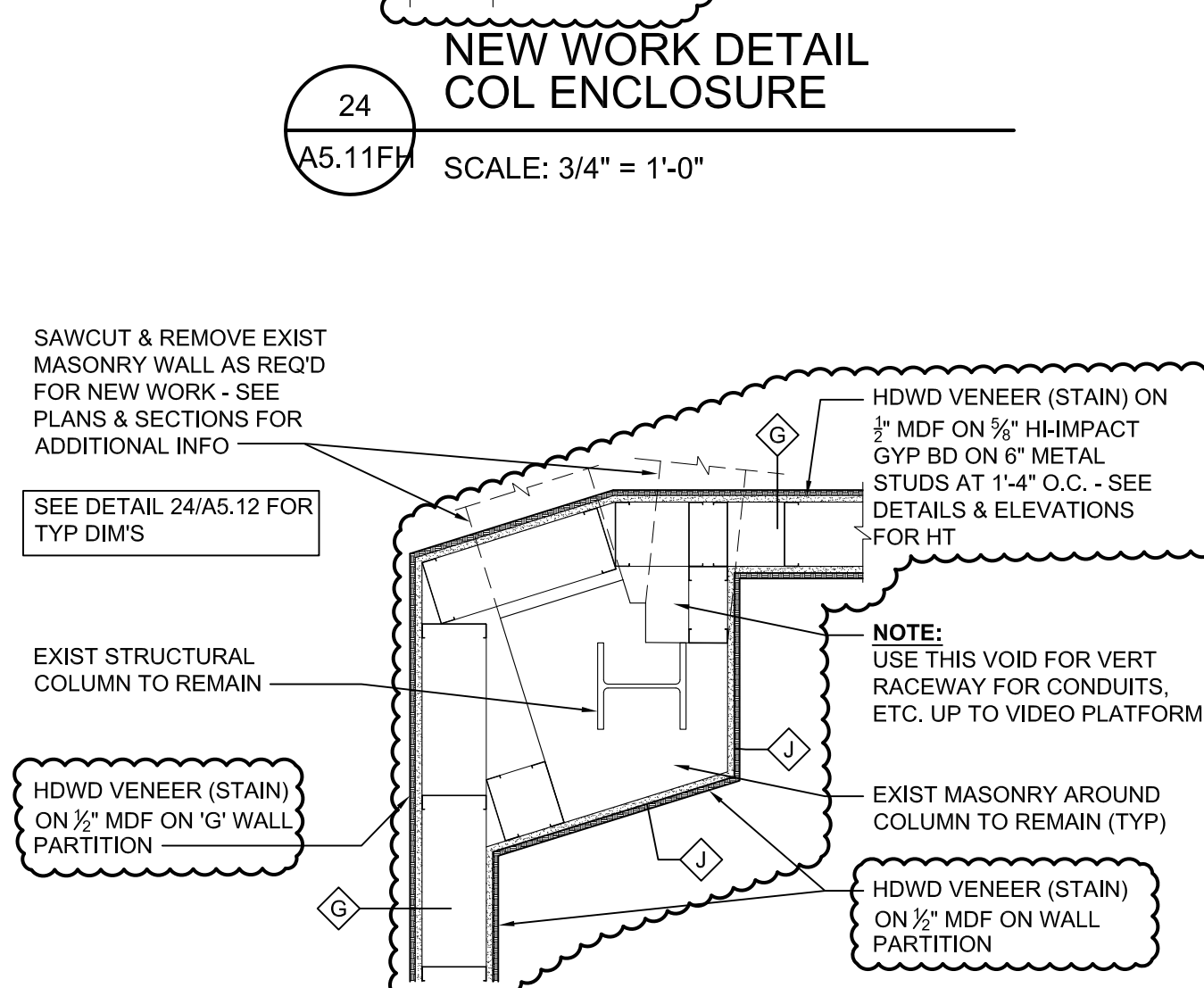
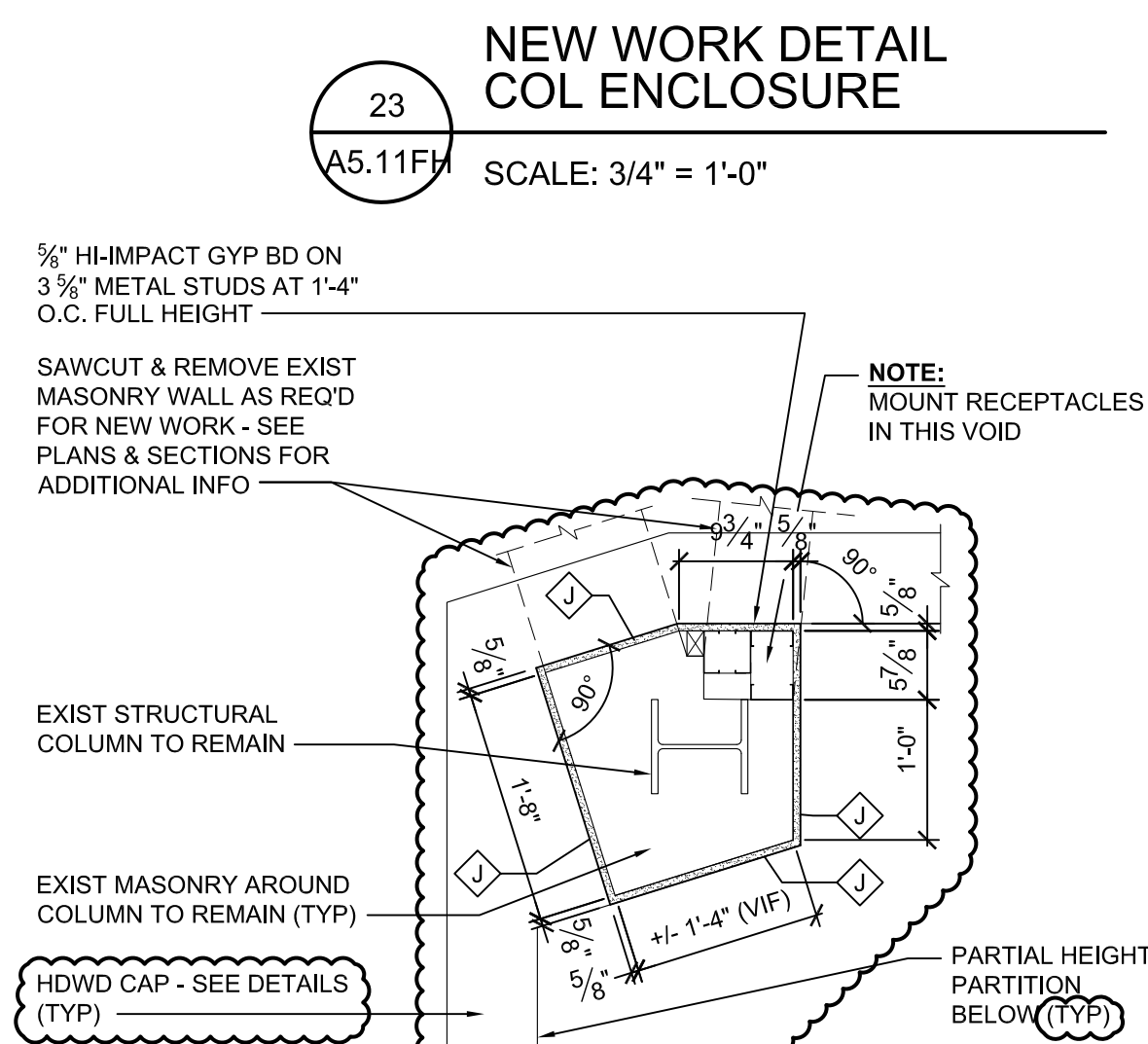
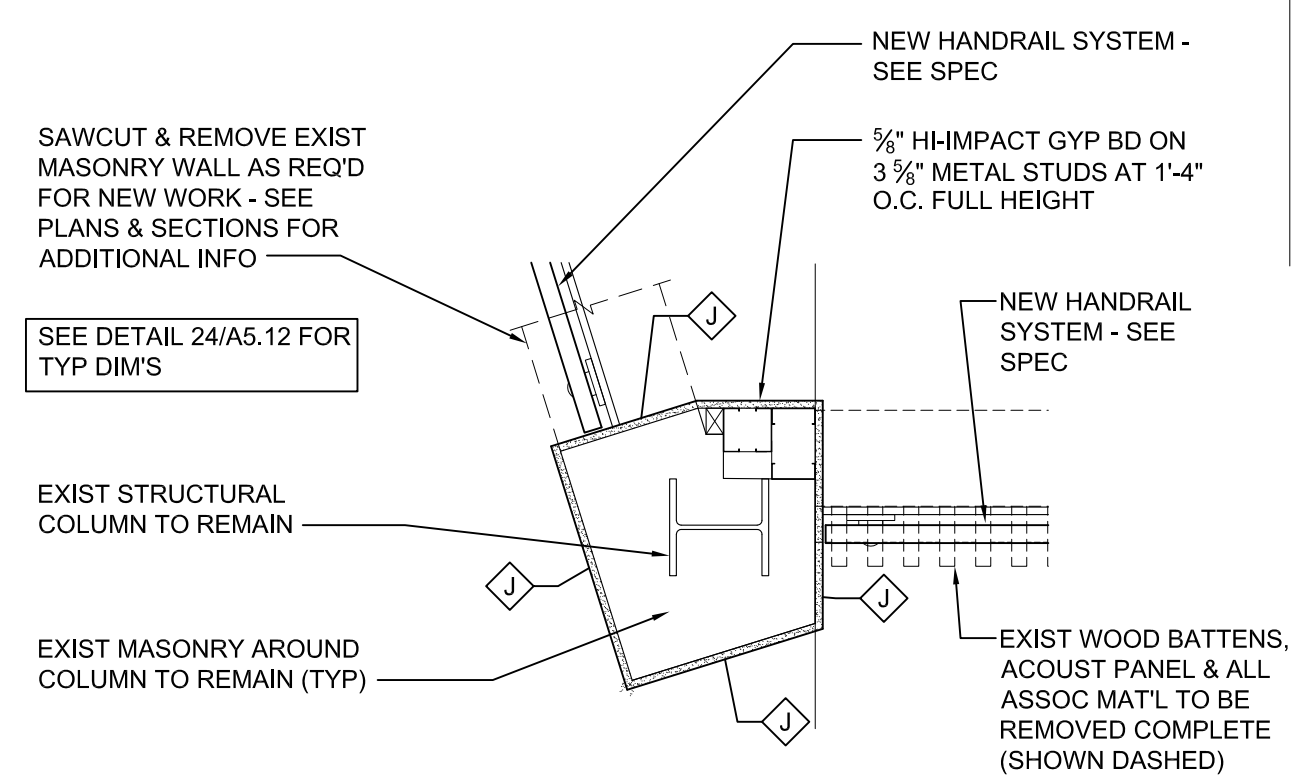
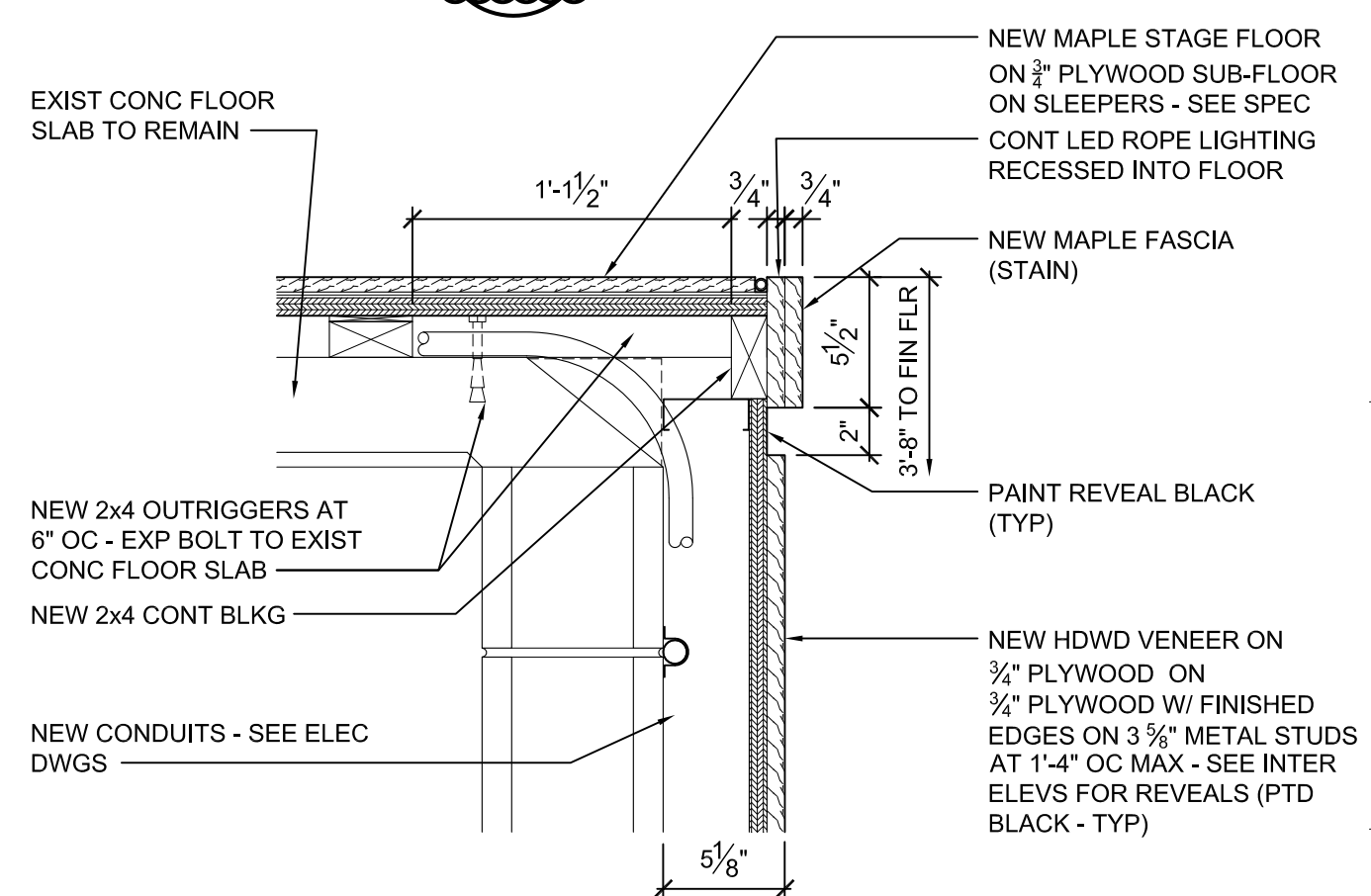
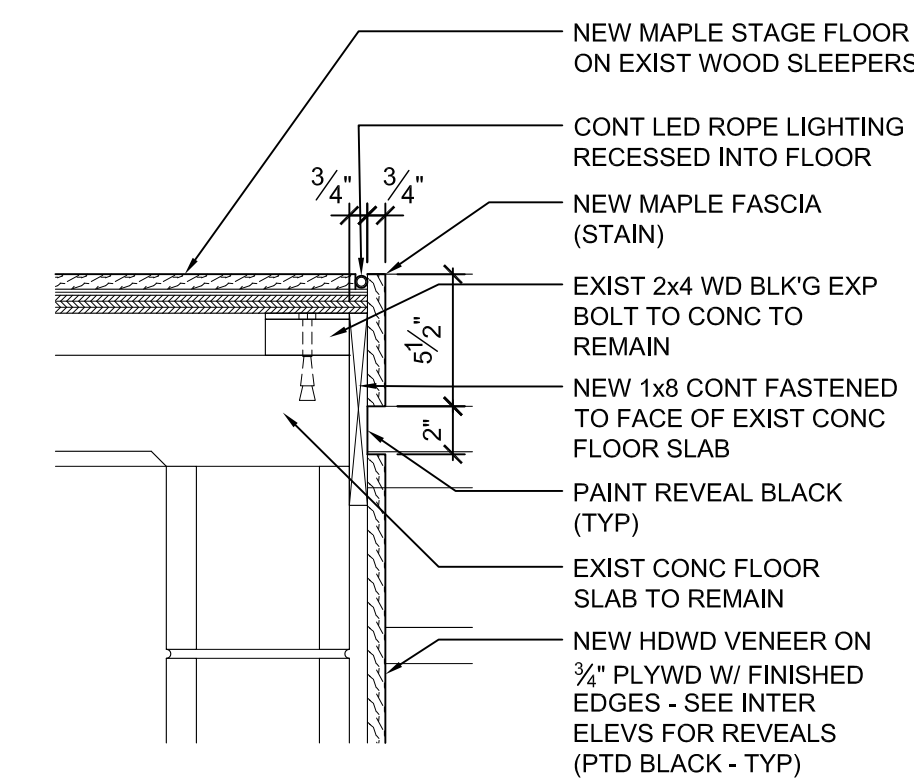
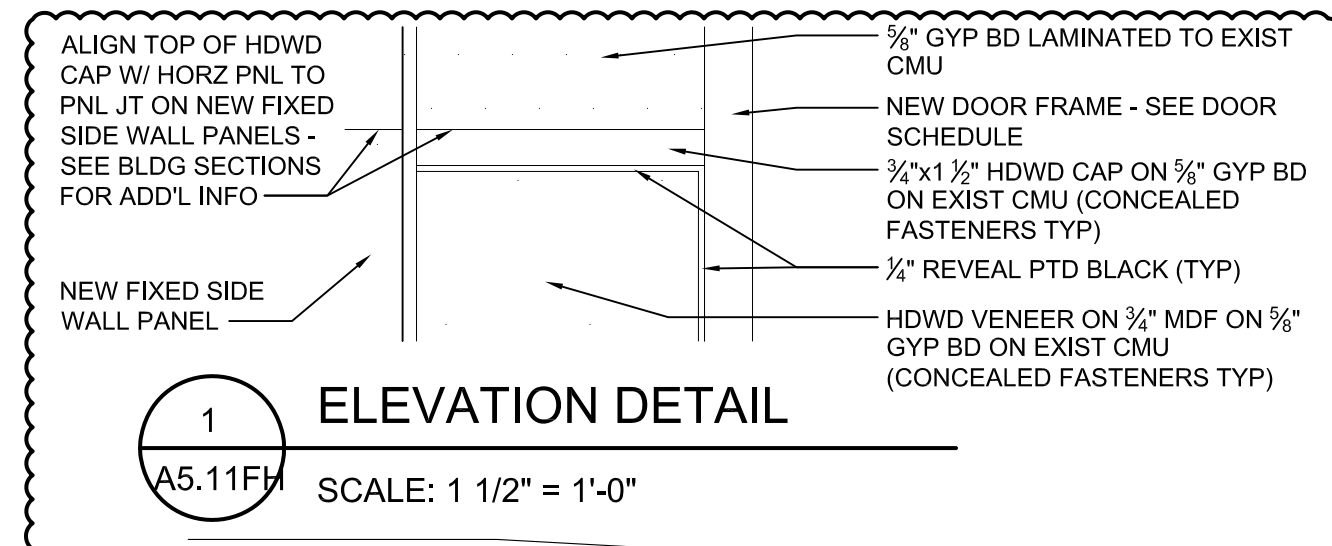
REVISIONS
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ADD NO 02 2-17-16

DATE: FEBRUARY 1, 2016
SHEET NO.

A5.10FH

JOB NO. 151626C



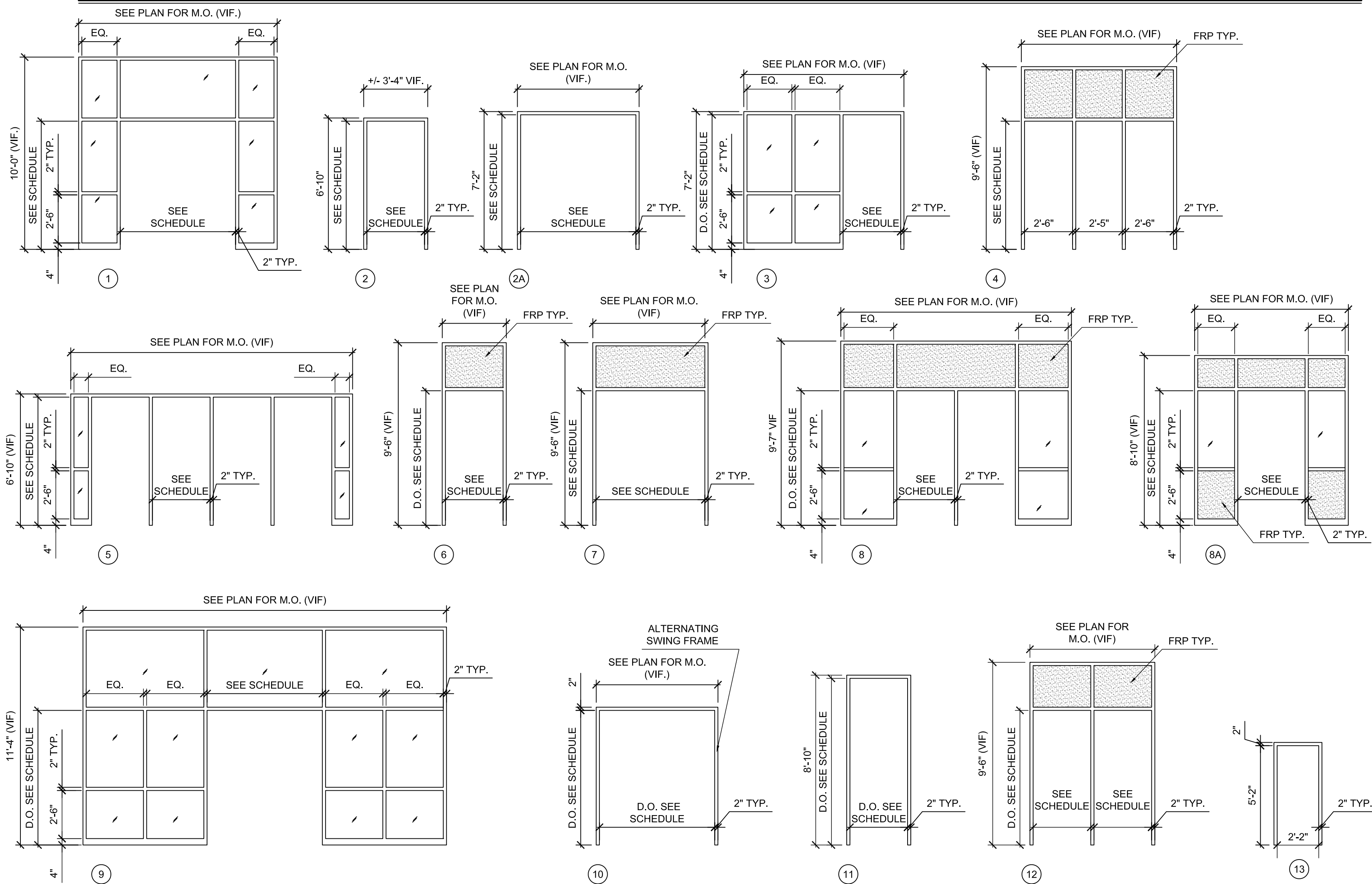


ABBREVIATIONS	
AL	ALUMINUM
HM	HOLLOW METAL
MAR	MARBLE
PT	PAINTED
STN	STAINED
TG	TEMPERED GLASS
VT	VINYL TRANSITION
WD	WOOD
ETR	EXISTING TO REMAIN
FRP	FIBERGLASS REINFORCED POLYESTER
KRM	KEYED REMOVABLE MULLION
PFN	PRE-FINISHED BY MANUFACTURER
GL	1/2" GLASS

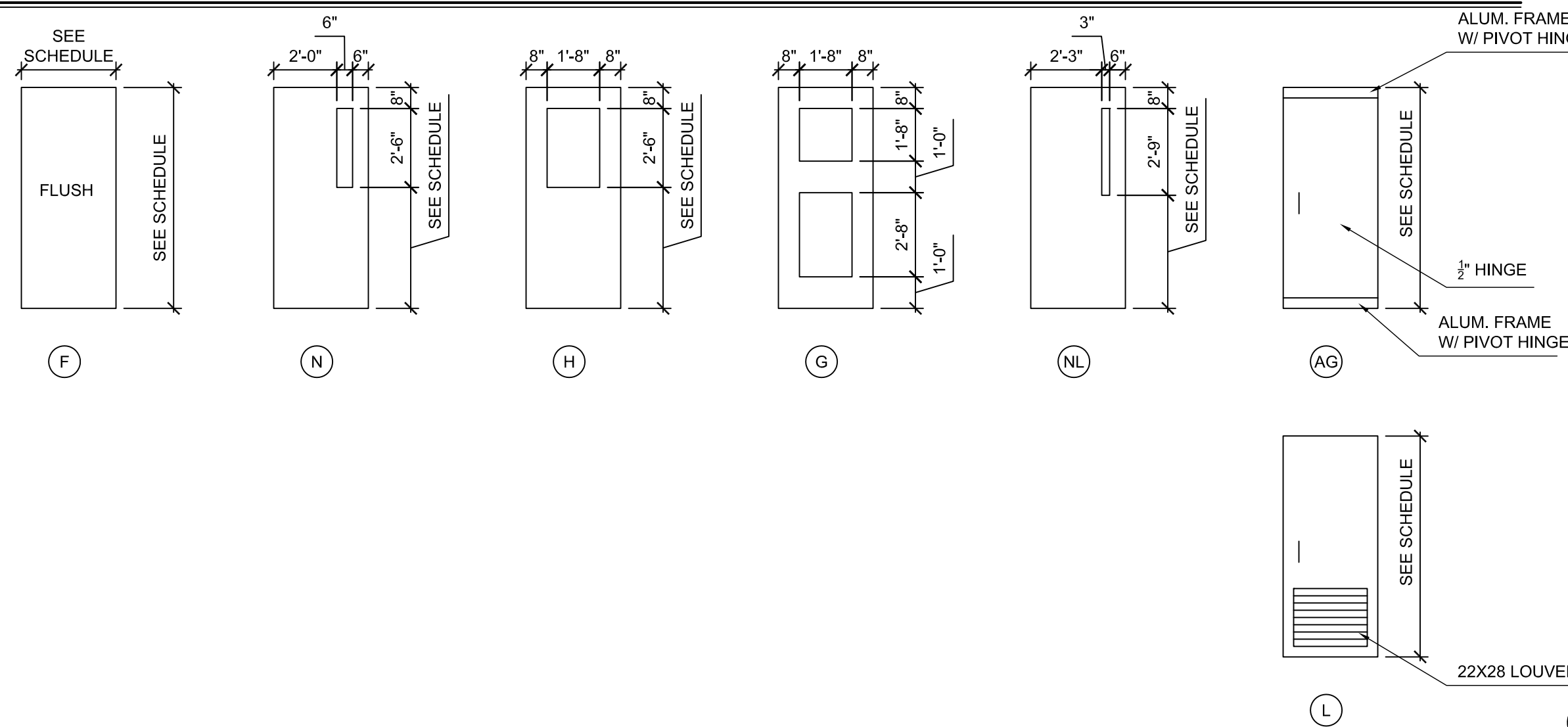
NOTES: (APPLIES TO ALL DOORS)	
A.	VERIFY ALL DOOR OPENINGS AND FRAME OPENINGS IN FILED PRIOR TO FABRICATION OF NEW
B.	ALL NEW WOOD DOORS CALLING FOR STAIN TO BE FACTORY APPLIED

DOOR SCHEDULE															
DOOR OPENING			DOOR			FRAME			DETAILS			THRESHOLD	U.L. LABEL	HARDWARE SET	REMARKS
NO.	WIDTH	HEIGHT	TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	HEAD	JAMB	SILL				
SECOND FLOOR															
D201A	3'-0"	6'-8"	N	WD	STN	-	HM	PT	-	-	-	-	20	-	6
D202A	3'-0"	7'-0"	N	WD	STN	-	HM	PT	-	-	-	-	-	-	-
D202B	3'-0"	6'-8"	N	WD	STN	-	HM	PT	-	-	-	-	-	-	-
D209A	3'-0"	6'-8"	N	WD	STN	-	HM	PT	-	-	-	-	20	-	6
D211A	3'-0"	6'-8"	N	WD	STN	-	HM	PT	-	-	-	-	20	-	6
D212A	3'-0"	6'-8"	N	WD	STN	-	HM	PT	-	-	-	-	20	-	6
D213A	3'-0"	6'-8"	N	WD	STN	-	HM	PT	-	-	-	-	20	-	6
D217A	3'-0"	6'-8"	F	WD	STN	2	HM	PT	-	-	-	-	20	-	6
D218A	-	-	-	-	-	-	HM	PT	-	-	-	-	-	-	1
D219A	3'-0"	6'-8"	F	WD	STN	2	HM	PT	-	-	-	-	20	-	6
D221A	-	-	-	-	-	-	HM	PT	-	-	-	-	-	-	1
D222A	-	-	-	-	-	-	HM	PT	-	-	-	-	-	-	1
D222B	3'-0"	7'-0"	F	FRP	PFN	2A	AL	PFN	-	-	-	AL	-	-	5
D226A	3'-0"	6'-8"	N	WD	STN	-	HM	PT	-	-	-	-	20	-	6
D227A	3'-0"	6'-8"	N	WD	STN	-	HM	PT	-	-	-	-	20	-	6
D228A	3'-0"	6'-8"	N	WD	STN	-	HM	PT	-	-	-	-	20	-	6
D229A	3'-0"	6'-8"	N	WD	STN	-	HM	PT	-	-	-	-	20	-	6
D231A	3'-0"	6'-8"	N	WD	STN	-	HM	PT	-	-	-	-	20	-	6
D232A	3'-0"	6'-8"	N	WD	STN	-	HM	PT	-	-	-	-	20	-	6
N201A	3'-0"	7'-8"	F	WD	STN	2A	HM	PT	-	-	-	-	20	-	-
N204A	2'-2"	5'-2"	F	HM	PT	13	HM	PT	-	-	-	-	60	-	-

FRAME ELEVATIONS:



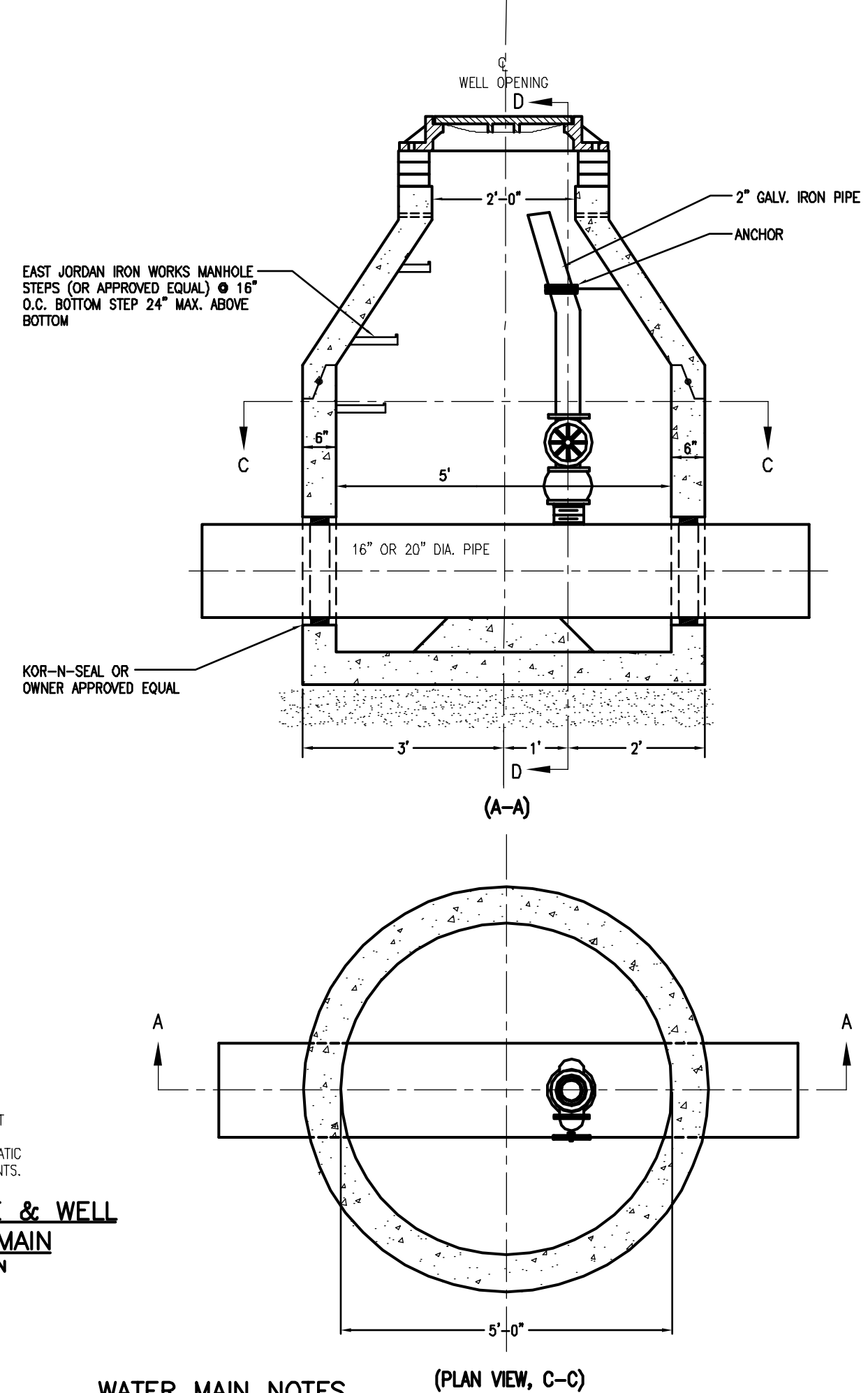
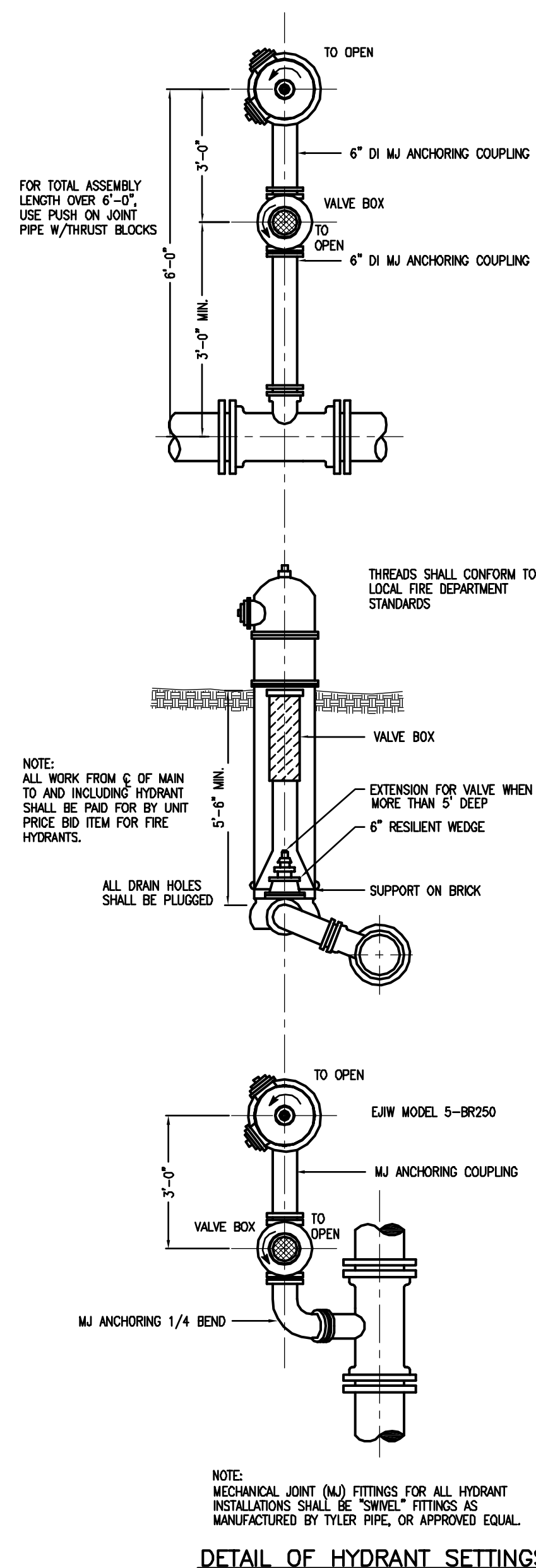
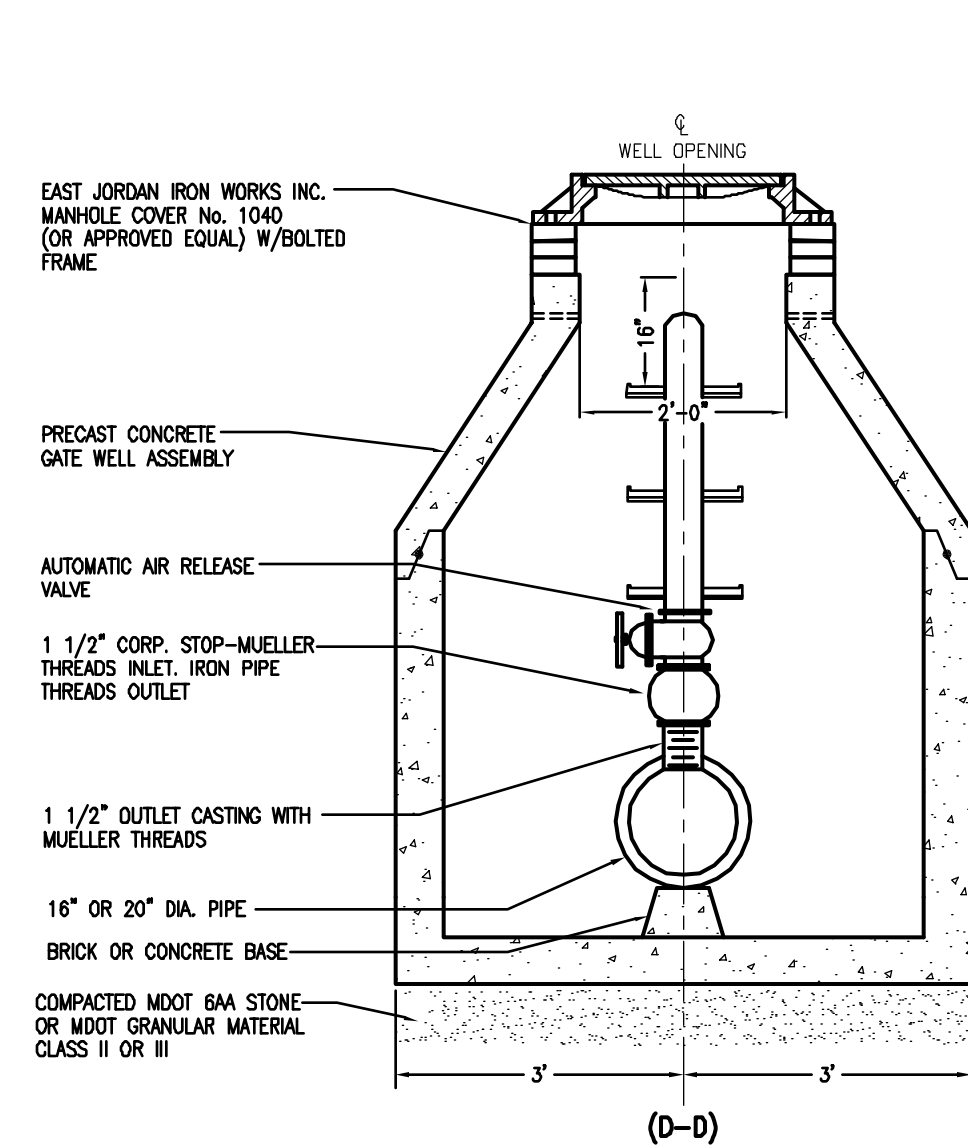
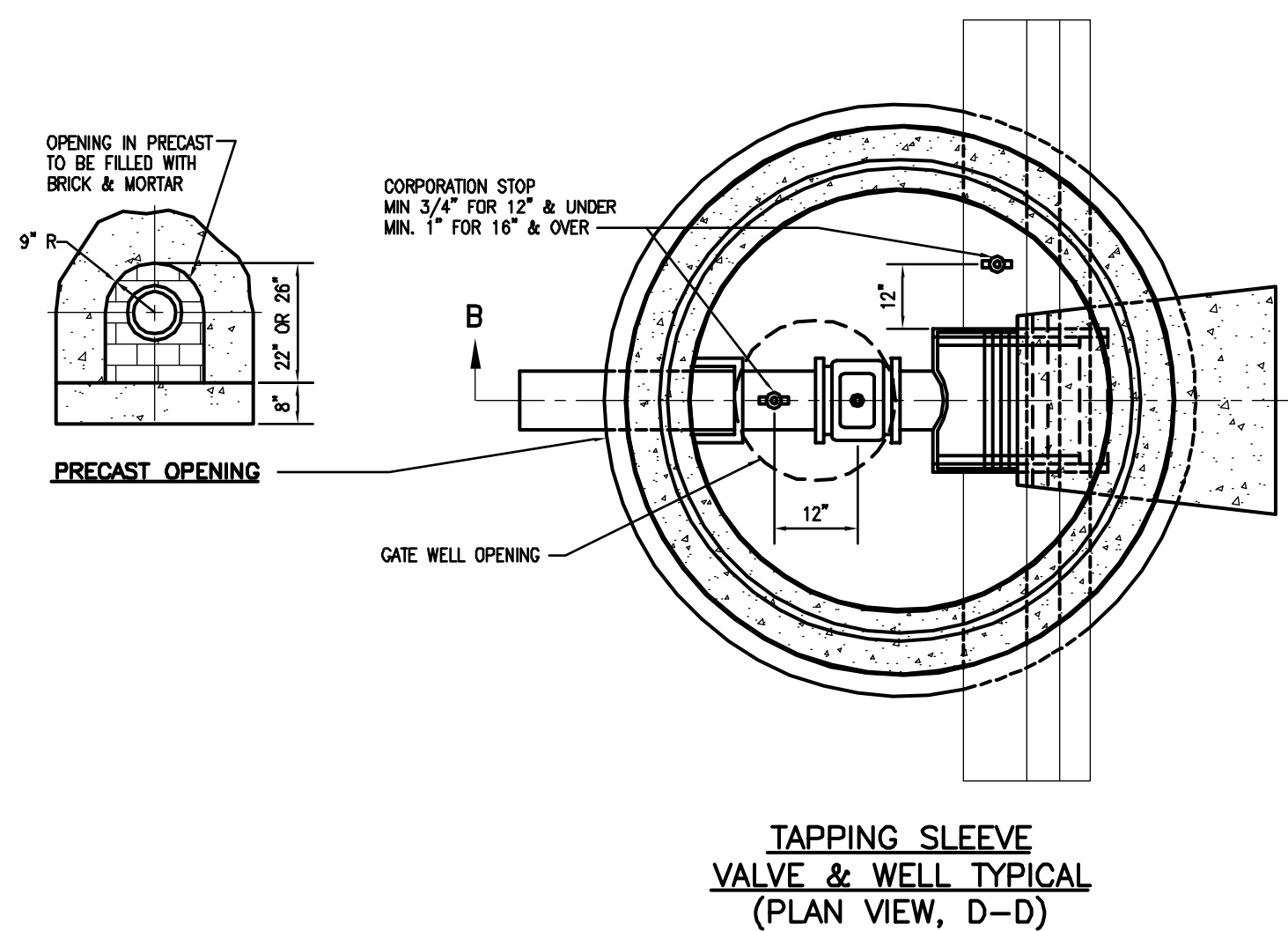
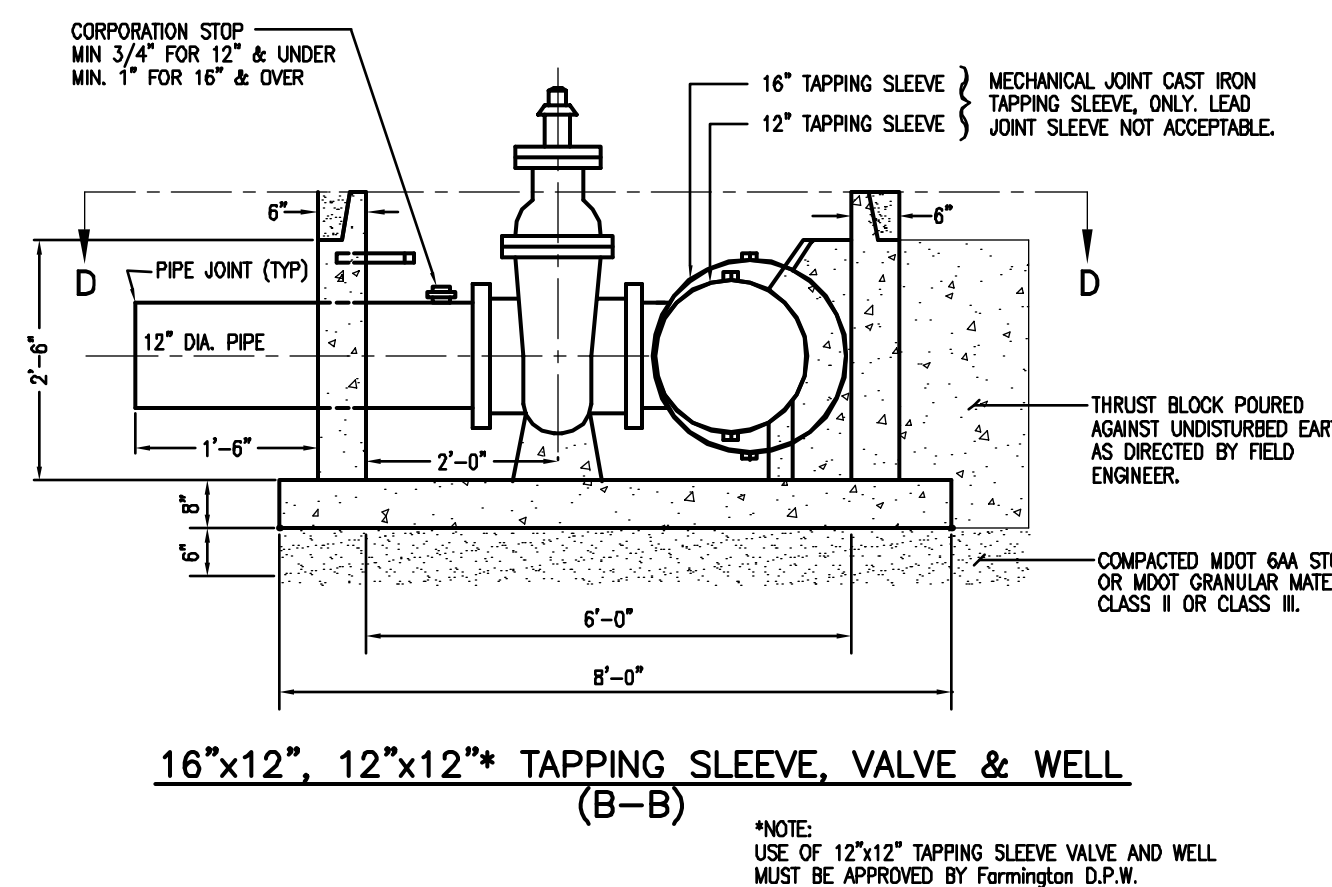
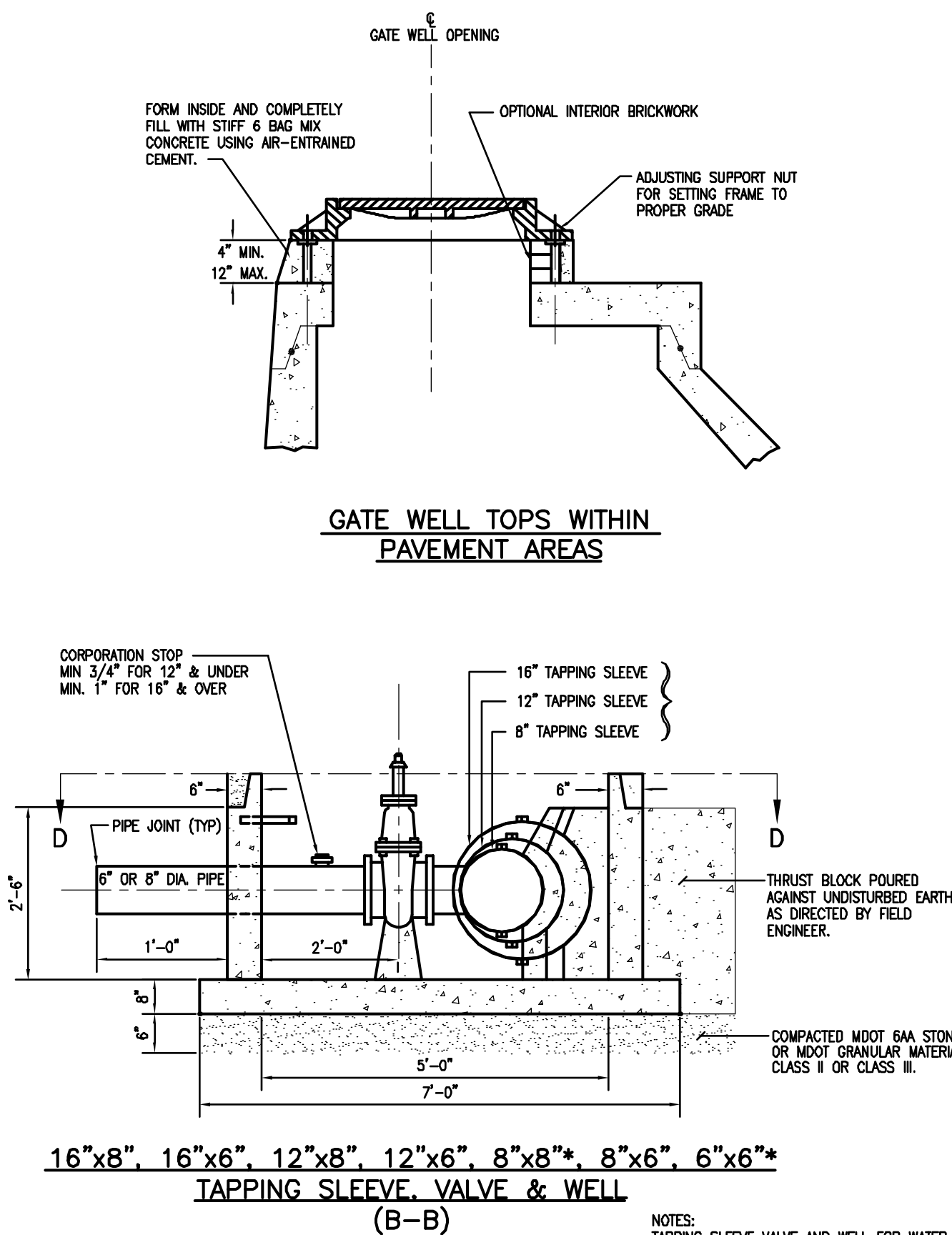
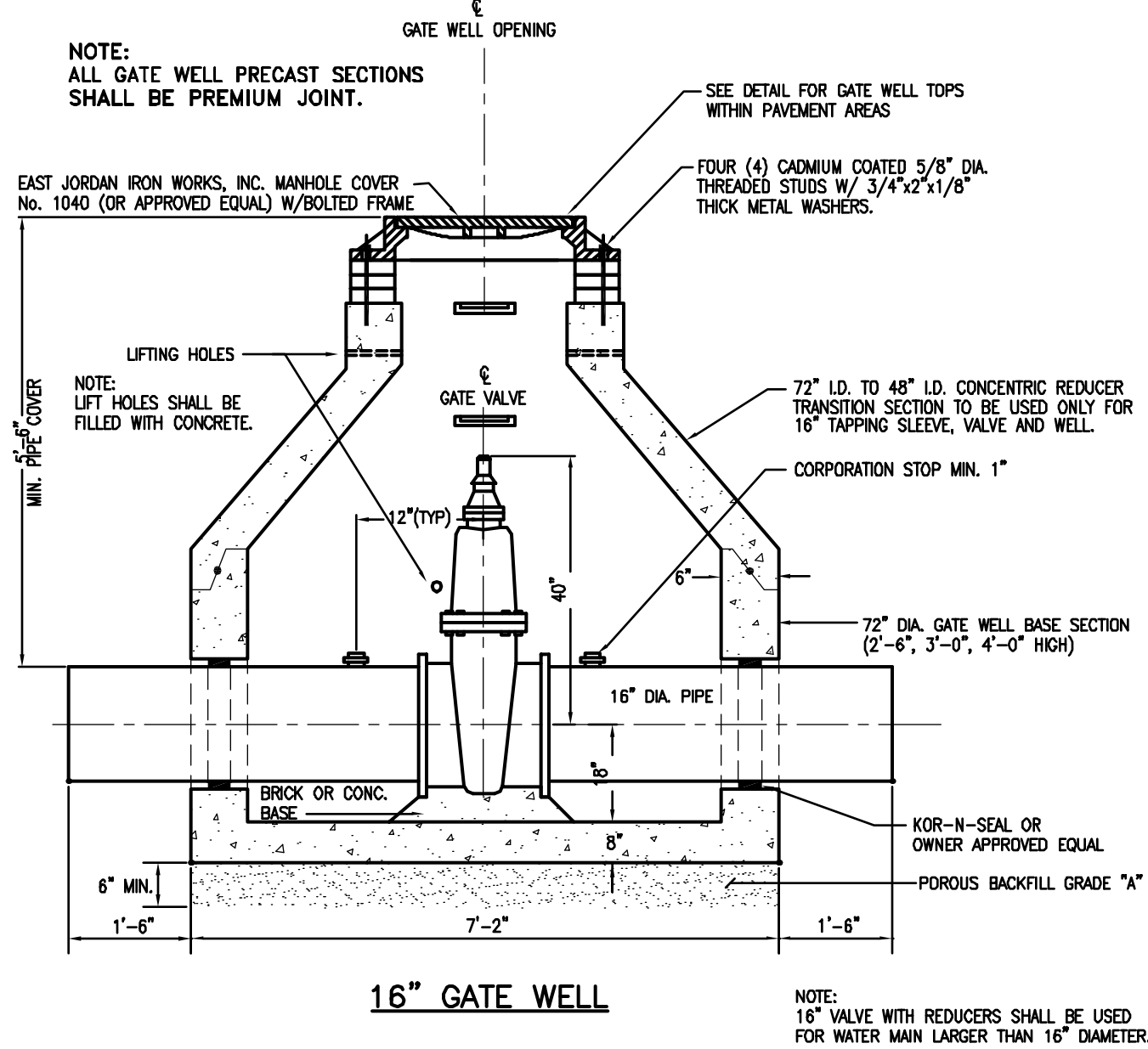
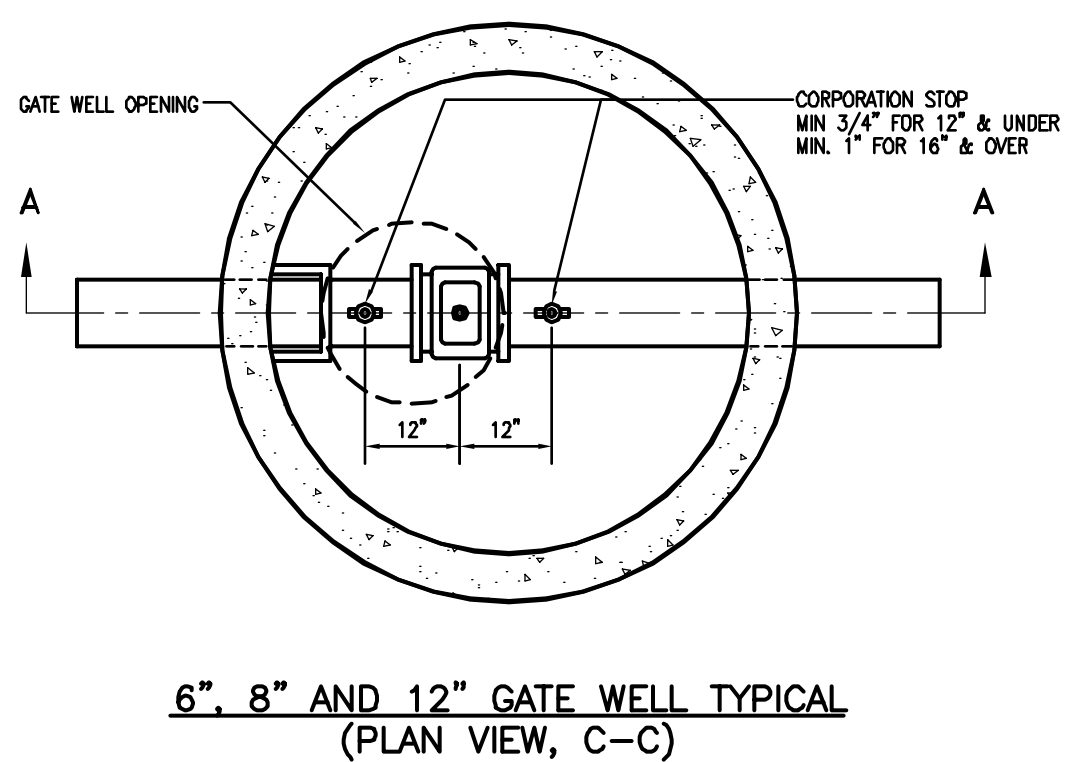
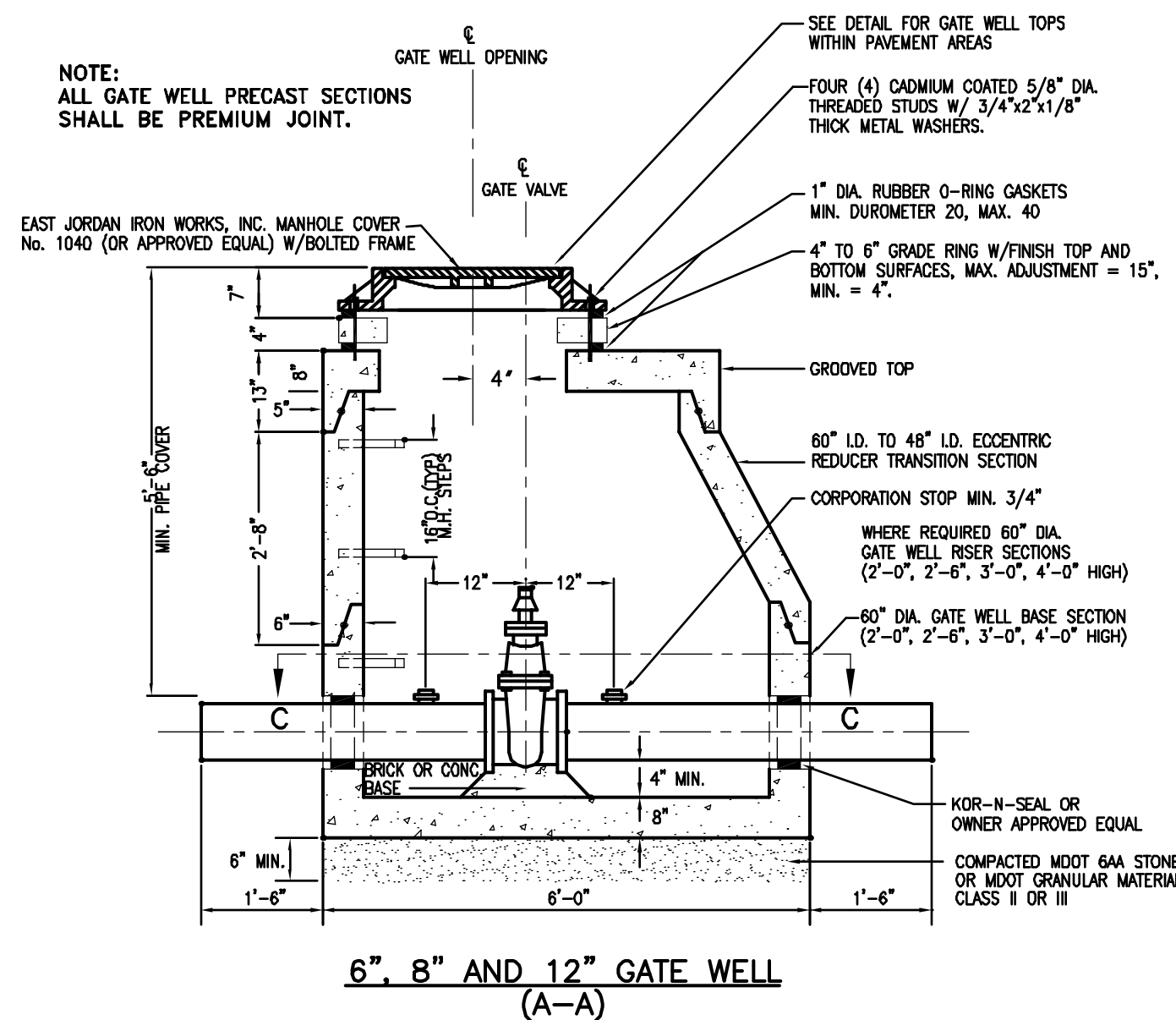
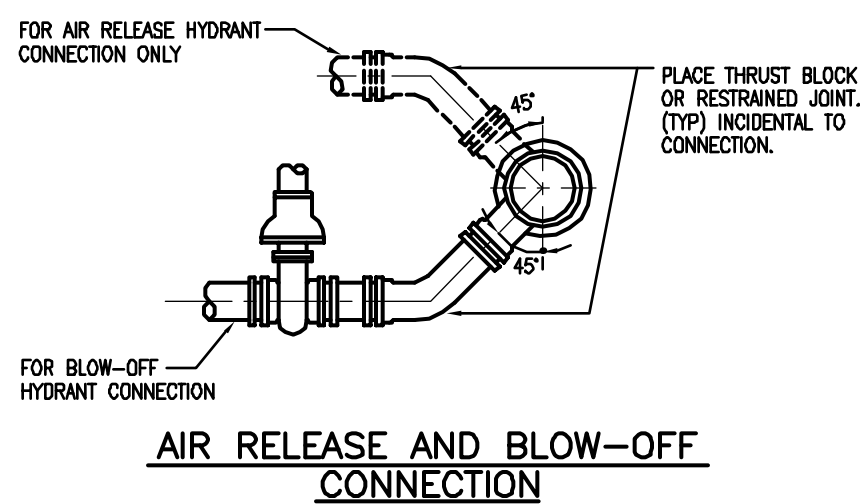
DOOR ELEVATIONS:



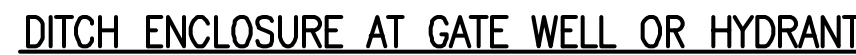
REMARKS - DOOR SCHEDULE

1	EXISTING DOOR & FRAME TO REMAIN
2	PROVIDE TEMPERED GLASS IN DOOR & FRAME OPENINGS
3	PROVIDE FIRE RATED GLAZING IN DOOR & FRAME OPENINGS
4	PREP DOOR & FRAME FOR CARD ACCESS OPENING HARDWARE
5	REMOVE AND REPLACE DOOR AND FRAME
6	REMOVE AND REPLACE DOOR AND HARDWARE - FRAME TO REMAIN, PREP AND PAINT EXISTING FRAME. (VIF D.O.)
7	PROVIDE TEMPERED GLASS IN DOOR AND INSULATED TEMPERED GLASS IN FRAME OPENINGS
8	PROVIDE MAGNETIC WALL HOLD OPENERS CONNECTED TO FIRE ALARM SYSTEM
9	PROVIDE TOTAL DOOR SYSTEM AT THIS LOCATION. SEE SPEC.
10	PROVIDE INSULATED FRP PANEL IN FRAME OPENINGS AS SHOWN
11	PROVIDE KEYED REMOVABLE MULLION BEHIND DOORS
12	SEE ELEVATION 5 ON A1.4FH
13	NO CENTER MULLION
14	PROVIDE ALTERNATING SWING FRAME
15	PROVIDE STEPPED ALUMINUM THRESHOLD
16	REINSTALL SALVAGED SOUND DOOR AND FRAME PRACTICE ROOM
17	FIRE RATED ROLLDOWN SHUTTER. (SEE SPEC.)
18	ROLLDOWN COUNTER SHUTTER. (SEE SPEC.)
19	HALF DOOR W/ WOOD JAMBS (SEE DETAILS)
20	PROVIDE ACOUSTIC SEALS ON JAMBS, HEAD AND DOOR BOTTOM
21	PROVIDE ADA OPERATOR ON 1 DOOR LEAF
22	PROVIDE 22X28 LOUVER IN BOTTOM OF DOOR
23	CHARSE THE DOOR FRAME TO STAIN AND PAINT
24	NEW HW DOORS TO BE 18GA W/ HONEYCOMB CORE EQUI TO STREET CRAFT L18 SERIES DOOR
-	-

DOOR SCHEDULE															
DOOR OPENING			DOOR			FRAME			DETAILS			THRESHOLD	U.L. LABEL	HARDWARE SET	REMARKS
NO.	WIDTH	HEIGHT	TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	HEAD	JAMB	SILL				
FIRST FLOOR															
A105A	(2) 3'-0"	7'-0"	N	FRP	PFN	8	AL	PFN	-	-	-	AL	-	-	5,7,10,11
A106A	3'-0"	7'-0"	NL	FRP	PFN	2A	AL	PFN	-	-	-	AL	-	-	2,5
B107A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
B110A	3'-6"	7'-0"	N	FRP	PFN	8A	AL	PFN	-	-	-	AL	-	-	5,7,10
B122A	(2) 3'-0"	7'-0"	G	FRP	PFN	9	AL	PFN	-	-	-	AL	-	-	5,7
C100A	(2) 3'-0"	7'-0"	NL	FRP	PFN	2A	AL	PFN	-	-	-	AL	-	-	2,5,11
C111A	(2) 3'-0"	7'-0"	NL	FRP	PFN	2A	AL	PFN	-	-	-	AL	-	-	2,5,11
C129A	(2) 3'-0"	7'-0"	NL	FRP	PFN	2A	AL	PFN	-	-	-	AL	-	-	2,5,11
D117A	3'-0"	7'-0"	H	WD	STN	-	HM	PT	-	-	-	-	-	-	2,12
D120A	3'-0"	8'-0"	AG	GL	-	-	-	-	-	-	-	-	-	-	-
D123A	3'-0"	8'-0"	AG	GL	-	-	-	-	-	-	-	-	-	-	-
D125A	3'-0"	8'-0"	AG	GL	-	-	-	-	-	-	-	-	-	-	-
D155A	3'-0"	7'-0"	N	WD	STN	2	HM	PT	-	-	-	-	20	-	3
D156A	3'-0"	6'-8"	N	WD	STN	2	HM	PT	-	-	-	-	-	-	2
D157A	3'-0"	7'-0"	F	WD	STN	2	HM	PT	-	-	-	-	-	-	-
D164A	3'-0"	7'-0"	N	WD	STN	2A	HM	PT	-	-	-	-	-	-	2
E107A	(2) 3'-0"	7'-0"	NL	FRP	PFN	7	AL	PFN	-	-	-	AL	-	-	2,5,10,11
F101A	(2) 3'-0"	6'-8"	F	FRP	PFN	2	AL	PFN	-	-	-	AL	-	-	5,11
F101B	(2) 3'-0"	6'-8"	F	FRP	PFN	2	AL	PFN	-	-	-	AL	-	-	5,11
F102A	(2) 3'-0"	7'-0"	NL	FRP	PFN	7	AL	PFN	-	-	-	AL	-	-	2,5,10,11
G104A	(2) 3'-0"	7'-0"	F	FRP	PFN	7	AL	PFN	-	-	-	AL	-	-	2,10,13
G108A	3'-0"	6'-8"	F	HM	PT	2	HM	PT	-	-	-	-	60	-	-
G112A	3'-0"	6'-8"	F	WD	STN	-	HM	PT	-	-	-	-	-	-	6
G116A	(2)3'-0"	7'-0"	F	FRP	PFN	7	AL	PFN	-	-	-	AL	-	-	5,10,11
G127A	3'-0"	6'-8"	F	WD	STN	-	HM	PT	-	-	-	-	-	-	5,10,11
G137A	(2)3'-1"	6'-8"	F	FRP	PFN	7	AL	PFN	-	-	-	-	-	-	5,10,11
G148A	(2)3'-0"	7'-0"	NL	FRP	PFN	7	AL	PFN	-	-	-	AL	-	-	5,10,13
G148B	(2)4'-0"	7'-0"	NL	HM	PT	10	HM	PT	-	-	-	-	90	-	3,5,8,9,13,14
H104A	3'-0"	7'-0"	F	WD	STN	-	HM	PT	-	-	-	-	20	-	6
H104B	3'-0"	7'-0"	F	WD	STN	-	HM	PT	-	-	-	-	-	-	6
H108A	(2) 3'-0"	7'-0"	NL	FRP	PFN	7	AL	PFN	-	-	-	AL	-	-	5,10,13
H116A	3'-0"	6'-8"	F	HM	HM	2	HM	PT	-	-	-	-	-	-	5
H131A	2'-7"	8'-8"	F	HM	PT	11	HM	PT	-	-	-	AL	-	-	5,15
H131B	2'-7"	8'-8"	F	HM	PT	11	HM	PT	-	-	-	AL	-	-	5,15
H140A	3'-0"	7'-0"	F	HM	PT	2	HM	PT	-	-	-	-	-	-	-
H141A	4'-0"	6'-8"	L	HM	PT	2	HM	PT	-	-	-	-	-	-	22
H143A	3'-0"	6'-8"	F	HM	STN	-	HM	PT	-	-	-	-	-	-	6
H144A	3'-0"	6'-8"	F	HM	PT	2	HM	PT	-	-	-	-	-	-	-
J100A	3'-0"	7'-0"	D	FRP	PFN	2A	HM	PT	-	-	-	-	-	-	2
J102A	3'-0"	7'-0"	N	WD	STN	2A	HM	PT	-	-	-	-	-	-	2
J105A	3'-0"	7'-0"	F	WD	STN	2A	HM	PT	-	-	-	-	-	-	-
J110A	3'-0"	7'-0"	N	WD	STN	2A	HM	PT	-	-	-	-	-	-	2
J115A	(2)3'-0"	7'-0"	G	FRP	PFN	12	AL	PFN	-	-	-	AL	-	-	7,21
J115B	(2)3'-0"	7'-0"	G	FRP	PFN	12	AL	PFN	-	-	-	-	-	-	7,21
J119A	3'-0"	7'-0"	F	WD	STN	2A	HM	PT	-	-	-	-	-	-	-
J121A	3'-0"	7'-0"	F	WD	STN	2A	HM	PT	-	-	-	-	-	-	-
J122A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
J151A	(2) 3'-0"	6'-8"	N	FRP	PFN	1	AL	PFN	-	-	-	AL	-	-	5,7,11
J153A	3'-0"	6'-8"	F	FRP	PFN	2	AL	PFN	-	-	-	AL	-	-	5
J153B	(2) 3'-1"	6'-8"	N	HM	PT	2	HM	PT	-	-	-	-	20	-	3,24
J161A	3'-0"	6'-8"	F	FRP	PFN	2	AL	PFN	-	-	-	AL	-	-	5
J161B	(2) 3'-1"	6'-8"	N	HM	PT	2	HM	PT	-	-	-	-	20	-	3,24
J161C	(2) 3'-1"	6'-8"	N	HM	PT	2	HM	PT	-	-	-	-	20	-	3,24
J164A	3'-0"	6'-8"	F	FRP	PFN	2	AL	PFN	-	-	-	AL	-	-	5
K104A	(2) 3'-0"	7'-0"	F	FRP	PFN	7	AL	PFN	-	-	-	AL	-	-	5,10,11
K105A	(2) 4'-0"	7'-0"	NL	HM	PT	10	HM	PT	-	-	-	-	90	-	-
K108A	3'-0"	7'-0"	F	FRP	PFN	6	AL	PFN	-	-	-	AL	-	-	5,10
K109A	(2) 3'-0"	7'-0"	F	FRP	PFN	2A	AL	PFN	-	-	-	AL	-	-	5,13
K111A	3'-0"	7'-0"	F	FRP	PFN	6	AL	PFN	-	-	-	AL	-	-	5,10
K111B	3'-0"	6'-8"	F	WD	STN	2	HM	PT	-	-	-	-	45	-	-
K113A	3'-0"	6'-8"	F	WD	STN	2	HM	PT	-	-	-	-	45	-	-
K116A	3'-0"	7'-0"	F	FRP	PFN	6	AL	PFN	-	-	-	AL	-	-	5,10
L103A	3'-4"	7'-0"	F	FRP	PFN	6	AL	PFN	-	-	-	AL	-	-	5,10
L112A	3'-0"	7'-0"	F	FRP	PFN	6	AL	PFN	-	-	-	AL	-	-	5,10
L112B	(2) 3'-0"	7'-0"	F	FRP	PFN	2A	AL	PFN	-	-	-	AL	-	-	5,11
L117A	(2) 2'-10"	6'-8"	F	FRP	PFN	7	AL	PFN	-	-	-	AL	-	-	5,13
L120A	4'-0"	4'-0"	-	-	-	-	-	-	-	-	-	-	60	-	17
L120B	4'-0"	4'-0"	-	-	-	-	-	-	-	-	-	-	60	-	17
L120C	3'-0"	7'-0"	F	WD	STN	2	HM	PT	-	-	-	-	20	-	-
L121A	3'-0"	7'-0"	H	WD	STN	2A	HM	PT	-	-	-	-	20	-	-
L121B	3'-2"	7'-0"	F	WD	STN	2	HM	PT	-	-	-	-	-	-	-
L124A	3'-0"	7'-0"	F	FRP	PFN	6	AL	PFN	-	-	-	AL	-	-	5,10
L124B	(2) 3'-0"	7'-0"	F	FRP	PFN	2A	AL	PFN	-	-	-	AL	-	-	5,13
L124C	3'-0"	7'-0"	F	HM	PT	2	HM	PT	-	-	-	-	60	-	6
L125A	3'-0"	7'-0"	F	FRP	PFN	2	AL	PFN	-	-	-	AL	-	-	5
L125B	3'-0"	7'-0"	F	FRP	PFN	2	AL	PFN	-	-	-	AL	-	-	5
M110A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
M111A	(2) 3'-0"	7'-0"	NL	HM	PT	2A	HM	PT	-	-	-	-	90	-	3,5,13
N102A	(4) 3'-0"	6'-8"	H	FRP	PFN	5	AL	PFN	-	-	-	AL	-	-	7
N103A	(2) 3'-2"	6'-8"	F	WD	PT	2	HM	PT	-	-	-	-	20	-	20
N103B	(2) 3'-2"	6'-8"	F	WD	PT	2	HM	PT	-	-	-	-	20	-	20
N103C	(2) 3'-2"	6'-8"	F	WD	PT	2	HM	PT	-	-	-	-	20	-	20
N103D	(2) 3'-0"	6'-8"	F	WD	STN	2	HM	PT	-	-	-	-	-	-	20
N103E	(2) 3'-0"	6'-8"	F	WD	STN	2	HM	PT	-	-	-	-	-	-	20
N104A	3'-0"	6'-8"	F	HM	PT	-	HM	PT	-	-	-	-	-	-	23
N105A	3'-0"	6'-8"	F	WD	STN	2	HM	PT	-	-	-	AL	20	-	-
N105B	4'-0"	4'-0"	-	-	-	-	-	-	-	-	-	-	60	-	17
N105C	4'-0"	4'-0"	-	-	-	-	-	-	-	-	-	-	60	-	17
N106A	3'-0"	6'-8"	F	HM	PT	-	HM	PT	-	-	-	-	-	-	23
N110A	3'-0"	4'-0"	F	WD	STN	-	WD	STN	-	-	-	-	-	-	19
N110B	(2) +/- 2'-0"	7'-0"	F	WD	STN	2A	HM	PT	-	-	-	-	-	-	-
N110C	(2) +/- 2'-0"	7'-0"	F	WD	STN	2A	HM	PT	-	-	-	-	-	-	-
N114A	(2)2'-6", (1)2'-5"	6'-8"	F	FRP	PFN	4	AL	PFN	-	-	-	AL	-	-	10



1. All construction procedures and materials used on all water main projects shall conform to Detroit Water and Sewerage Department and The City of Farmington current Standards and Specifications.
2. All hydrants shall be E.I.I.W. #5BR-250 WaterMaster and shall conform to AWWA specification C502 as amended and shall have a minimum 5 1/4" valve opening which meets with the water pressure. Hydrants shall meet all test requirements and be listed by Underwriters Laboratories, Inc. and meet the requirements of Factory Mutual. They must also be in accordance with the East Jordan Iron Works SBR-250 Fire Hydrant Specifications- Farmington. Hydrants shall be traffic style with breakable flange and coupling. Hydrants shall have a swivel flange to allow bonnet to be turned 360 degrees without removing the bonnet, and barrel flanges shall be integrally cast with the barrel. Inlet shoe shall have a bronze valve seat, which can be removed without digging. Inlet connection shall be 6" mechanical joint, ASA-A21-11. Stem threads shall be sealed with double "O" rings and shall be permanently lubricated with all weather grease. Hose connections: two (2) 2 1/2" hose nozzles, and One (1) 4 1/2" pumper nozzle, with National Standard threads. Operating Nut: (1) 1/2" P-Pentagon, open left. All hydrants shall have a Carroll drain. Hydrants shall be painted red above the ground and black below, with a finish coat of Glomortex 501 enamel or approved equal. Nozzle caps shall be painted red.
3. All water mains shall be ductile iron, as per the following specification Ductile iron pipe shall be ANSI 1-A21.51 (AWWA-C151) standard wall thickness, cement lined with bituminous seal coat Class 54 for sizes 6" through 20" and Class 55 for 24" pipe.
4. Gate Valves shall be iron body, fully bracket mounted, E.I.I.W. resilient wedge, non-rising stem, opening counter clockwise conforming to City of Detroit Water and Sewerage Department specifications. All gate valves with operating nuts at a distance greater than 5' below ground surface shall be provided with an extension stem. The length of the extension shall be such that it will be within 5' of ground surface when an extension stem is used. It shall be held in place by two extension stem guide assemblies. Each assembly shall be comprised of a "J" bracket and "L" bracket supplied by E.I.I.W. The stem guides shall be located opposite from each other, and shall be suitably fastened to the wall of the gate well. In addition, a "stop" shall be welded to the extension stem in a location that will prevent the extension stem from slipping off the operating nut. Details of extension stem and method of installation shall be approved by the engineer prior to installation. All precast concrete gate well sections shall be manufactured to conform with ASTM C478, standard specifications for precast reinforced concrete manhole sections, except wall thickness, shall be shown on these details. All joints for precast concrete gate well sections shall be "modified grooved tongue" with gasket manufactured to conform with ASTM C443, standard specification for joints for circular concrete sewer and culvert pipe rubber gaskets. All gate well covers shall be E.I.I.W. #1040 with bolted and have words "Water Dept" in raised letters on the frame cover, or approved equal.
5. Tapping sleeve shall be mechanical joint with DMSW Mechanical Joint Tapping Gate Valve. Lead joint sleeves shall not be used.
6. Water mains shall be laid at least 10 feet horizontally from any existing or proposed gravity sewer line, or subsoil treatment system. The distance shall be measured edge to edge. In cases where it is not practical to maintain a 10 foot separation, the reviewing authority may allow deviation on a case-by-case basis, if supported by data from the design engineer.
7. No installation of water main shall be attempted without City's inspector being present. Unless otherwise specified on plans, top of all water mains shall be 5.5 ft. below existing or proposed road centerline, or 5.5 ft. below existing or proposed ground, whichever results in lower elevation. An 18" minimum vertical clearance between storm or sanitary sewer shall be maintained. This shall be the case where the water main is either above or below the sewer with preference to the water main located above the sewer.
8. Installed pipe shall be pressure tested and leak tested in accordance with AWWA standards. New, cleaned and repaired water mains shall be disinfected in accordance with AWWA standard C651. The specifications shall include detailed procedures for adequate flushing, disinfection, and microbiological testing of all water mains.
9. The design engineer shall furnish The City of Farmington with mylar "As-Built" water main plans along with a computer disk using the most recent release of AutoCad, upon job completion. Plans shall locate all water mains, hydrants and gate valves and wells.
10. All required cross connection devices shall be installed as required by the local plumbing inspector and in accordance with the standards of the Michigan Department of Public Health.
11. Three (3) working days before you dig, dial MISS DIG at 1-800-482-7171.
12. Where work is to be performed in the vicinity of a City of Detroit water main, the contractor shall notify the Detroit Metropolitan Water Services Inspection Department, (Bill Gwinn) at (313) 833-8649 (7:30-9:30 AM, 3:30-4:30 PM), 3 working days prior to start of construction and request an inspection of the job.
13. All pipe and all fittings shall be made in U.S.A.
14. All bolts on all flanged and mechanical joint fittings shall be domestic origin high strength, low alloy COR-BLUE steel bolts or approved equal. These bolts shall meet the current provisions of American National Standard ANSI/AWWA C111/A21.11-90 for rubber gasket joints for ductile iron pressure pipes and fittings. Bolt manufacturer's certificate of compliance must accompany each shipment.
15. All bolts used in securing fittings to the water main shall be "COR-BLUE" bolts or approved equal.
16. BACKFILL NOTE: Under road surfaces, pavement, sidewalk, curb, driveways and where the edge of the trench is within 3 (three) feet of the pavement or as called for on the plans, the trench depth shall be 4 (four) inches lower than the proposed water main elevation. The trench width shall be the outside diameter plus 16 (sixteen) inches for pipe diameters up to 36 (thirty-six) inches and larger. The trench shall be backfilled by placing granular material by the "Controlled Density Method" or other means having approval of the engineer and compacting it to 95 (ninety-five) percent of its maximum unit weight.
17. Tracing wire shall be provided for all water main. Wire shall be copper, 12 gage, stranded, insulated per city requirements. Connection is required at all service laterals, hydrants and gate well, with exposed wire above the ground surface. Conductivity shall be tested by the City prior to the acceptance of the main. All splices shall be made using a gel-cap product which provides a waterproof seal, such as 3M's Direct Burial Splice kit #P054007/09964 or approved equal.
18. Polywrap shall be placed as required by the City.
19. Like size to like size tapping sleeves shall not be used with transite pipe.
20. Where water main is located under pavement, the City shall not be responsible for repairing pavement within the easement in the event that maintenance or repairs to the water main become necessary.



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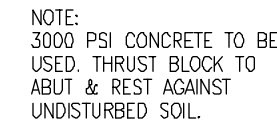
* NOTE: IF THE EXISTING SUBGRADE SOILS MEET THE REQUIREMENTS FOR MDOT GRANULAR MATERIAL CLASS II (MINIMUM 4" THICK), THEN THE WATER MAIN MAY BE LAID DIRECTLY ON THE COMPACTED NATIVE SUBGRADE SOILS.



STANDARD MANHOLE STEP

SECTION X-X

VERTICAL ANCHORAGE DETAIL



NOTE:
ADDITIONAL CONCRETE TO BE PLACED PER ENGINEER'S DIRECTION FOR HYDRANTS
REQUIRING THRUST BLOCKS. THE THRUST BLOCKS ARE INCIDENTAL TO HYDRANT INSTALLATION.



DETAILS ARE TYPICAL FOR WATER MAIN
CONSTRUCTED IN CASING PIPE

8" BRICK BULKHEAD SHALL BE PLACED AT EACH END OF CASING PIPE AFTER PIPE INSTALLATION. SKIDS SHALL TERMINATE 12" FROM END OF CASING TO ALLOW BULKHEADING OF ENTIRE PIPE CIRCUMFERENCE.

WATER MAIN SHALL BE STRAPPED TO WOLMANIZED SKIDS SO THAT THE CARRIER PIPE CANNOT ROLL OVER OR FLOAT. SKIDS SHALL BE 85% OF PIPE LENGTH.

THE CONTRACTOR SHALL SUBMIT IN WRITING THE DETAILS OF THE APPROPRIATE PIPE CASING INSTALLATION AND JOINT RESTRAINT FOR THE REVIEW AND APPROVAL BY THE ENGINEER BEFORE INSTALLATION OF ANY CASING STARTS.

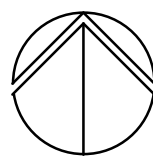
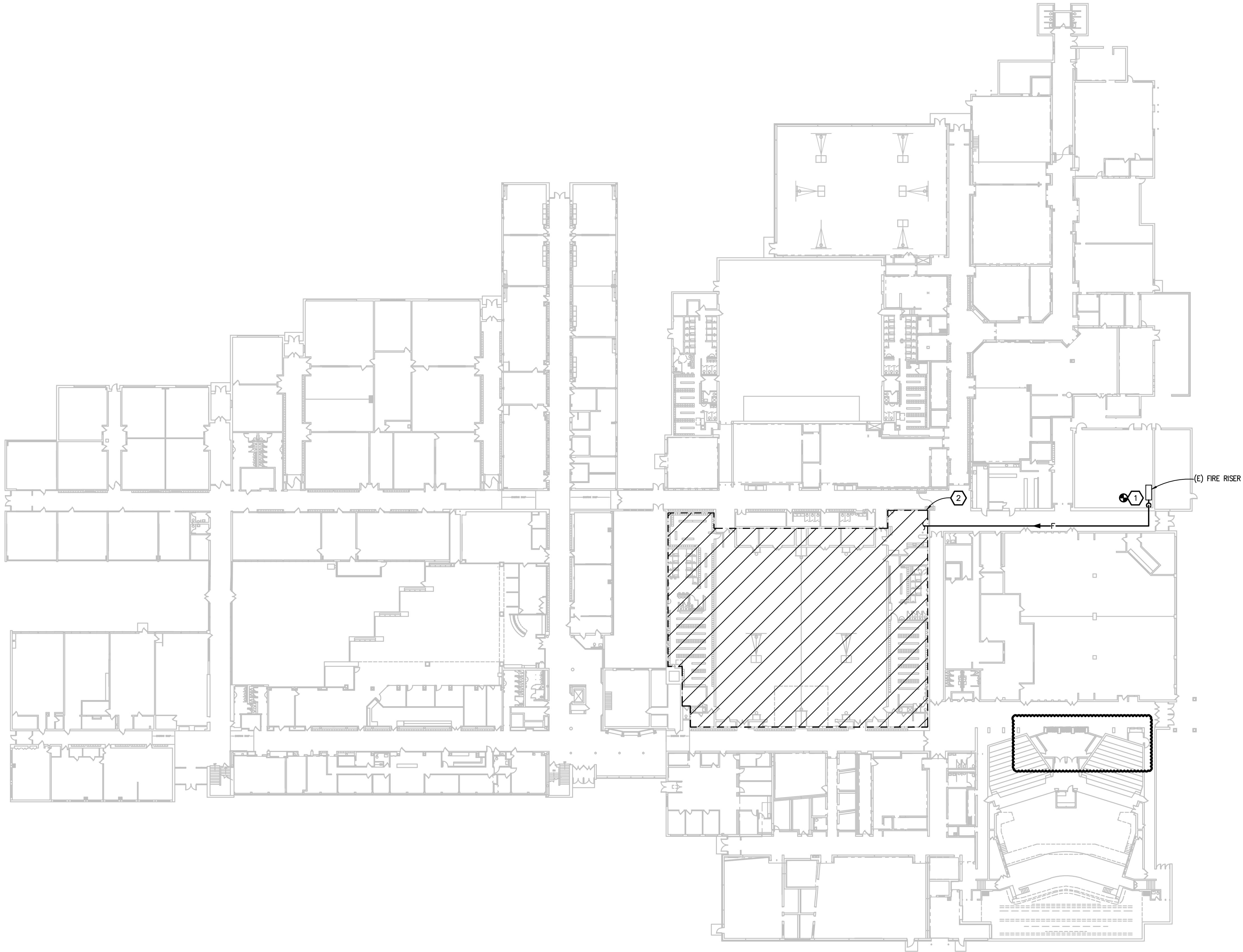
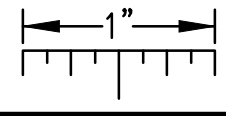


16" WATER MAIN ENCASEMENT
UNDER DRAINS & DITCHES



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THE FOLLOWING DIMENSION EQUALS
ONE INCH WHEN PRINTED TO SCALE.



FIRST LEVEL FIRE PROTECTION COMPOSITE PLAN
SCALE: 1/32" = 1' - 0"

FIRE PROTECTION GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. MINIMUM RUN-OUT PIPE SIZE TO SPRINKLER HEADS SHALL BE 1".
5. PROVIDE AN AUTOMATIC WET PIPE SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13 LIGHT HAZARD CLASSIFICATION. HYDRAULIC CALCULATIONS SHALL BE BASED ON DENSITY OF 0.10 GPM/SQ FT. OVER THE MOST REMOTE 1500 SQ. FT.
6. ACCORDING TO THE EXISTING RISER TAG INFORMATION, THE STATIC PRESSURE AVAILABLE IS 85 PSIG AND RESIDUAL PRESSURE OF 55 PSIG. CONTRACTOR SHALL MAKE HIS OWN PRESSURE AND FLOW TEST PRIOR TO SYSTEM DESIGN.

4 CONSTRUCTION KEY NOTES:

1. REWORK EXISTING FIRE PROTECTION RISER TO ADD NEW ZONE RISER.
2. PROVIDE WET PIPE SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13. NEW ZONE IS APPROXIMATELY 18,000 SQFT. REFER TO ARCHITECTURAL PLANS FOR ROOM TYPE AND CEILING CONSTRUCTION.

WA

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**FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL**

FIRE PROTECTION
COMPOSITE PLANS

PRELIMINARY ■
DESIGN DEVELOPMENT ■
CONSTRUCTION ■
FINAL RECORD □

DRAWN BY: JRM
CHECKED BY: RNR

REVISIONS:

REVISION NO. 2 02-17-16

DATE: February 1, 2016

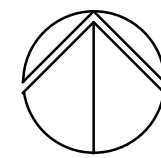
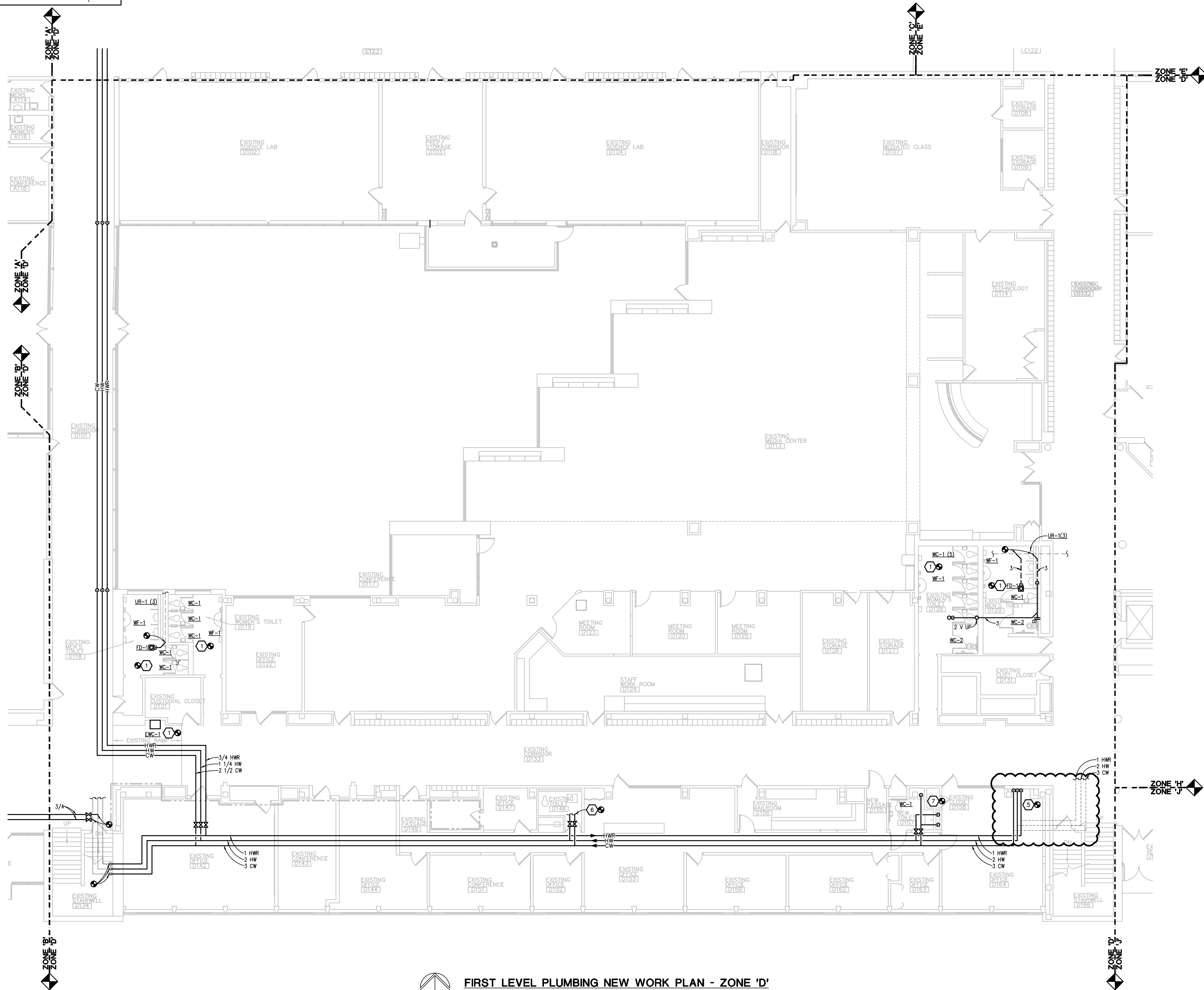
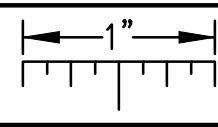
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THE FOLLOWING DIMENSION EQUALS
ONE INCH WHEN PRINTED TO SCALE.



FIRST LEVEL PLUMBING NEW WORK PLAN - ZONE 'D'
SCALE: 1/8" = 1' - 0"

PLUMBING GENERAL NOTES:

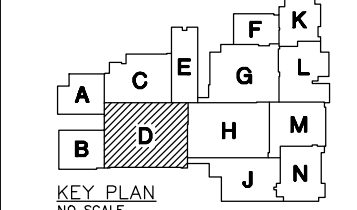
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- INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
- PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
- COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
- PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
- REFER TO ARCHITECTURAL PLANS FOR DIMENSIONED LOCATIONS OF PLUMBING FIXTURES.
- HOT AND COLD WATER PIPING RUN-OUTS TO LAVATORIES AND SINKS SHALL BE 1/2" UNLESS OTHERWISE NOTED.
- PLUMBING VENT PIPING THROUGH ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
- PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.
- MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

CONSTRUCTION KEY NOTES:

- CONNECT NEW PLUMBING FIXTURE TO EXISTING SAN, VENT, CW, AND HW.
- REWORK EXISTING SAN, VENT, CW, AND HW PIPING TO ACCOMMODATE NEW FIXTURE LOCATIONS AS NECESSARY. SAW CUT AND PATCH FLOOR AS NECESSARY TO ACCOMMODATE NEW SAN PIPING.
- EXTEND EXISTING 1 G TO NEW POOL WATER HEATER. ROUTE FWH-1 CONDENSATE THROUGH CONDENSATE NEUTRALIZER AND SPILL TO NEAREST FLOOR DRAIN.
- SAW CUT AND PATCH SLAB AS REQUIRED TO ROUTE NEW UNDERGROUND SANITARY.
- ROUTE NEW PIPING DOWN IN CHASE INTO PIPE TUNNEL BELOW AND CONNECT TO EXISTING MAINS. CONNECT CW SUCH THAT EXISTING IRRIGATION BRANCH PIPE RUNNING OUT OF TUNNEL TO THE SOUTH REMAINS ACTIVE.
- ROUTE 1 1/2 CW AND 1/2 HW TO FIXTURES. CONNECT PER PLUMBING FIXTURE CONNECTION SCHEDULE. ROUTE 1 1/2 SAN FROM NEW LAV TO EXISTING SANITARY PIPING IN TUNNEL BELOW.
- ROUTE 1 1/2 CW AND 1/2 HW TO EXISTING FIXTURES. CONNECT PER PLUMBING FIXTURE CONNECTION SCHEDULE.
- ROUTE 3/4 CW AND 3/4 HW DOWN IN SHEET METAL PIPE ENCLOSURE AND CONNECT TO EXISTING CW AND HW PIPING WITHIN CASEWORK. ABANDON EXISTING UNDERGROUND CW AND HW PIPING CURRENTLY SERVING FIXTURES.
- CONNECT NEW 3 G TO EXISTING 5 GAS MAIN IN BOILER ROOM. PROVIDE MANUFACTURED PIPE PORTAL AT ROOF PENETRATION.
- PROVIDE MANUFACTURED ROOF MOUNTED PIPE SUPPORT.
- SIZE PIPING BASED ON PLUMBING CONNECTION SCHEDULE.
- CONNECT VENT TO NEAREST 2 V.
- EMERGENCY BOILER SHUT DOWN SWITCH.
- ROUTE 3/4 CW DN WALL IN SHEET METAL PIPE ENCLOSURE. ENCLOSURE TO BE FROM FLOOR TO CEILING.

FARMINGTON PUBLIC SCHOOLS 2015 RENOVATIONS FARMINGTON HIGH SCHOOL

FIRST LEVEL PLUMBING NEW
WORK PLAN - ZONE 'D'



PRELIMINARY
DESIGN DEVELOPMENT
CONSTRUCTION
FINAL RECORD

DRAWN BY: JRM
CHECKED BY: RNR

REVISIONS:

ADDENDUM NO. 2 02-17-16
ADDENDUM NO. 1 02-08-16

DATE: February 1, 2016

SHEET NO.:

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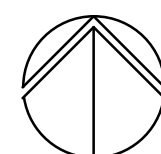
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SCALE: 1/8" = 1' - 0"

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED
COORDINATION. COORDINATION DRAWINGS AND COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, STEEL METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. SUBMIT PROPOSED METHODS OF ANCHORING AND GUIDING PIPING SYSTEMS TO STRUCTURAL ENGINEER FOR APPROVAL.
7. COORDINATE LOCATION OF DUCT-MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
8. BRANCH PIPING SERVING TERMINAL UNIT HEATING COILS OR RADIANT CEILING PANELS SHALL BE 3/4" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING MORE THAN ONE TERMINAL UNIT HEATING COIL SHALL BE 1" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING HOT WATER UNIT HEATERS AND CABINET UNIT HEATERS SHALL BE 1" UNLESS OTHERWISE NOTED.
9. MOUNT THERMOSTATS 48" AFF., NEARLY DOOR. COORDINATE EXACT LOCATION WITH DOOR MOUNT INDICATED NEAR DOOR. COORDINATE EXACT LOCATION WITH ALL OTHER TRADES.

1. PROVIDE NEW HOT WATER HEATING AND CHILLED WATER CONTROL VALVES IN EXISTING UNIT VENTILATOR HOUSING. BRUSH/VACUUM HEATING AND COOLING COILS, STRAIGHTEN FINS, AND VACUUM CLEAN UNIT VENTILATOR HOUSING. SHAKE EXISTING CONDENSATE PIPE AND PROVIDE NEW COPPER FLEW ON EXISTING TERMINATION. REFER TO FLOOR PLANS FOR TYPE OF VALVES (2-WAY OR 3-WAY).
2. PROVIDE NEW ELECTRIC DAMPER ACTUATOR, ELECTRIC THERMOSTAT, ELECTRIC 2-WAY HEATING VALVE AND ACTUATOR ON EXISTING HOT WATER/SPLIT DX UNIT VENTILATOR. NEW DDC CONTROLS SHALL REPLACE EXISTING UNIT PNEUMATIC CONTROLS.
3. PROVIDE NEW DDC CONTROL ON EXISTING PNEUMATICALLY CONTROLLED CHW. PROVIDE NEW TEMP-SENSOR CONTROL, VALVE-ACTUATOR, AND REQUIRED ACCESSORIES FOR COMPLETE DDC CONTROL.
4. CONNECT NEW UNIT VENTILATOR TO EXISTING HOT WATER HEATING AND CHILLED WATER PIPING. ROUTE CROSSOVER PIPING IN UNIT FALSEBACK. CONNECT UNIT CONDENSATE DRAIN TO EXISTING CONDENSATE DRAIN PIPING DOWN THROUGH FLOOR SLAB WITH COPPER PIPING. REFER TO UNIT VENTILATOR SCHEDULE FOR SIZE PANELS.
5. PROVIDE NEW FINNED PIPE TUBE RADIATION COVER TO CONCEAL EXISTING HORIZONTAL STACKED HHV & CHW PIPING BETWEEN CHASE AND UNIT VENTILATOR HOUSING. COVER TO BE SIMILAR TO RITTLING BGS. VERIFY REQUIRED COVER HEIGHT WITH EXISTING PIPING.
6. PROVIDE PIPE ENCLOSURE FROM CEILING DOWN TO FLOOR. ROUTE NEW HHV/R PIPING DOWN TO EXISTING FIN TUBE ELEMENT.
7. PROVIDE NEW PIPE INSULATION AND INSTALL NEW PROTECTIVE COVER ON VERTICAL PIPE. REFER TO DETAIL PIPE ENCLOSURE DETAIL ON SHEET M6.2.
8. REMOVE AND REPLACE EXISTING NCM BUILDING CONTROLLER WITH NEW JOI FACILITY EXPLORER.
9. PROVIDE BRAIDED FLEXIBLE EXPANSION LOOP (METRALOOP MLR604000 SIZE 4 OR SIMILAR). REFER TO SPECIFICATIONS.
10. LOCATE T-STAT IN RETURN AIR OF CABINET UNIT HEATER.
11. EMERGENCY BOILER SHUT DOWN SWITCH.
12. ROUTE HHV'S R DOWN CHASE INTO PIPE TUNNEL BELOW AND CONNECT TO EXISTING HHV'S.



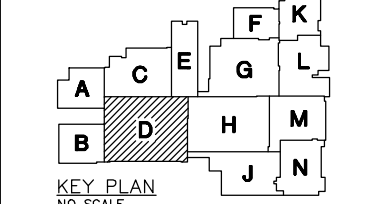
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DEA Project No.: 3045-01-020-01

FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

FIRST LEVEL HVAC PIPING
NEW WORK PLAN - ZONE 'D'



PRELIMINARY	<input checked="" type="checkbox"/>
DESIGN DEVELOPMENT	<input checked="" type="checkbox"/>
CONSTRUCTION	<input checked="" type="checkbox"/>
FINAL RECORD	<input type="checkbox"/>

DRAWN BY: JRM
CHECKED BY: RNR

REVISIONS:

ADDENDUM NO. 2 02-17-10

ADDENDUM NO. 2	02-17-10
ADDENDUM NO. 1	02-02-10

DATE: February 1, 2016

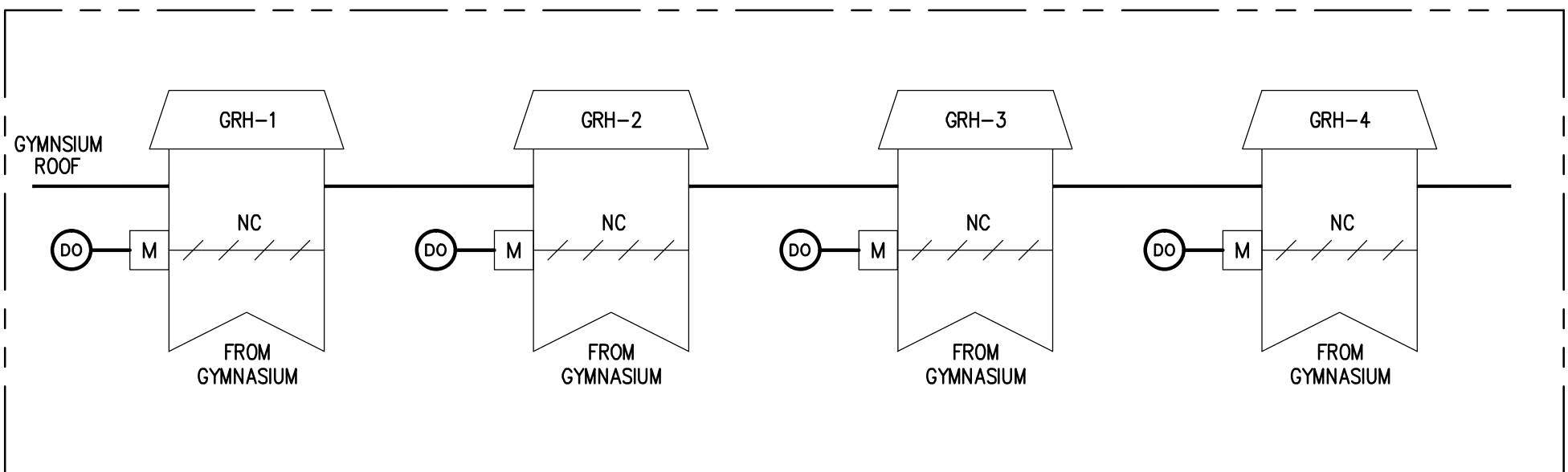
SHEET NO.:

MO 1D

M3.1D

151626C

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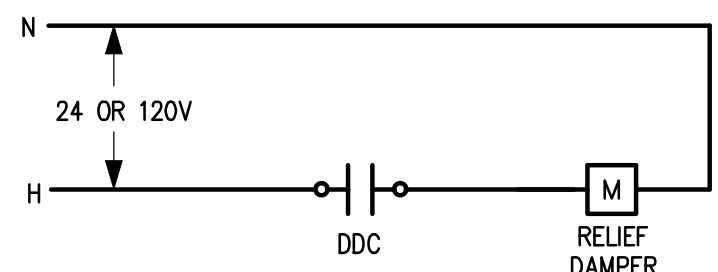
GYMNASIUM AHU ECONOMIZER/RELIEF DAMPERS CONTROL					
	OUTSIDE AIR DAMPER POSITION/GRH DAMPER OPEN/CLOSED SETTING				
	AHU-"A" & AHU-"B"	AHU-"A"	AHU-"A"	AHU-"B"	AHU-"B"
MECHANICAL EQUIPMENT	AT MIN. OA ½	AT MIN. OA PLUS 10%	AT MIN. OA PLUS 30%	AT MIN. OA PLUS 10%	AT MIN. OA PLUS 30%
GRH-1 DAMPER	CLOSED	OPEN	OPEN	---	---
GRH-2 DAMPER	CLOSED	CLOSED	OPEN	---	---
GRH-3 DAMPER	CLOSED	---	---	OPEN	OPEN
GRH-4 DAMPER	CLOSED	---	---	CLOSED	OPEN

GYMNASIUM RELIEF HOODS/DAMPERS CONTROL

- NOTES:
- COORDINATE WIRING WITH EQUIPMENT SUPPLIER.
 - ACTUATED (MOTORIZED) DAMPERS SHALL BE PROVIDED BY THE EQUIPMENT SUPPLIER.

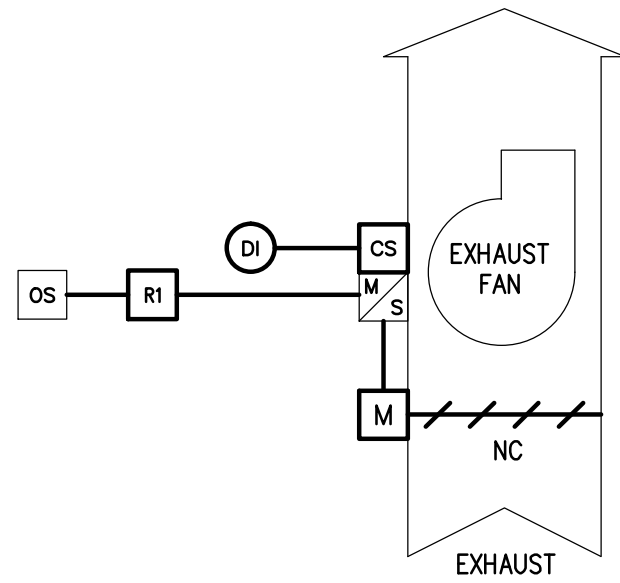
SEQUENCE OF OPERATION

- (E)GYMNASIUM AHU CONTROL:
- ALL SETPOINTS DESCRIBED SHOWN IN THE TABLE ABOVE OR IN THE SEQUENCE OF OPERATION SHALL BE ADJUSTABLE BY SYSTEM OPERATORS (CREATE REQUIRED VIRTUAL POINTS). APPROPRIATE DEADBANDS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS.
 - GYMNASIUM AHU-"A" & AHU-"B" SEQUENCE OF OPERATION SHALL BE MODIFIED TO PROVIDE CONTROL OF THE RELIEF DAMPERS MOUNTED IN RELIEF HOODS ON THE GYMNASIUM ROOF PER THE SCHEDULE ABOVE.
 - RELIEF DAMPERS SHALL ALL BE CLOSED WHEN AHU MIXED AIR DAMPERS ARE AT MINIMUM OA POSITION. DDC SHALL OPEN/CLOSE THE RELIEF AIR DAMPERS BASED ON THE MIXED AIR DAMPER POSITIONS (IN ECONOMIZER) AS SHOWN ABOVE.
 - TAB CONTRACTOR SHALL VERIFY OPERATIONAL CONTROL BY TAKING GYM STATIC PRESSURE READINGS AND CORRECTING SETPOINTS IF NECESSARY.



RELIEF DAMPER CONTROL WIRING

TYPICAL FOR RELIEF AIR HOODS

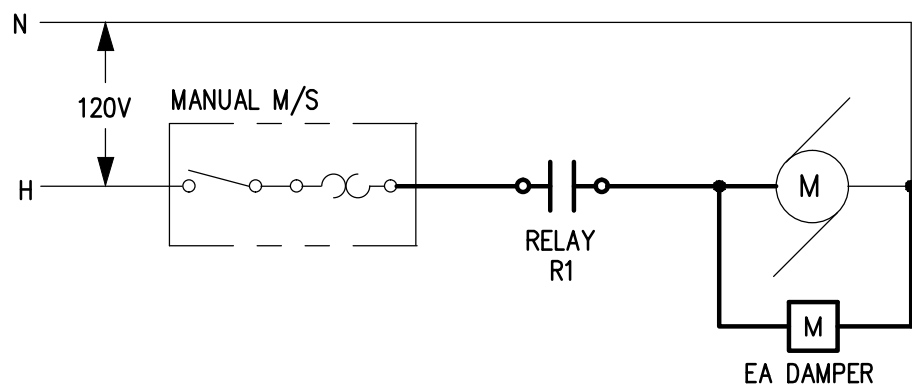


CONCESSIONS EF-4 CONTROL

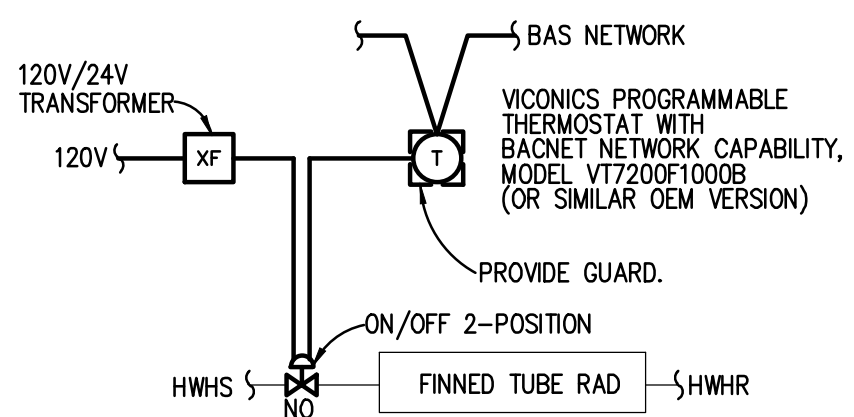
SERVES: NEW CONCESSIONS

SEQUENCE OF OPERATION:

- EXHAUST FAN EF-4 SHALL BE INTERLOCK WIRED TO LIGHTING OCCUPANCY SENSOR THRU RELAY FOR CONCESSIONS ROOM. WIRING INTERLOCK SHALL OPEN DAMPERS.
- DDC SHALL MONITOR EF-4 RUN STATUS THRU CURRENT SWITCH FOR RUNTIME HOURS OF OPERATION. DDC SHALL ALARM THE FAN IF RUNNING BETWEEN MIDNIGHT AND 5A.M.



EF-4 M/S WIRING



FINNED TUBE RADIATION CONTROL

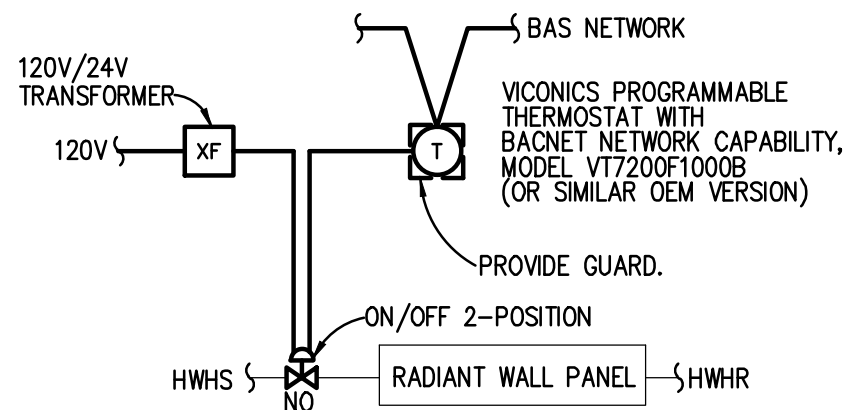
GREENHOUSE

NOTES:

- REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF UNITS.
- GREENHOUSE VENTILATOR IS EXISTING. COORDINATE THE ADDITION OF THE THERMOSTAT AND FINNED TUBE RADIATION VALVE WITH THE VENTILATOR CONTROLS. FINNED TUBE SHALL ACT AS 1ST STAGE OF HEAT.

SEQUENCE OF OPERATION:

- ALL SETPOINTS SHALL BE ADJUSTABLE THROUGH THERMOSTAT.
- THERMOSTAT SHALL OPEN/CLOSE HEATING VALVE AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT OF 68°F DURING BLDG OCCUPANCY AND 55°F DURING BLDG UNOCCUPANCY.
- THERMOSTAT SHALL PROVIDE A 2°F DEADBAND AROUND SETPOINTS FOR CONTROL.



RADIANT WALL PANEL CONTROL

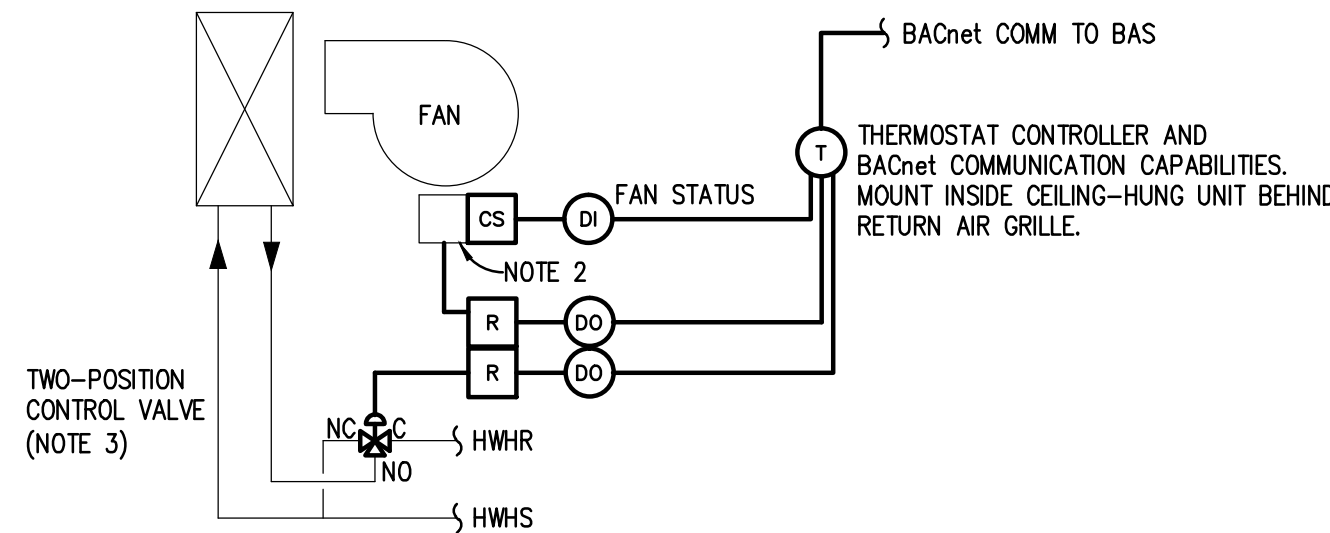
H144 TOILET ROOM

NOTES:

- REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF UNITS.

SEQUENCE OF OPERATION:

- ALL SETPOINTS SHALL BE ADJUSTABLE THROUGH THERMOSTAT.
- THERMOSTAT SHALL OPEN/CLOSE HEATING VALVE AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT OF 68°F DURING BLDG OCCUPANCY AND 55°F DURING BLDG UNOCCUPANCY.
- THERMOSTAT SHALL PROVIDE A 2°F DEADBAND AROUND SETPOINTS FOR CONTROL.



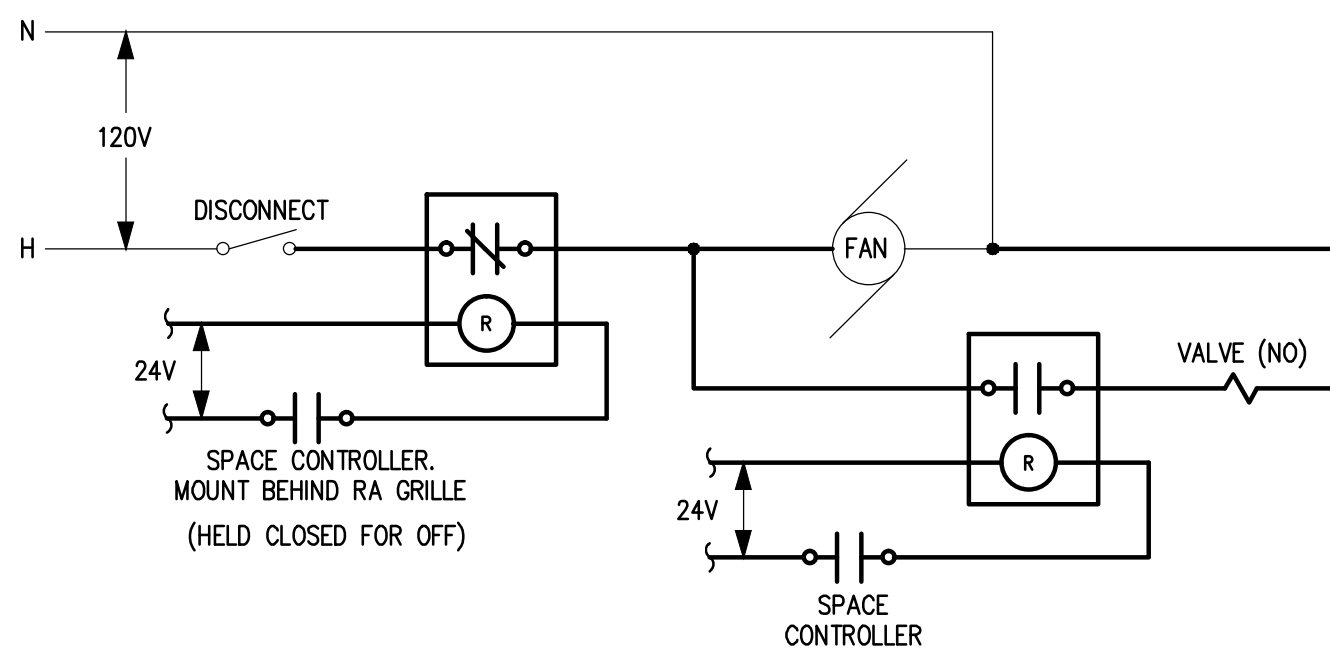
HWH CUH-1 CONTROL

NOTES:

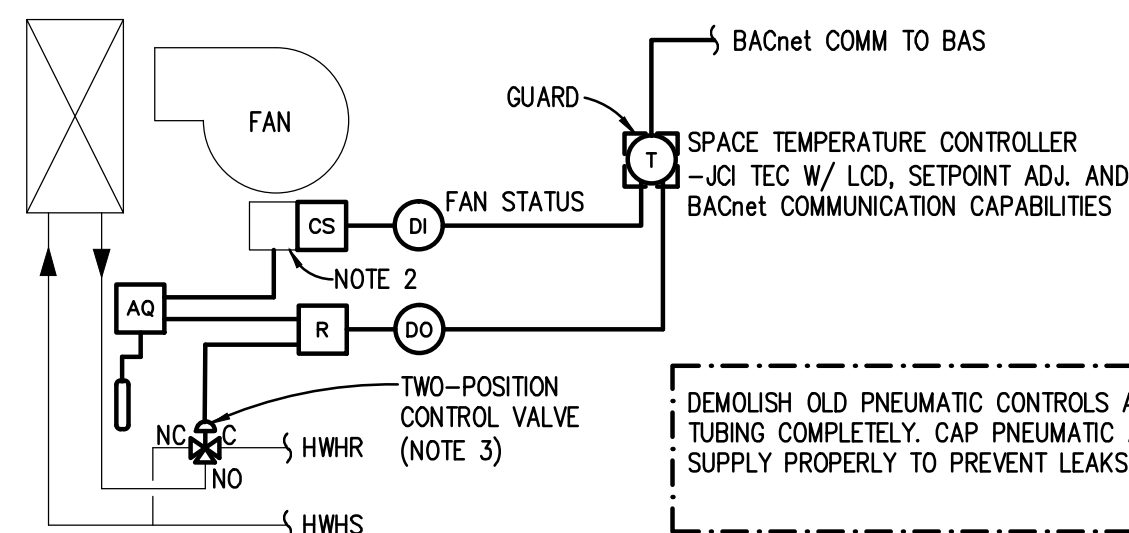
- REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF UNITS.
- CONTROL VALVE MANUFACTURER/MODEL SHALL BE SCHNEIDER ELECTRIC (FORMERLY ERIE) / VM SERIES POPTOP ZONE VALVES WITH AP23A000 MODEL ACTUATOR WITH APPROPRIATE CONTROL SIGNAL TO INTERFACE WITH NEW CONTROLLER.

SEQUENCE OF OPERATION:

- BELOW 50°F OUTSIDE AIR TEMPERATURE, DDC SHALL COMMAND THE CUH FAN TO RUN CONTINUOUSLY. SPACE CONTROLLER, BASED ON SPACE TEMPERATURE, SHALL OPEN/CLOSE HEATING VALVE AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT OF 68°F DURING BLDG OCCUPANCY AND 55°F DURING BLDG UNOCCUPANCY.
- DDC SHALL MONITOR FAN OPERATION. ABNORMAL OPERATING STATUS SHALL ACTIVATE AN ALARM.



HWH CUH-1 WIRING



EXISTING PNEUMATIC CABINET UNIT HEATER UPGRADED TO DDC CONTROLS

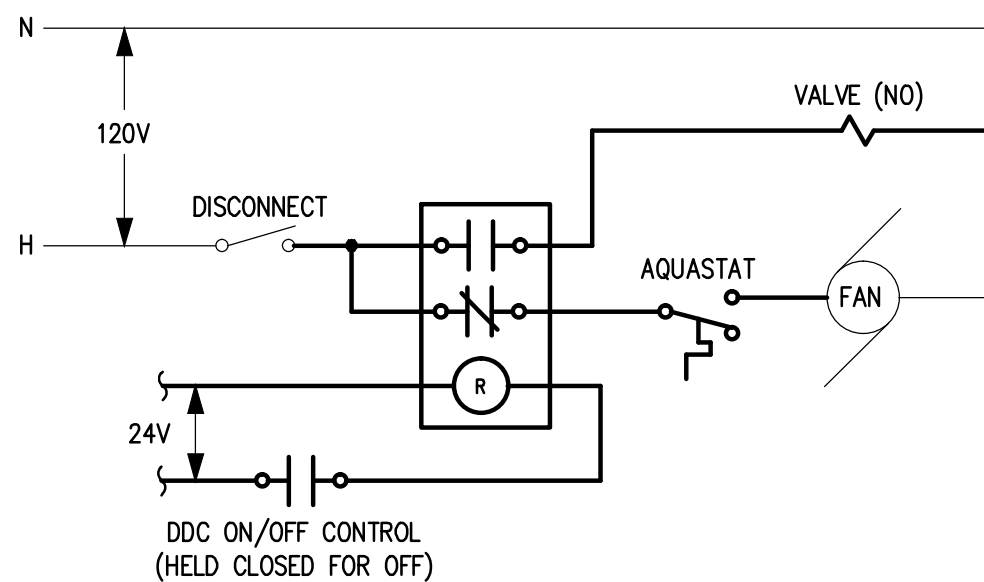
TYPICAL

NOTES:

- REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF UNITS.
- AQUASTAT SHALL BE WIRED IN SERIES WITH FAN CONTROL WIRING CIRCUIT.
- CONTROL VALVE MANUFACTURER/MODEL SHALL BE SCHNEIDER ELECTRIC (FORMERLY ERIE) / VM SERIES POPTOP ZONE VALVES WITH AP23A000 MODEL ACTUATOR WITH APPROPRIATE CONTROL SIGNAL TO INTERFACE WITH NEW CONTROLLER.

SEQUENCE OF OPERATION:

- SPACE TEMP CONTROLLER SHALL ENABLE/DISABLE FAN CIRCUIT AND OPEN/CLOSE HEATING VALVE AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT OF 68°F DURING BLDG OCCUPANCY AND 55°F DURING BLDG UNOCCUPANCY. FAN SHALL ACTIVATE UPON PROOF OF HWHR FLOW BY AQ.
- DDC SHALL MONITOR FAN OPERATION. ABNORMAL OPERATING STATUS SHALL ACTIVATE AN ALARM.



HWH CUH WIRING

TYPICAL

WA

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PEL-00000000000000000000

FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

TEMPERATURE CONTROLS

PRELIMINARY
DESIGN DEVELOPMENT
CONSTRUCTION
FINAL RECORD

DRAWN BY: JRM
CHECKED BY: RNR

REVISIONS:

ADDENDUM NO. 2 02-17-16
ADDENDUM NO. 1 02-08-16

DATE: February 1, 2016

SHEET NO.:

M8.7

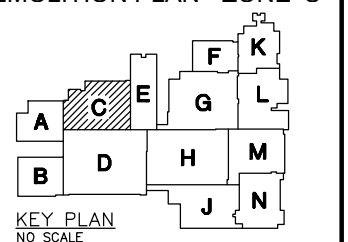
JOB NO. 151626C



SCALE: 1/8" = 1' - 0"

AM. REMOVE/ REINSTALL CONVECTOR/ CONVECTOR COVER AS REQUIRED FOR ARCHITECTURAL REMODELING. COORDINATE WITH ARCHITECTURAL TRADES.

FIRST LEVEL MECHANICAL
DEMOLITION PLAN - ZONE 'C'



PRELIMINARY	<input checked="" type="checkbox"/>
DESIGN DEVELOPMENT	<input checked="" type="checkbox"/>
CONSTRUCTION	<input checked="" type="checkbox"/>
FINAL RECORD	<input type="checkbox"/>

DRAWN BY: JRM
CHECKED BY: RNR

REVISIONS:

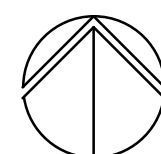
APPENDIX NO. 2 02-17-16

DATE: February 1, 2016

SHEET NO.:

MD1.1C

OB NO. 151626C



FIRST LEVEL MECHANICAL DEMOLITION PLAN - ZONE 'D'
SCALE: 1/8" = 1' - 0"

1. ANY INTERRUPTION OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE.
2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. ACTUAL ROUTING AND SIZES OF EXISTING PIPING AND DUCTWORK MIGHT DIFFER TO A LIMITED EXTENT FROM WHAT IS SHOWN. MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL EXISTING CONDITIONS SHALL BE REPORTED TO THE ENGINEER.
3. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
4. ALL MECHANICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE, INCLUDING ALL RELATED ITEMS SUCH AS HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN DENSE PIPES AND DUCTWORK.

A. REMOVE EXISTING PLUMBING FIXTURE AND PREPARE PIPING FOR NEW WORK.

B. REMOVE EXISTING JOI NETWORK CONTROLLER AND PREPARE FOR NEW JOI FX60 NETWORK CONTROLLER.

C. REMOVE UNIT VENTILATORS AND CONTROLS COMPLETE. PREPARE PIPING FOR NEW WORK.

D. REMOVE EXISTING PNEUMATIC CONTROLS COMPLETE INCLUDING THERMOSTAT, DAMPER ACTUATOR, HEATING CONTROL VALVE AND SPLIT CONDENSING UNIT CONTROL.

E. REMOVE GALV. DOMESTIC CW PIPING. PREPARE PIPE FOR NEW WORK.

F. REMOVE POOL BOILER, FLUE, COMBUSTION AIR, AND PIPING BACK TO PVC MAINS COMPLETE.

G. REMOVE EXISTING SUPPLY DUCTWORK AND ASSOCIATED DIFFUSERS. REMOVE EXISTING RETURN GRILLES AND CONNECTED RETURN DIFFUSERS. PATCH WALLS TO MATCH EXISTING CONDITIONS IF NECESSARY.

H. REMOVE EXISTING HV UNIT AND CONTROLS COMPLETE. REMOVE EXISTING OUTSIDE AIR INTAKE HOOD AND CAP EXISTING ROOF CURB. REFER TO ROOF CURB CAP DETAIL ON SHEET M6.2.

I. REMOVE AHU AND CONTROLS COMPLETE. REMOVE HHWS/R BACK TO MAIN AND CAP. REMOVE OUTSIDE AIR PLENUM AND BLANK OFF LOUVER. REFER TO EXISTING EXTERIOR LOUVER CLASH DETAIL ON SHEET M6.2.

J. REMOVE EXISTING HOT WATER HEATING AND CHILLED WATER CONTROL VALVES AND ACTUATORS FROM EXISTING UNIT VENTILATOR. PREPARE PIPING FOR NEW VALVES.

K. REMOVE EXISTING HEATING AND VENTILATION UNIT, DUCTWORK, AND CONTROLS COMPLETE.

L. REMOVE EXISTING SUPPLY, RETURN, AND EXHAUST DUCTWORK COMPLETE. REMOVE EXISTING GRILLES, REGISTER, AND DIFFUSERS COMPLETE. REMOVE EXISTING HHWS/R PIPING BACK TO MAIN AND PREPARE FOR NEW CONNECTION. SEE NEW WORK PLANS. REMOVE CONTROLS AND TEMPERATURE SENSORS COMPLETE. REMOVE EXISTING OUTSIDE AIR INTAKE HOOD AND CAP CURB. SEE ROOF CURB CAP DETAIL ON SHEET M6.3.

M. REMOVE EXISTING MAKE UP AIR UNIT COMPLETE. PREPARE DUCTWORK AND GAS PIPING FOR NEW UNIT. EXISTING CURB AND ROOF RAELS TO REMAIN. PROVIDE PRE-DEMO AIR FLOW READINGS.

N. REMOVE EXISTING ROOF MOUNTED EXHAUST FANS COMPLETE. EXISTING CURB AND DUCTWORK TO REMAIN. PROVIDE PRE-DEMO AIR FLOW READINGS.

O. REMOVE EXISTING DRINKING FOUNTAINS. PREPARE CW PIPING FOR NEW CONNECTION.

P. REMOVE EXISTING PNEUMATIC CONTROLS ON CABINET UNIT HEATER COMPLETE INCLUDING THERMOSTAT AND VALVE ACTUATOR. REPLACE WITH DDC CONTROLS.

Q. REMOVE CONVECTOR AND CONTROLS COMPLETE. REMOVE HW/HI PIPING BACK TO MAINS AND CAP.

R. REMOVE PLUMBING FIXTURE. REMOVE CW AND HW PIPING FEED FROM BELOW.

S. EXISTING FINNED TUBE TO REMAIN.

T. PROVIDE PRE-DEMO HOT WATER HEATING WATER FLOW TEST. RECORD READINGS.

U. REMOVE EXISTING FLOOR DRAIN AND CAP SAN BACK AT MAIN.

V. REMOVE HHWS/R PIPING AND FINNED TUBE IN GREENHOUSE. PREPARE HHWS/R PIPING FOR NEW WORK.

W. REMOVE EXISTING SUPPLY DIFFUSERS AND EXHAUST GRILLES. PREPARE SHEET METAL FOR NEW WORK.

X. REMOVE EXISTING SINK AND PIPING BACK TO MAIN AND CAP.

Y. REMOVE EXISTING MASTER MIXING VALVE AND PIPING BACK TO MAINS.

Z. REMOVE EXISTING RETURN GRILLES AND REMOVE BRANCH DUCT BACK TO MAINS AND CAP.

AA. REMOVE/ SALVAGE DIFFUSER. PREPARE FOR NEW WORK.

AB. REMOVE EXISTING TIME CONTROLLED FLUSH VALVE FOR URINALS AND ASSOCIATED COMPONENTS COMPLETE. PREPARE EXISTING 1 1/4 CW BRANCH FOR NEW WORK.

AC. REMOVE EXISTING SUPPLY DIFFUSERS AND DUCT WORK BACK TO MAIN. PREPARE DUCT WORK MAINS FOR NEW WORK. PROVIDE PRE-DEMO AIRFLOW READINGS.

AD. REMOVE EXISTING PIPE INSULATION. PREPARE PIPING FOR NEW WORK.

AE. REMOVE DIFFUSERS, GRILLES, AND REGISTERS. REMOVE SHEET METAL AND SUPPORTS BACK TO MECHANICAL ROOM WALL. PROVIDE PRE-DEMO AIRFLOW READINGS.

AF. REMOVE EXISTING SAN AND PREPARE FOR NEW WORK.

AG. REMOVE HHWS/R FROM BELOW. PREPARE EXISTING CUH FOR NEW PIPING CONNECTION.

AH. REMOVE EXISTING EXHAUST GRILLES. PREPARE DUCT WORK FOR NEW WORK. PROVIDE PRE-DEMO AIR FLOW READINGS.

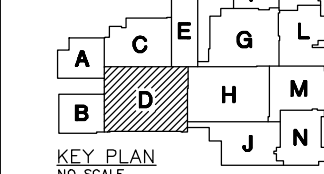
AJ. REMOVE DUCT WORK AND ASSOCIATED SUPPORTS COMPLETE..

AK. REMOVE/ SALVAGE UNIT, SHEET METAL, AND DAMPER TO ALLOW FOR CONSTRUCTION OF NEW GREENHOUSE. PREPARE UNIT FOR REINSTALLATION. ALL CONTROLS TO REMAIN.

AL. REMOVE UNIT HEATER AND CAP PIPING IN A CONCEALED MANOR.

AM. CAP EXISTING RIDGE VENT. REFER TO ROOF CURB CAP DETAIL ON SHEET M6.2.

AN. REMOVE/ REINSTALL CONVECTORY/ CONVECTOR COVER AS REQUIRED FOR ARCHITECTURAL REMODELING. COORDINATE WITH ARCHITECTURAL TRADES.



PRELIMINARY
DESIGN DEVELOPMENT
CONSTRUCTION
FINAL RECORD

DRAWN BY: J
CHECKED BY: R

REVISIONS:

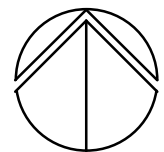
ADDENDUM NO. 2 02.13.14

DATE: February 1, 2016

SHEET NO. :

MD1.1D

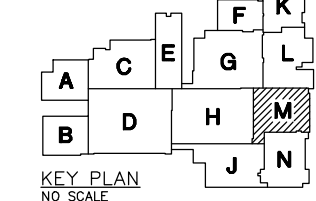
JOB NO. 151626C



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1. REMOVE EXISTING PLUMBING FIXTURE AND PREPARE PIPING FOR NEW WORK.
2. REMOVE EXISTING CUH NETWORK CONTROLLER AND PREPARE FOR NEW CUH FX60 NETWORK CONTROLLER.
3. REMOVE UNIT VENTILATORS AND CONTROLS COMPLETE. PREPARE PIPING FOR NEW WORK.
4. REMOVE EXISTING PNEUMATIC CONTROLS COMPLETE INCLUDING THERMOSTAT, DAMPER ACTUATOR, HEATING CONTROL VALVE AND SPLIT CONDENSING UNIT CONTROL.
5. REMOVE GALV. DOMESTIC CW PIPING. PREPARE PIPE FOR NEW WORK.
6. REMOVE POOL BOILER, FLUE, COMBUSTION AIR, AND PIPING BACK TO PVC MAINS COMPLETE.
7. REMOVE EXISTING SUPPLY DUCTWORK AND ASSOCIATED DIFFUSERS. REMOVE EXISTING RETURN GRILLES AND UNCONNECTED RETURN DUCTWORK. PATCH WALLS TO MATCH EXISTING CONDITIONS IF NECESSARY.
8. REMOVE EXISTING HY UNIT AND CONTROLS COMPLETE. REMOVE EXISTING OUTSIDE AIR INTAKE HOOD AND CAP EXISTING ROOF CURB. REFER TO ROOF CURB CAP DETAIL ON SHEET M6.2.
9. REMOVE AHU AND CONTROLS COMPLETE. REMOVE HWHS/R BACK TO MAIN AND CAP. REMOVE OUTSIDE AIR PLENUM AND BLANK OFF LOUVER. REFER TO EXISTING EXTERIOR LOUVER CLOSURE DETAIL ON SHEET M6.2.
10. REMOVE EXISTING HOT WATER HEATING AND CHILLED WATER CONTROL VALVES AND ACTUATORS FROM EXISTING UNIT VENTILATOR. PREPARE PIPING FOR NEW VALVES.
11. REMOVE EXISTING HEATING AND VENTILATION UNIT, DUCTWORK, AND CONTROLS COMPLETE.
12. REMOVE EXISTING SUPPLY, RETURN, AND EXHAUST DUCTWORK COMPLETE. REMOVE EXISTING GRILLES, REGISTER, AND DIFFUSERS COMPLETE. REMOVE EXISTING HWHS/R PIPING BACK TO MAIN AND PREPARE FOR NEW CONNECTION. SEE NEW WORK PLANS. REMOVE CONTROLS AND TEMPERATURE SENSORS COMPLETE. REMOVE EXISTING OUTSIDE AIR INTAKE HOOD AND CAP CURB. SEE ROOF CURB CAP DETAIL ON SHEET M6.3.
13. REMOVE EXISTING MAKE UP AIR UNIT COMPLETE. PREPARE DUCTWORK AND GAS PIPING FOR NEW UNIT. EXISTING CURB AND ROOF RAILS TO REMAIN. PROVIDE PRE-DEMO AIR FLOW READINGS.
14. REMOVE EXISTING ROOF MOUNTED EXHAUST FANS COMPLETE. EXISTING CURB AND DUCTWORK TO REMAIN. PROVIDE PRE-DEMO AIR FLOW READINGS.
15. REMOVE EXISTING DRINKING FOUNTAINS. PREPARE CW PIPING FOR NEW CONNECTION.
16. REMOVE EXISTING PNEUMATIC CONTROLS ON CABINET UNIT DDC CONTROLS. INCLUDING THERMOSTAT AND VALVE ACTUATOR. REPLACE WITH HEAT CONTROLS.
17. REMOVE CONNECTOR AND CONTROLS COMPLETE. REMOVE HHM PIPING BACK TO MAINS AND CAP.
18. REMOVE PLUMBING FIXTURE. REMOVE CW AND HW PIPING FEED FROM BELOW.
19. EXISTING FINNED TUBE TO REMAIN.
20. PROVIDE PRE-DEMO HOT WATER HEATING WATER FLOW TEST. RECORD READINGS.
21. REMOVE EXISTING FLOOR DRAIN AND CAP SAN BACK AT MAIN.
22. REMOVE HWHS/R PIPING AND FINNED TUBE IN GREENHOUSE. PREPARE HWHS/R PIPING FOR NEW WORK.
23. REMOVE EXISTING SUPPLY DIFFUSERS AND EXHAUST GRILLES. PREPARE SHEET METAL FOR NEW WORK.
24. REMOVE EXISTING SINK AND PIPING BACK TO MAIN AND CAP.
25. REMOVE EXISTING MASTER MIXING VALVE AND PIPING BACK TO MAINS.
26. REMOVE EXISTING RETURN GRILLES AND REMOVE BRANCH DUCT WORK BACK TO MAINS AND CAP.
27. A. REMOVE/ SALVAGE DIFFUSER. PREPARE FOR NEW WORK.
28. B. REMOVE EXISTING TIME CONTROLLED FLUSH VALVE FOR URINALS AND ASSOCIATED COMPONENTS COMPLETE. PREPARE EXISTING 1 1/4" CW BRANCH FOR NEW WORK.
29. A. C. REMOVE EXISTING SUPPLY DIFFUSERS AND DUCT WORK BACK TO MAIN. PREPARE DUCT WORK MAINS FOR NEW WORK. PROVIDE PRE-DEMO AIRFLOW READINGS.
30. D. REMOVE EXISTING PIPE INSULATION. PREPARE PIPING FOR NEW WORK.
31. A. E. REMOVE EXISTING GRILLES, AND REGISTERS. REMOVE SHEET METAL AND SUPPORTS BACK TO MECHANICAL ROOM WALL. PROVIDE PRE-DEMO AIRFLOW READINGS.
32. F. REMOVE EXISTING SAN AND PREPARE FOR NEW WORK.
33. A. G. REMOVE HWHS/R FROM BELOW. PREPARE EXISTING CUH FOR NEW PIPING CONNECTION.
34. A. H. REMOVE EXISTING EXHAUST GRILLES. PREPARE DUCT WORK FOR NEW WORK. PROVIDE PRE-DEMO AIR FLOW READINGS.
35. I. REMOVE DUCT WORK AND ASSOCIATED SUPPORTS COMPLETE..
36. A. J. REMOVE/ SALVAGE UNIT, SHEET METAL, AND DAMPER TO ALLOW FOR CONSTRUCTION OF NEW GREENHOUSE. PREPARE UNIT FOR REINSTALLATION. ALL CONTROLS TO REMAIN.
37. K. REMOVE UNIT HEATER AND CAP PIPING IN A CONCEALED MANOR.
38. A. L. REMOVE EXISTING RIDGE VENT. REFER TO ROOF CURB CAP DETAIL ON SHEET M6.2.
39. A. M. REMOVE/ REINSTATE CONNECTOR/ CONNECTOR COVER AS REQUIRED FOR ARCHITECTURAL REMODELING. COORDINATE WITH ARCHITECTURAL TRADES.



PRELIMINARY	
DESIGN DEVELOPMENT	
CONSTRUCTION	
FINAL RECORD	

DRAWN BY: JR
CHECKED BY: RN

REVISIONS:

ADDENDUM NO. 2 02-17-

DATE: February 1, 201

SHEET NO.:

MD1.1M

JOB NO. 151626C

FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

FIRST LEVEL MECHANICAL
DEMOLITION PLAN - ZONE

KEY PLAN
NO SCALE

PRELIMINARY	
DESIGN DEVELOPMENT	
CONSTRUCTION	
FINAL RECORD	

DRAWN BY: JR
CHECKED BY: RN

REVISIONS:

ADDENDUM NO. 2 02-17-

DATE: February 1, 201

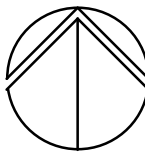
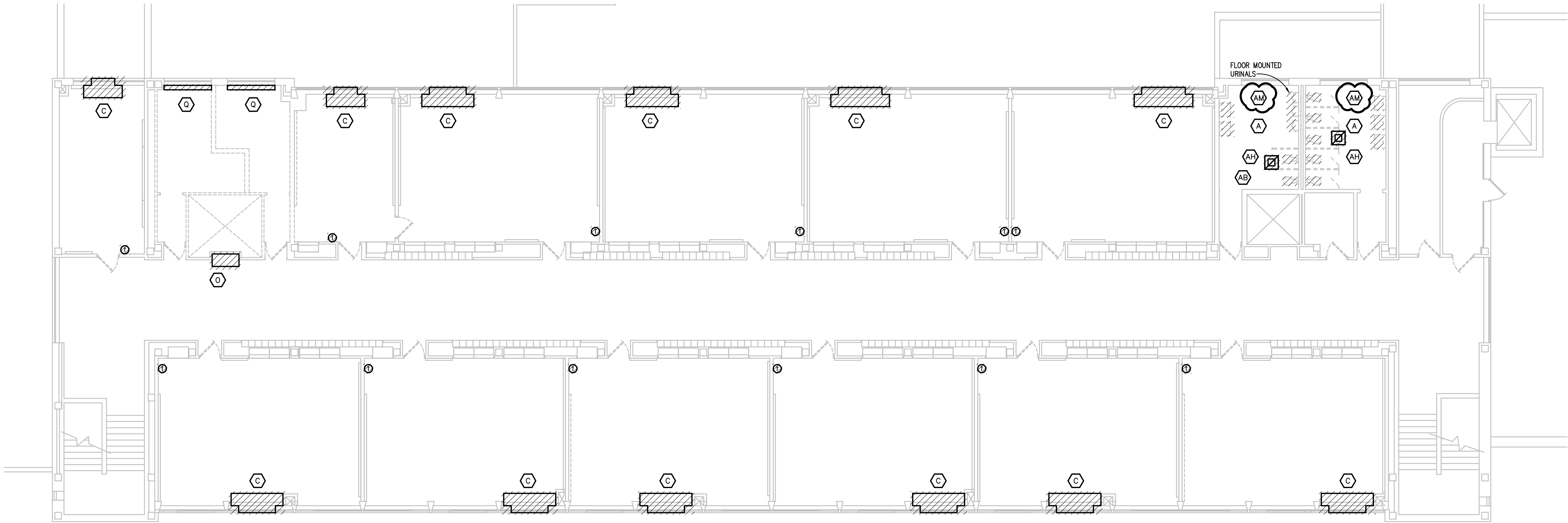
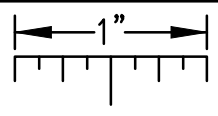
SHEET NO.:

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JOB NO. 151626C

G:\2015\2015-0142-001\05 Farmington HS\2015-0142-05-MD1-MD1-DP2.dwg, MD1.2D, 2/17/2016 10:51:56 AM, James McKinnon, Electronic - PDF.pc3 1.93331, Peter Basso Associates Inc.

THE FOLLOWING DIMENSION EQUALS
ONE INCH WHEN PRINTED TO SCALE.



SECOND LEVEL MECHANICAL DEMOLITION PLAN - ZONE 'D'
SCALE: 1/8" = 1' - 0"

MECHANICAL GENERAL DEMOLITION NOTES:

1. ANY INTERRUPTION OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE.
2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. ACTUAL ROUTING AND SIZES OF EXISTING PIPING AND DUCTWORK MIGHT DIFFER TO A LIMITED EXTENT FROM WHAT IS SHOWN. MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL EXISTING CONDITIONS SHALL BE REPORTED TO THE ENGINEER.
3. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
4. ALL MECHANICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE, INCLUDING ALL RELATED ITEMS SUCH AS HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES AND DUCTWORK.

DEMOLITION KEY NOTES:

- A. REMOVE EXISTING PLUMBING FIXTURE AND PREPARE PIPING FOR NEW WORK.
- B. REMOVE EXISTING JCI NETWORK CONTROLLER AND PREPARE FOR NEW JCI FX60 NETWORK CONTROLLER.
- C. REMOVE UNIT VENTILATORS AND CONTROLS COMPLETE. PREPARE PIPING FOR NEW WORK.
- D. REMOVE EXISTING PNEUMATIC CONTROLS COMPLETE INCLUDING THERMOSTAT, DAMPER ACTUATOR, HEATING CONTROL VALVE AND SPLIT CONDENSING UNIT CONTROL.
- E. REMOVE GALV. DOMESTIC CW PIPING. PREPARE PIPE FOR NEW WORK.
- F. REMOVE POOL BOILER, FLUE, COMBUSTION AIR, AND PIPING BACK TO PVC MAINS COMPLETE.
- G. REMOVE EXISTING SUPPLY DUCTWORK AND ASSOCIATED DIFFUSERS. REMOVE EXISTING RETURN GRILLES AND CONNECTED RETURN DUCTWORK. PATCH WALLS TO MATCH EXISTING CONDITIONS IF NECESSARY.
- H. REMOVE EXISTING HV UNIT AND CONTROLS COMPLETE. REMOVE EXISTING OUTSIDE AIR INTAKE HOOD AND CAP EXISTING ROOF CURB. REFER TO ROOF CURB CAP DETAIL ON SHEET M6.2.
- I. REMOVE AHU AND CONTROLS COMPLETE. REMOVE HHWS/R BACK TO MAIN AND CAP. REMOVE OUTSIDE AIR FLENUM AND BLANK OFF LOUVER. REFER TO EXISTING EXTERIOR LOUVER CLOSURE DETAIL ON SHEET M6.2.
- J. REMOVE EXISTING HOT WATER HEATING AND CHILLED WATER CONTROL VALVES AND ACTUATORS FROM EXISTING UNIT VENTILATOR. PREPARE PIPING FOR NEW VALVES.
- K. REMOVE EXISTING HEATING AND VENTILATION UNIT, DUCTWORK, AND CONTROLS COMPLETE.
- L. REMOVE EXISTING SUPPLY, RETURN, AND EXHAUST DUCTWORK COMPLETE. REMOVE EXISTING GRILLES, REGISTER, AND DIFFUSERS COMPLETE. REMOVE EXISTING HHWS/R PIPING BACK TO MAIN AND PREPARE FOR NEW CONNECTION. SEE NEW WORK PLANS. REMOVE CONTROLS AND TEMPERATURE SENSORS COMPLETE. REMOVE EXISTING OUTSIDE AIR INTAKE HOOD AND CAP CURB. SEE ROOF CURB CAP DETAIL ON SHEET M6.3.
- M. REMOVE EXISTING MAKE UP AIR UNIT COMPLETE. PREPARE DUCTWORK AND GAS PIPING FOR NEW UNIT. EXISTING CURB AND ROOF RAILS TO REMAIN. PROVIDE PRE-DEMO AIR FLOW READINGS.
- N. REMOVE EXISTING ROOF MOUNTED EXHAUST FANS COMPLETE. EXISTING CURB AND DUCTWORK TO REMAIN. PROVIDE PRE-DEMO AIR FLOW READINGS.
- O. REMOVE EXISTING DRINKING FOUNTAINS. PREPARE CW PIPING FOR NEW CONNECTION.
- P. REMOVE EXISTING PNEUMATIC CONTROLS ON CABINET UNIT HEATER COMPLETE INCLUDING THERMOSTAT AND VALVE ACTUATOR. REPLACE WITH DDC CONTROLS.
- Q. REMOVE CONVECTOR AND CONTROLS COMPLETE. REMOVE HHW PIPING BACK TO MAINS AND CAP.
- R. REMOVE PLUMBING FIXTURE. REMOVE CW AND HW PIPING FEED FROM BELOW.
- S. EXISTING FINNED TUBE TO REMAIN.
- T. PROVIDE PRE-DEMO HOT WATER HEATING WATER FLOW TEST. RECORD READINGS.
- U. REMOVE EXISTING FLOOR DRAIN AND CAP SAN BACK AT MAIN.
- V. REMOVE HHWS/R PIPING AND FINNED TUBE IN GREENHOUSE. PREPARE HHWS/R PIPING FOR NEW WORK.
- W. REMOVE EXISTING SUPPLY DIFFUSERS AND EXHAUST GRILLES. PREPARE SHEET METAL FOR NEW WORK.
- X. REMOVE EXISTING SINK AND PIPING BACK TO MAIN AND CAP.
- Y. REMOVE EXISTING MASTER MIXING VALVE AND PIPING BACK TO MAINS.
- Z. REMOVE EXISTING RETURN GRILLES AND REMOVE BRANCH DUCT WORK BACK TO MAINS AND CAP.
- AA. REMOVE/ SALVAGE DIFFUSER. PREPARE FOR NEW WORK.
- AB. REMOVE EXISTING TIME CONTROLLED FLUSH VALVE FOR URINALS AND ASSOCIATED COMPONENTS COMPLETE. PREPARE EXISTING 1 1/4" CW BRANCH FOR NEW WORK.
- AC. REMOVE EXISTING SUPPLY DIFFUSERS AND DUCT WORK BACK TO MAIN. PREPARE DUCT WORK MAINS FOR NEW WORK. PROVIDE PRE-DEMO AIRFLOW READINGS.
- AD. REMOVE EXISTING PIPE INSULATION. PREPARE PIPING FOR NEW WORK.
- AE. REMOVE DIFFUSERS, GRILLES, AND REGISTERS. REMOVE SHEET METAL AND SUPPORTS BACK TO MECHANICAL ROOM WALL. PROVIDE PRE-DEMO AIRFLOW READINGS.
- AF. REMOVE EXISTING SAN AND PREPARE FOR NEW WORK.
- AG. REMOVE HHWS/R FROM BELOW. PREPARE EXISTING CUH FOR NEW PIPING CONNECTION.
- AH. REMOVE EXISTING EXHAUST GRILLES. PREPARE DUCT WORK FOR NEW WORK. PROVIDE PRE-DEMO AIR FLOW READINGS.
- AI. REMOVE DUCT WORK AND ASSOCIATED SUPPORTS COMPLETE.
- AJ. REMOVE/ SALVAGE UNIT, SHEET METAL, AND DAMPER TO ALLOW FOR CONSTRUCTION OF NEW GREENHOUSE. PREPARE UNIT FOR REINSTALLATION. ALL CONTROLS TO REMAIN.
- AK. REMOVE UNIT HEATER AND CAP PIPING IN A CONCEALED MANOR.
- AL. CAP EXISTING RIDGE VENT. REFER TO ROOF CURB CAP DETAIL ON SHEET M6.2.
- AM. REMOVE/ REINSTALL CONVECTOR/ CONVECTOR COVER AS REQUIRED FOR ARCHITECTURAL REMODELING. COORDINATE WITH ARCHITECTURAL TRADES.

FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

SECOND LEVEL
MECHANICAL DEMOLITION
PLAN - ZONE 'D'

PRELIMINARY ■
DESIGN DEVELOPMENT ■
CONSTRUCTION ■
FINAL RECORD □

DRAWN BY: JRM
CHECKED BY: RNR

REVISIONS:

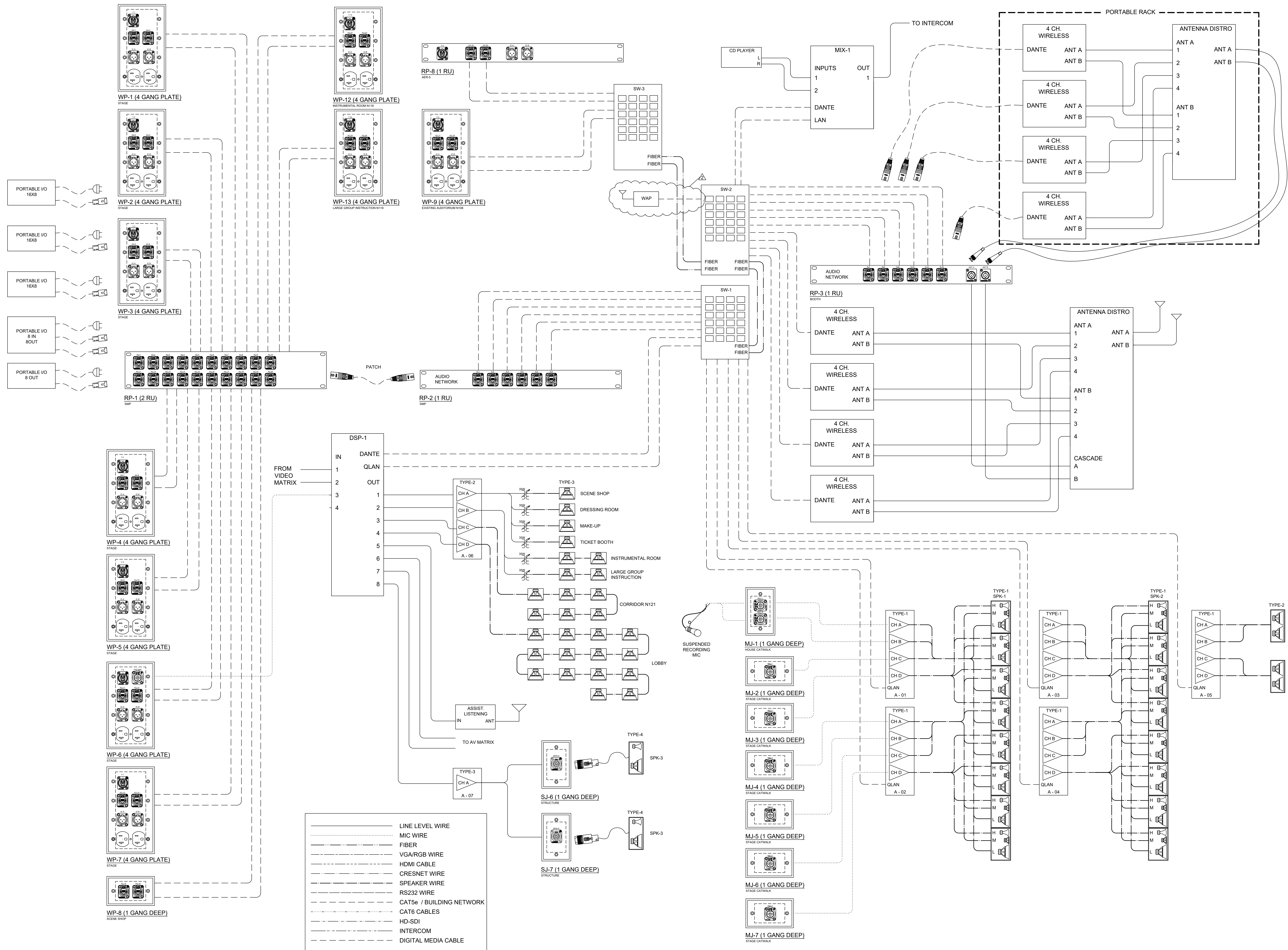
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ADDENDUM NO. 1 02-08-18

DATE: February 1, 2018

SHEET NO.:

MD1.2D

JOB NO. 151626C



FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

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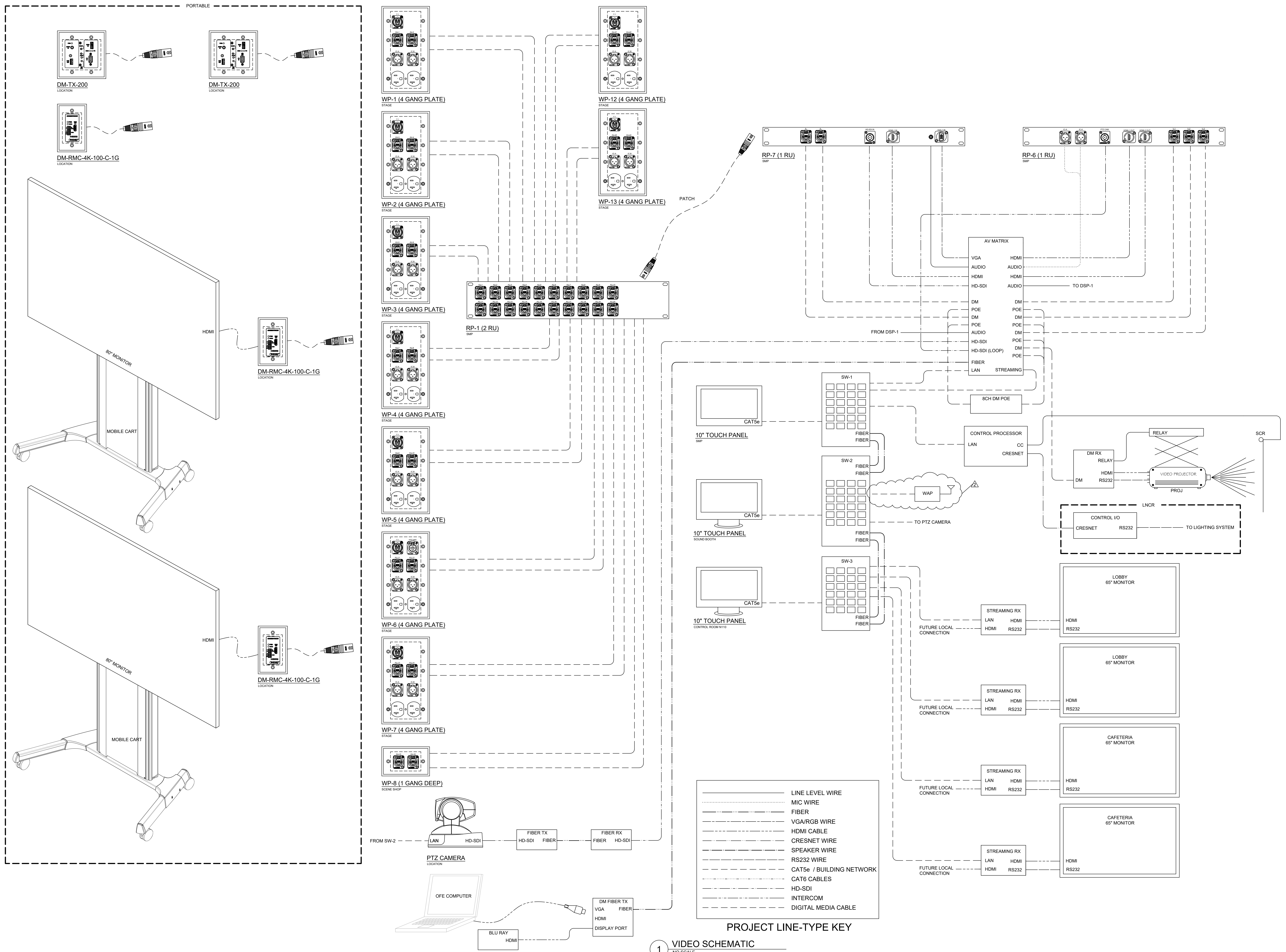
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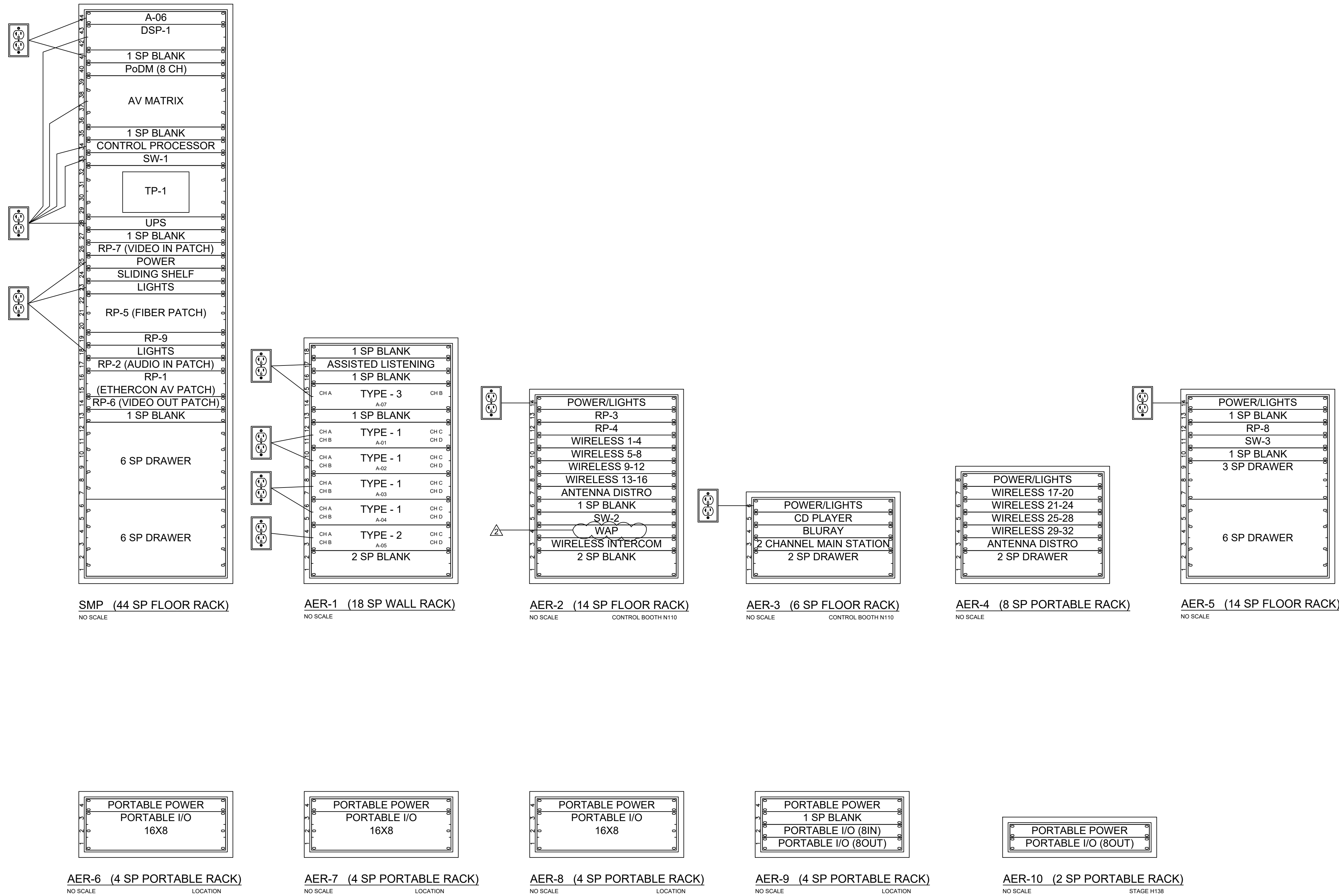
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1 AV RACK LAYOUTS
NO SCALE

FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

FIRST FLOOR AV PLAN

PRELIMINARY ☐
DESIGN DEVELOPMENT ☐
CONSTRUCTION ☐
FINAL RECORD ☒

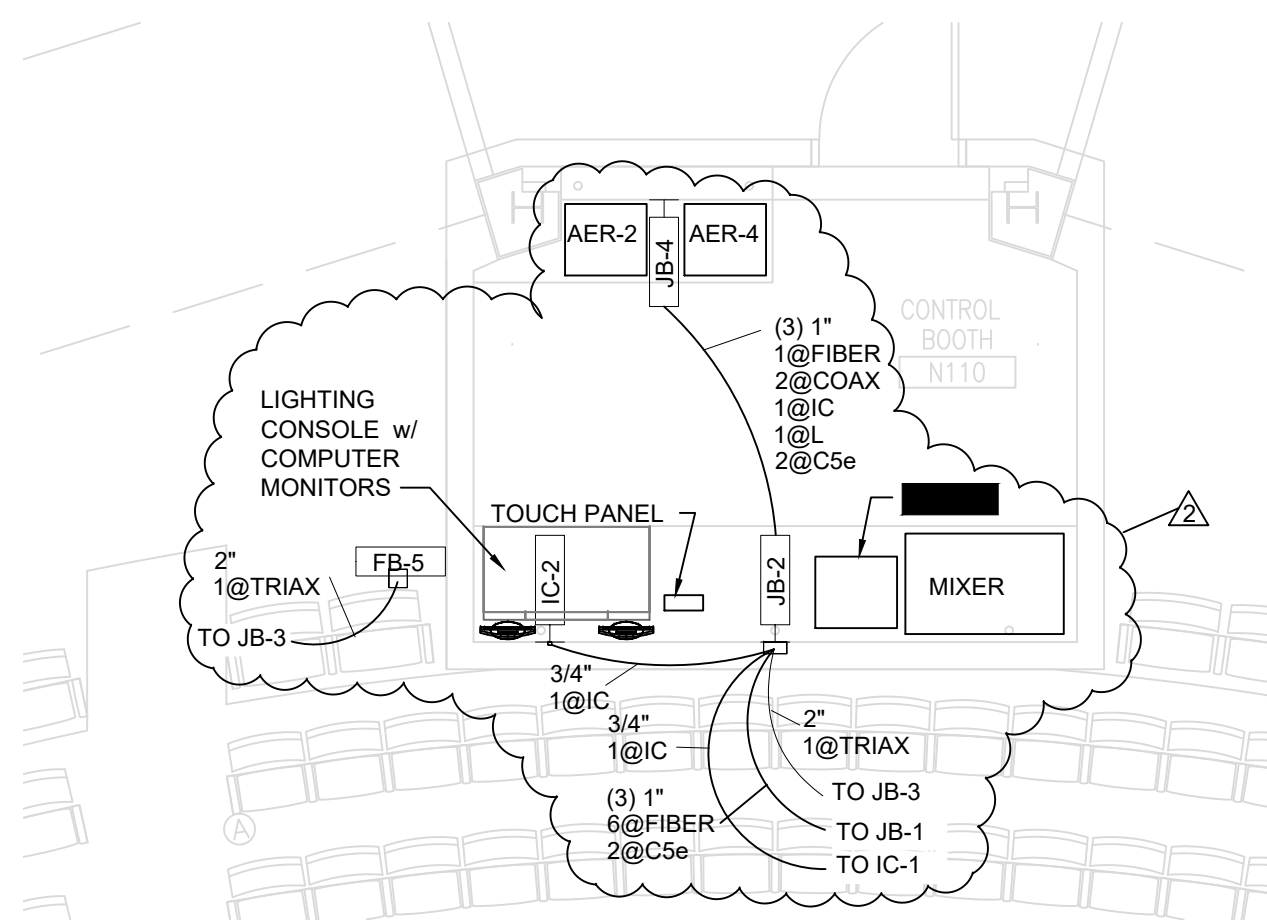
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Add No 2 2-17-16

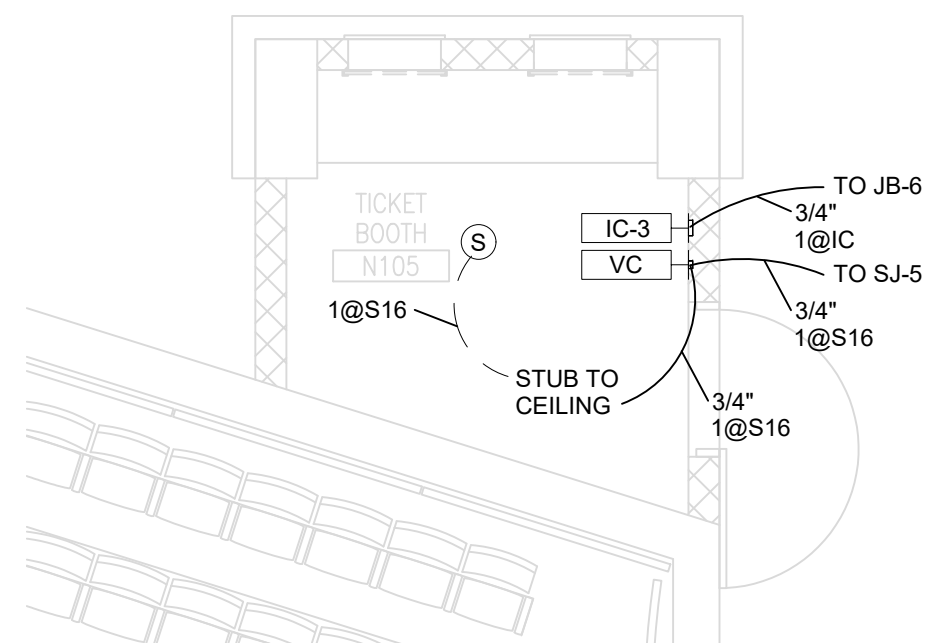
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SHEET NO.:

AV211

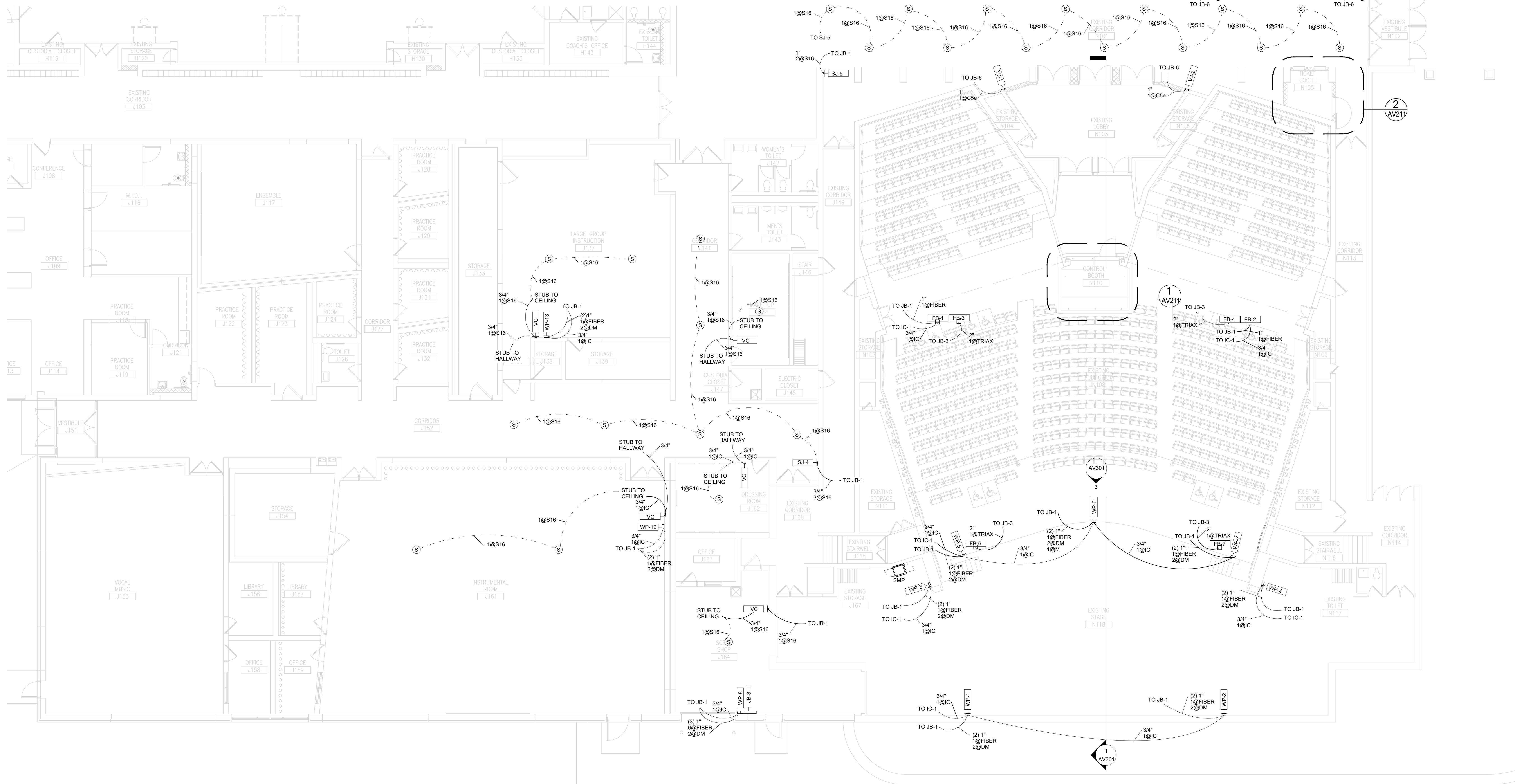
JOB NO. 151626C



2 ENLARGED CONTROL BOOTH LAYOUT
SCALE: 1/4" = 1'-0"

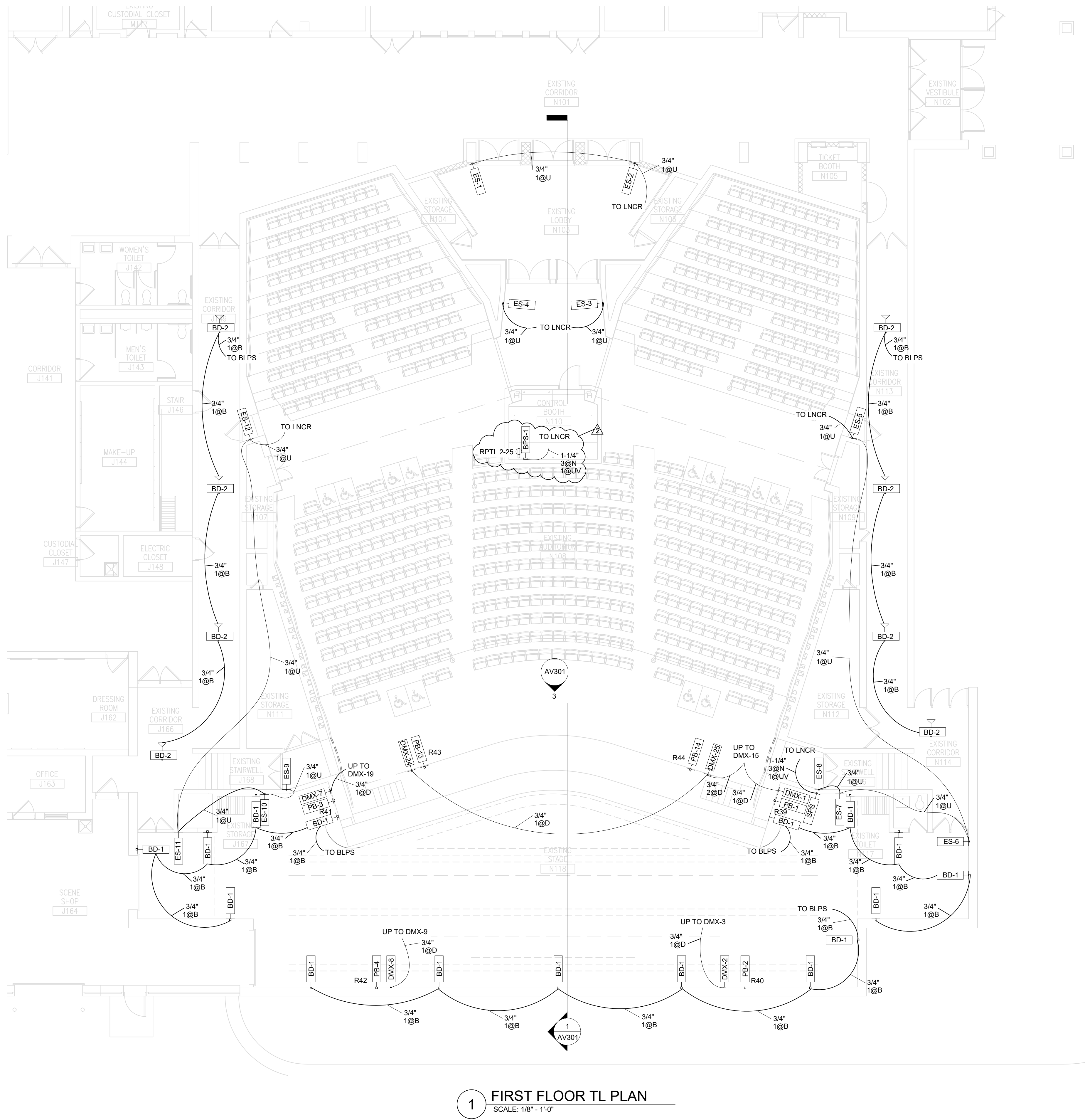


3 ENLARGED TICKET BOOTH LAYOUT
SCALE: 1/4" = 1'-0"



1 FIRST FLOOR AV PLAN
SCALE: 1/8" = 1'-0"

CONDUIT LINE TYPE KEY
- - - - - FREE-WIRED BY AV CONTRACTOR
————— CONDUIT BY ELECTRICAL CONTRACTOR



WIRE ROSTER

WIRING BASED ON ELECTRONIC THEATRE CONTROLS
ALL WIRING IS TO BE BELDEN OR MANUFACTURER
EQUIVALENT

B = BLUE LIGHTS (3) #14
D = DMX - BELDEN 9728
N = DMX - BELDEN 183A
U = UNISON - BELDEN 8471 + (1) #14
UV = UNISON w/ VOLTAGE - BELDEN 8471 + (2) #16 LV + (1) #14

TOUCH PANEL PROGRAMMING NOTES

- TOUCH PANEL SHALL PROVIDE A SCREEN WITH UP TO 10 RECORDABLE PRESETS
- PROVIDE SCREEN WITH HOUSE LIGHT PRESETS FOR LEVELS AND ZONES
- PROVIDE SCREEN WITH WORK LIGHTS AND RUNNING LIGHT CONTROLS
- PROVIDE LOCK-OUT CONTROLS FOR ENTRY STATIONS DURING PERFORMANCES
- DIMMING SYSTEM SHALL BE PROGRAMMED TO ACCEPT RS-232 COMMANDS FROM PRESET RECALL FROM THE AV CRESTRON CONTROL SYSTEM

ENTRY STATION CONTROLS

	BUTTON #1	BUTTON #2	CONTROL AREA	COLOR
ES-1	ON	OFF	LOBBY	IVORY
ES-2	ON	OFF	LOBBY	IVORY
ES-3	ON	OFF	HOUSE	IVORY
ES-4	ON	OFF	HOUSE	IVORY
ES-5	ON	OFF	HOUSE	IVORY
ES-6	ON	OFF	STAGE WING WORK LIGHTS	BLACK
ES-7	ON	OFF	2ND LEVEL STORAGE	BLACK
ES-8	ON	OFF	HOUSE	IVORY
ES-9	ON	OFF	HOUSE	IVORY
ES-10	ON	OFF	STAGE WING WORK LIGHTS	BLACK
ES-11	ON	OFF	STAGE WING WORK LIGHTS	BLACK
ES-12	ON	OFF	HOUSE	IVORY
ES-13	ON	OFF	2ND LEVEL STORAGE	BLACK
ES-14	ON	OFF	CATWALK WORK LIGHTS	BLACK
ES-15	ON	OFF	CATWALK WORK LIGHTS	BLACK

FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

FIRST FLOOR TL PLAN

- PRELIMINARY ☐
DESIGN DEVELOPMENT ☐
CONSTRUCTION ☒
FINAL RECORD ☐

DRAWN BY: MT
CHECKED BY: TGH

REVISIONS:
Add No 2 2-17-16

DATE: FEBRUARY 1, 2016
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TL211

JOB NO. 151626C

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Consultants in Acoustics & A/E Systems Design

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Portland, OR 97201
www.acousticbydesign.com

FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL RENOVATIONS

FIRST LEVEL NEW WORK
TECHNOLOGY PLAN: AREA G

PRELIMINARY ☐
DESIGN DEVELOPMENT ☐
CONSTRUCTION ☒
FINAL RECORD ☐

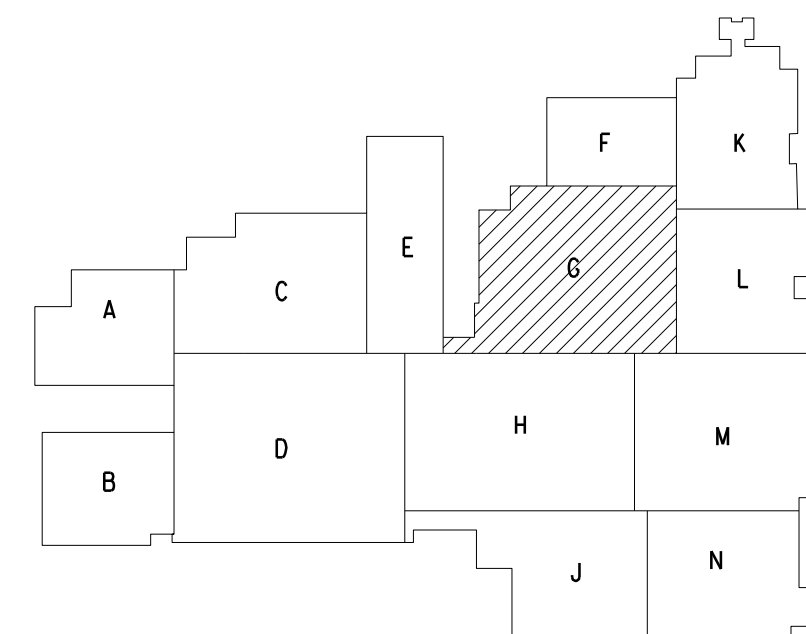
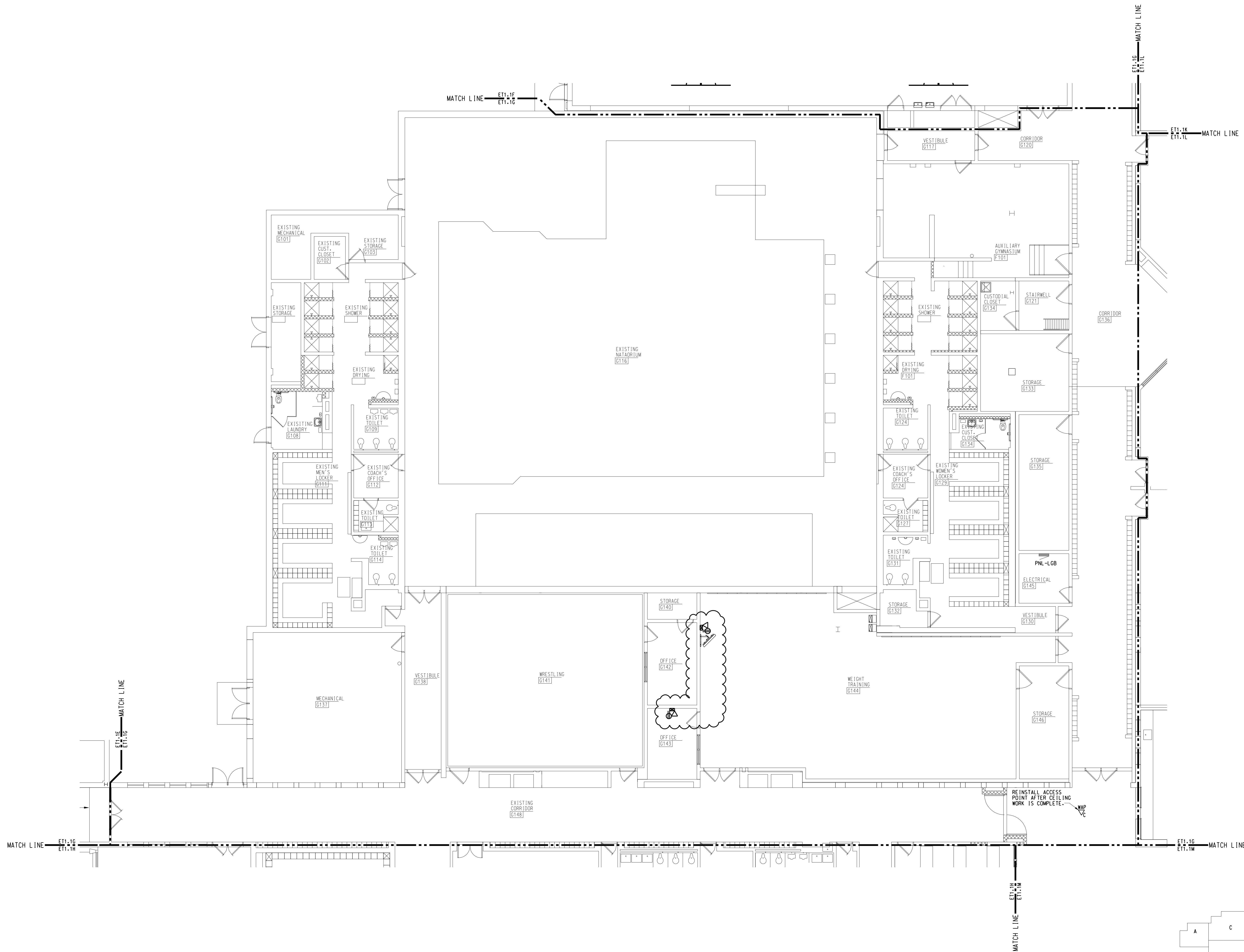
DRAWN BY L. NAPOLI
CHECKED BY S. TYBURSKI

REVISIONS
BIDS 2-1-16
ADD No 2 2-17-16

DATE: OCTOBER 7, 2015
SHEET NO.

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JOB NO.
151626C



KEY PLAN

FARMINGTON HIGH NEW
TECHNOLOGY PLAN: AREA G

1/8" = 1'-0"



LIGHTING FIXTURE SCHEDULE				
TYPE	DESCRIPTION	MANUFACTURERS	LAMPS	
L1 GYM	LED ROUND HIGH BAY LIGHT FIXTURE: UV STABILIZED POLYCARBONATE REFLECTOR. DIE CAST ALUMINUM HEAT SINK, MULTI VOLT DRIVER AC INPUT, CLASS P SOLID STATE RATED FOR A MINIMUM OF 50,000 HOURS OF OPERATION, 5 YEAR WARRANTY.	1. EVERLAST LEGEND SERIES 2. MHT LTG MHTL-HB SERIES 3. KENALL EPLB SERIES 4. SPECORADE HXBA SERIES	LED 4000K WHITE 17,000 LUMENS 80 CRI MINIMUM	
L2 STORAGE	LED LENSED STRIP LIGHT FIXTURE: DIE FORMED HEAVY GAUGE STEEL HOUSING WITH A DIE CAST ALUMINUM HEAT SINK, MULTI VOLT DRIVER AC INPUT, CLASS P SOLID STATE RATED FOR A MINIMUM OF 50,000 HOURS OF OPERATION, 5 YEAR WARRANTY. CHAIN HUNG.	1. METALUX SNLED SERIES 2. VISIONEERING LCOON SERIES 3. LITHONIA ZL2N 4. DAY-BRITE L7 SERIES	LED 4000K WHITE 3100 LUMENS 80 CRI MINIMUM	
L3 RESTROOM	LED 1X4 RECESSED LIGHT FIXTURE: DIE FORMED WELDED STEEL HOUSING. ELECTROSTATICALLY APPLIED WHITE POWDER COAT FINISH. 18 GAUGE STEEL DOOR FRAME, ONE PIECE WITH DIE FORMED EDGES, AIRCRAFT CABLE, TETHER FROM DOOR FRAME TO FIXTURE. STAINLESS STEEL TAMPER RESISTANT T20 TORX SCREWS. PROVIDED (2) SCREW DRIVERS FOR OWNER. LENS SHALL BE PRISMATIC POLYCARBONATE. DIE CAST ALUMINUM HEAT SINK, MULTI VOLT DRIVER AC INPUT, CLASS P SOLID STATE RATED FOR A MINIMUM OF 50,000 HOURS OF OPERATION, 5 YEAR WARRANTY. CHAIN HUNG.	1. KENALL HASEDI SERIES 2. FAIL-SAFE PSR SERIES 3. NEWSTAR 37M14 SERIES 4. WILLIAMS 50 SERIES	LED 4000K WHITE 4000 LUMENS 80 CRI MINIMUM	
L4 CORRIDOR/ OFFICE	LED 2X4 RECESSED CENTER BASKET LIGHT FIXTURE: DIE CAST ALUMINUM HEAT SINK MULTI VOLT DRIVER AC INPUT, CLASS P SOLID STATE, RATED FOR A MINIMUM OF 50,000 HOURS OF OPERATION, 5 YEAR FULL COVER WARRANTY.	1. LITHONIA 2VTL SERIES 2. METALUX 24CZ SERIES 3. VISIONEERING LRTM SERIES 4. DAY-BRITE 2EY SERIES	LED 4000K WHITE 4000 LUMENS 80 CRI MINIMUM	
L5 SHOWERS	LED 6 INCH APERTURE RECESSED DOWN LIGHT FIXTURE: LENSED AND GASKETED. VANDAL RESISTANT. WHITE TRIM RING. SEMI SPECULAR, TEMPERED PRISMATIC GLASS LENS. WARM WHITE LED SOURCE WITH MAXIMUM COLOR TEMPERATURE DIFFERENTIATION OF ± 100K. VENTILATED DIE CAST ALUMINUM HEAT SINK, SELF FLANGED REFLECTOR WITH MATTIE FINISH. MULTI VOLT DRIVER, AC INPUT, CLASS P, SOLID STATE, RATED FOR MINIMUM 50,000 HOURS OF OPERATION, 5 YEAR WARRANTY.	1. FAIL-SAFE FERMA6 SERIES 2. GOTHAM EVO SERIES 3. NEWSTAR DLMB SERIES 4. VANTAGE VVR SERIES	LED 4000K WHITE 1400 LUMENS 80 CRI	
L6	LED 6 INCH APERTURE RECESSED DOWN LIGHT FIXTURE: WARM WHITE LED SOURCE WITH MAXIMUM COLOR TEMPERATURE DIFFERENTIATION OF ± 100K. VENTILATED DIE CAST ALUMINUM HEAT SINK, SELF FLANGED REFLECTOR WITH MATTIE FINISH. MULTI VOLT DRIVER, AC INPUT, CLASS P, SOLID STATE, RATED FOR MINIMUM 50,000 HOURS OF OPERATION, 5 YEAR WARRANTY.	1. FAIL-SAFE FERMA6 SERIES 2. GOTHAM EVO SERIES 3. NEWSTAR DLMB SERIES 4. CALCULITE CBL SERIES	LED 4000K WHITE 1400 LUMENS 80 CRI MINIMUM	
L7 MEDIA CENTER	LED ARCHITECTURAL PENDANT LINER LIGHT FIXTURE: LOW PROFILE HOUSING, CONTINUOUS MOUNTING END TO END, LENGTH AS INDICATED ON PLAN 4" OR 8", HIGH REFLECTIVE WHITE POWDER COAT PAINTED. DIE CAST ALUMINUM HEAT SINK MULTI VOLT DRIVER AC INPUT, CLASS P SOLID STATE, RATED FOR A MINIMUM OF 50,000 HOURS OF OPERATION, 5 YEAR FULL COVER WARRANTY. RIGID WHITE PENDANT MOUNTING. WHITE 50 POWER CORD SHALL BE LOCATED IN SAME LOCATION.	1. CORELITE DIVIDE SERIES SERIES 2. PEELESS VELLUM LED SERIES 3. ALERA PLANK 7" LED	LED 4000K WHITE 57 WATTS 4500 LUMENS 80 CRI MINIMUM	
L8 CORRIDOR	LED 2X2 RECESSED LAY IN LIGHT FIXTURE: 3-1/4" DEEP HOUSING. DIE CAST ALUMINUM HEAT SINK MULTI VOLT DRIVER AC INPUT, CLASS P SOLID STATE, RATED FOR A MINIMUM OF 50,000 HOURS OF OPERATION, 5 YEAR FULL COVER WARRANTY.	1. METALUX GRLED SERIES 2. LITHONIA 20TL SERIES 3. VISIONEERING LRTA SERIES 4. DAY-BRITE 2GT SERIES	LED 4000K WHITE 3000 LUMENS 80 CRI MINIMUM	
L9	LED 2X4 RECESSED LAY IN LIGHT FIXTURE: 3-1/4" DEEP HOUSING. DIE CAST ALUMINUM HEAT SINK MULTI VOLT DRIVER AC INPUT, CLASS P SOLID STATE, RATED FOR A MINIMUM OF 50,000 HOURS OF OPERATION, 5 YEAR FULL COVER WARRANTY.	1. METALUX GRLED SERIES 2. LITHONIA 20TL SERIES 3. VISIONEERING LRTA SERIES 4. DAY-BRITE 2GT SERIES	LED 4000K WHITE 4000 LUMENS 80 CRI MINIMUM	
L10 EXTERIOR WALL	LED ARCHITECTURAL TRAPEZODAL WALL PACK LIGHT FIXTURE: FORWARD THROW, WEATHER RESISTANT ALUMINUM HOUSING WITH INTEGRAL WEATHER TIGHT LED DRIVER WITH HIGH PERFORMANCE ALUMINUM HEAT SINKS. U.L. LISTED FOR WET LOCATIONS. FIXTURE SHALL BE COMPLETELY GASKETED. MULTI VOLT DRIVER AC INPUT, CLASS P SOLID STATE, RATED FOR A MINIMUM 50,000 HOURS OF OPERATION, 5 YEAR WARRANTY. BLACK COLOR. PROVIDE WITH OCCUPANCY SENSOR CONTROL. FIXTURE SHALL DIM TO 20% OUTPUT WHEN NO MOTION IS DETECTED. PROVIDE WITH INTEGRAL PHOTO CELL. PROVIDE WITH DUAL DRIVER FOR (2) CIRCUIT OPERATION.	1. LITHONIA WST-LED SERIES 2. MCGRAW-EDISON IST B01 SERIES 3. SPALLING TRP SERIES 4. GARCOO 121 SERIES	LED 4000K WHITE 2000 LUMENS 80 CRI MINIMUM	
L11 EXTERIOR WALL	LED WALL MOUNTED FIXTURE: DIE CAST HOUSING WITH IMPACT-RESISTANT GLASS LENS. GASKETED AND SEALED HOUSING, IP55 RATED MINIMUM. POWDER COAT BRONZE FINISH.	1. LITHONIA TMI-LED SERIES 2. RAYON LIGHTING T SERIES LED 3. HUBBELL PVL3 SERIES	LED 4000K WHITE 8000 LUMENS 80 CRI MINIMUM	
L12 PARKING LOT	LED 14,000 LUMEN FLOOD LIGHT FIXTURE: FIXTURE SHALL BE WIDE FLOOD TYPE (3) DISTRIBUTION. FULLY GASKETED, BUG TIGHT, LOW PROFILE CAST ALUMINUM WITH INTEGRAL WEATHER TIGHT LED DRIVER COMPARTMENTS AND HIGH PERFORMANCE ALUMINUM HEATSINKS. LED DRIVER SHALL BE MULTI VOLT. FIXTURE SHALL MOUNT SIMILAR TO EXISTING AND WILL BE ARMED ACCORDINGLY. PROVIDE ALL NECESSARY PARTS AND PIECES FOR COMPLETE INSTALLATION. PROVIDE WITH AMIABLE ARM MOUNT. LIGHT FIXTURE SHALL MOUNT SAME AS EXISTING. FIXTURE SHALL BE BLACK IN COLOR.	1. LITHONIA D SERIES FLOOD 2. HADCO FX1 SERIES 3. BETA EDGE NEMA 6 4. LUMARK NIGHT FALCON FLOOD SERIES	LED 4000K WHITE 70 CRI MINIMUM 14,000 LUMENS MINIMUM	
L13 EXTERIOR CANOPY	LED SURFACE MOUNTED SQUARE DOWN LIGHT FIXTURE: LED, LOW PROFILE, 4" DEEP, FULL FACE, WITH MAXIMUM COLOR, VENTILATED DIE CAST ALUMINUM HEAT SINK, MATTIE FINISH. LENS SHALL BE PEARLESCENT HIGH IMPACT ACRYLIC SO THAT LED HAS LOW GLARE. UL LISTED FOR WET LOCATION, FIXTURE SHALL BE COMPLETELY GASKETED AND BUG TIGHT. PROVIDE WITH INTEGRAL PHOTO CELL. FIXTURE SHALL BE A MINIMUM 12" SQUARE. NOTE: NEW FIXTURE TO REPLACE RECESSED FIXTURE. REMOVE EXISTING FIXTURE AND PROVIDE ALUMINUM COVER PLATE AS REQUIRED TO COVER THE HOLE LEFT FROM THE REMOVAL OF THE OLD FIXTURE. PAINT COVER PLATE TO MATCH EXISTING CANOPY.	1. KENALL MILLENNIUM SQUARE MS15 2. LUMINS M102 SERIES 3. LUMINAIRE FORM FW1212 SERIES 4. BARRON TRACE TLED-C-P SERIES	LED 4100K WHITE 30 WATTS MAXIMUM 1400 MIN. LUMENS 80 CRI MINIMUM	
L14 AUDITORIUM	AUDITORIUM CYLINDER STYLE LED DOWN LIGHT: 6" APERTURE WARM WHITE LED SOURCE WITH MAXIMUM COLOR TEMPERATURE DIFFERENTIATION OF ± 100K. VENTILATED DIE CAST ALUMINUM HEAT SINK, 60° BEAM ANGLE, 100% MAXIMUM INPUT WATTS, 120V AC INPUT WITH DMX CONTROL, CLASS P, SOLID STATE DRIVER, RATED FOR MIN. 50,000 HOURS OF OPERATION. FIXTURE SHALL HAVE A DIFFUSED LENS SO THAT LED HAS LOW GLARE. FIXTURE SHALL BE DIMMABLE AND COMPATIBLE WITH THE EXISTING "ETC" DIMMER. 3500K COLOR TEMPERATURE. FIXTURE COLOR SHALL BE BLACK. NOTES: 1. PROVIDE RIGID MOUNTING STEMS SO THAT BOTTOM OF FIXTURE SHALL BE EQUAL TO THE BOTTOM OF THE FLOATING CEILING. THE ELECTRICAL CONTRACTOR SHALL FIELD VERIFY EXACT LENGTH PRIOR TO ORDERING. 2. FIXTURE TO BE PROVIDE WITH INPUT FOR DMX CONTROLS COMPATIBLE WITH ETC DIMMING SYSTEM. 3. FIXTURE MANUFACTURER SHALL PROVIDE A COMPLETE WARRANTY PARTS AND LABOR ON ALL COMPONENTS INCLUDING DRIVER, LEDS AND ALL ASSOCIATED PARTS AND PIECES FOR 5 YEARS. 4. ELECTRICAL CONTRACTOR SHALL PROVIDE 5 YEAR WARRANTY FOR ALL LABOR TO INSTALL ANY COMPONENTS OF THE FIXTURE THAT FAIL.	1. GOTHAM 6" INCH CYLINDER DMX CONTROLLED, 60° BEAM ANGLE.	LED 3500K WHITE 6000 LUMENS 100 WATTS MAX 80 CRI MINIMUM 120V	
L15 AUDITORIUM STAGE	1'x4' LED SURFACE MOUNTED VANDAL RESISTANT LINEAR LIGHT FIXTURE, HEAVY DUTY EXTRUDED ALUMINUM WITH DIE-CAST END CAPS POLYESTER POWDER COAT FINISH. LENS SHALL BE HIGH IMPACT EXTRUDED PEARLESCENT POLYCARBONATE SMOOTH EXTERIOR, LINEAR PRISMATIC INTERIOR. NOMINAL THICKNESS 0.156". TAMPER-RESISTANT STAINLESS STEEL TORX WITH CENTER PIN FASTENERS AND SEALED AND GASKETED. LED DRIVER SHALL 120V AC INPUT WITH 0-10V DIMMING, 5 YEAR WARRANTY. FIXTURE COLOR SHALL BE BLACK.	1. KENALL MILLENNIUM STRETCH MH142 SERIES 2. FAIL-SAFE HH12 SERIES 3. NEW STAR VR ARCHITECTURAL SERIES SERIES	LED 3500K WHITE 5200 LUMENS 73 WATTS 80 CRI MINIMUM 120V	
L16 AUDITORIUM CATWALK	VAPOR-PROOF JELLY JAR LED: LED SOURCE WITH MAXIMUM COLOR TEMPERATURE DIFFERENTIATION OF ± 100K. VENTILATED DIE CAST ALUMINUM HEAT SINK, SELF FLANGED REFLECTOR WITH MATTIE FINISH. 120V VOLT WITH 0-10V DIMMING CONNECTED TO THE ETC AUDITORIUM LIGHTING CONTROLS. FIXTURE SHALL HAVE DIFFUSED LENS SO THAT LED HAS LOW GLARE. 5 YEAR WARRANTY. FIXTURE COLOR SHALL BE BLACK.	1. LITHONIA OLYTMM SERIES 2. RAB VIBRELED26MDC SERIES 3. HUBBELL VL15 SERIES 4. PHOENIX VA SERIES	LED 3500K WHITE 20 WATTS 1000 MIN. LUMENS 80 CRI MINIMUM 120V	
L17 AUDITORIUM LOBBY	ROUND RECESSED LED DOWNLIGHT 6 INCH APERTURE: LED WITH VENTILATED DIE-CAST ALUMINUM HEAT SINK, SELF FLANGED REFLECTOR WITH MATTIE DIFFUSE FINISH FOR LOW GLARE. DRIVER SHALL BE 120V AC INPUT WITH DMX DIMMING CONTROL. CONNECT TO THE ETC LIGHTING CONTROLS, 5 YEAR WARRANTY.	1. GOTHAM EVO SERIES WITH DMX CONTROLS 2. PORTFOLIO LDBA SERIES 3. PRESOLITE LFL6LD44 SERIES	LED 3500K WHITE 30 WATTS MAXIMUM 1500 MIN. LUMENS 80 CRI MINIMUM 120V	
L18 FLAG POLES	LED 6,000 LUMEN FLOOD LIGHT FIXTURE: FIXTURE SHALL BE WIDE FLOOD TYPE (3) DISTRIBUTION. FULLY GASKETED, BUG TIGHT, LOW PROFILE CAST ALUMINUM WITH INTEGRAL WEATHER TIGHT LED DRIVER COMPARTMENTS AND HIGH PERFORMANCE ALUMINUM HEATSINKS. LED DRIVER SHALL BE MULTI VOLT. FIXTURE SHALL MOUNT SIMILAR TO EXISTING AND WILL BE ARMED ACCORDINGLY. PROVIDE ALL NECESSARY PARTS AND PIECES FOR COMPLETE INSTALLATION. PROVIDE WITH AMIABLE ARM MOUNT. LIGHT FIXTURE SHALL MOUNT SAME AS EXISTING. FIXTURE SHALL BE BLACK IN COLOR.	1. LITHONIA D SERIES FLOOD 2. HADCO FX1 SERIES 3. BETA EDGE NEMA 6 4. LUMARK NIGHT FALCON FLOOD SERIES	LED 4000K WHITE 70 CRI MINIMUM 6,000 LUMENS MINIMUM	

LIGHTING FIXTURE SCHEDULE			
TYPE	DESCRIPTION	MANUFACTURERS	LAMPS
L19 PARKING LOT	LED POLE MOUNTED PARKING LOT LIGHT FIXTURE: POLE TOP CONFIGURATION AS SHOWN ON PLAN. TYPE (4) DISTRIBUTION. FULLY GASKETED ALUMINUM HOUSING WITH INTEGRAL WEATHER TIGHT ELECTRONIC MULTI-VOLT LED DRIVER THAT IS U.L. LISTED FOR WET LOCATIONS. FUSED AT HAND HOLE. PROVIDE NEW MOUNTING ARM(S) AS REQUIRED. FIXTURE COLOR SHALL BE BLACK WITH A 10 YEAR WARRANTY.	1. LITHONIA D SERIES 2. CREE OSO SERIES 3. COOPER GALLEON SERIES 4. GARCOO EGT SERIES	LED 4000K WHITE 80 CRI MINIMUM 20,000 LUMENS MINIMUM
L20 AUDITORIUM	LED UP/DOWN WALL SCONCE 0-10V DIMMING TIED TO ETC CONTROL. CUSTOM COLOR AS SPECIFIED BY ARCHITECT. 120V. PROVIDE WITH TOP AND BOTTOM LENS.	1. ADVENT SEBRING AW9673 2. BETACALOO SURA ES SERIES	LED 3500K WHITE 114.3 WATTS 80 CRI MINIMUM
L21 GREEN HOUSE	4" LONG VAPOR TIGHT LINEAR GASKETED LED FIXTURE: REINFORCE FIBERGLASS HOUSING, WATER TIGHT CONDUIT ENTRY HUBS, PRISMATIC LENS WITH 50% HIGH IMPACT ADDITIVE; WET LOCATION LISTED; STAINLESS STEEL LATCHES; CHAIN HANGING KIT.	1. LITHONIA FEMALED SERIES 2. METALUX VT-LD2 SERIES 3. CREE ZR24 SERIES 4. DAY-BRITE V2W SERIES	LED 4000K WHITE 80 CRI MINIMUM 6,000 LUMENS MINIMUM
IA MEDIA CENTER	INCANDESCENT PENDANT HUNG LIGHT FIXTURE: 13.5" DIAMETER, HAMMERED METAL ANTIQUE PEWTER EXTERIOR FINISH, WHITE INTERIOR FINISH, SINGLE A21 BULB MEDIUM SOCKET BASE.	1. KICHLER 78200 SERIES 2. SEA GULL DIVISION STREET SERIES 3. ARCHITECT APPROVED EQUAL	100W INCANDESCENT MAXIMUM.
X	EXIT LIGHT SHALL BE MOUNTED AS REQUIRED, WITH WHITE DIE CAST ALUMINUM HOUSING, HIGH OUTPUT LED DIFFUSE LIGHT PANEL, SINGLE STENCIL WHITE FACE WITH RED LETTERS AND SUITABLE FOR MULTI VOLT (FUSED) OPERATION. PROVIDE DIRECTIONAL ARROW AS INDICATED ON PLAN. UNIT SHALL BE COMPLETELY SELF-CONTAINED WITH SEALED MAINTENANCE FREE BATTERY CAPABLE OF PROVIDING 90 MINUTE FULL LIGHT OPERATION. UNIT SHALL HAVE AUTOMATIC CONSTANT CURRENT SERIES CHARGER, TRANSFER CIRCUIT AND TEST SWITCH. WARRANTY FOR 3 YEARS WITH AN ADDITIONAL 3 YEAR PRO RATA WARRANTY ON THE BATTERY.	1. LITHONIA SIGNATURE SERIES 2. SURLITE CX SERIES 3. DUAL LITE SE SERIES 4. GALAXY XD SERIES	HIGH OUTPUT LED LIGHT PANEL
X1	SAME AS FIXTURE TYPE X EXCEPT BLACK IN AUDITORIUM ONLY.		

ALL LED FIXTURES SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS:
MULTI VOLT DRIVER, MINIMUM OF 50,000 HOURS OPERATION WITH GREATER THAN 70% DELIVERED LUMEN OUTPUT.
DELIVERED LUMENS NOT JUST LUMENS WITHIN 3% OF SCHEDULE LUMENS.
INDOOR DRIVERS SHALL BE RATED FOR A MINIMUM 65°C.
OUTDOOR DRIVERS SHALL BE RATED FOR MINIMUM -20°C.
DRIVER SHALL BE LABELED TO COMPLY WITH NEMA SSL1, AND THD OF LESS THAN 20%.
DRIVER SHALL BE SERVICABLE FROM BELOW CEILING.
DRIVER SHALL BE LABELED TO COMPLY WITH DESIGNLIGHTS CONSORTIUM.
FIXTURE SHALL COMPLY WITH IES STANDARDS LM-79 AND LM-80.
DRIVER AND LED FIXTURE SHALL HAVE MINIMUM 5 YEAR WARRANTY.

DTE LIGHTING INCENTIVES PROGRAM

THE ELECTRICAL CONTRACTOR SHALL INCLUDE IN HIS BID AND BE RESPONSIBLE FOR PROVIDING AND MEETING ALL REQUIREMENTS FOR THE OWNER TO PARTICIPATE IN THE 2016 DTE ENERGY SAVINGS PROGRAM. THE FOLLOWING ITEMS WILL BE REQUIRED BUT NOT LIMITED TO, FOR THE OWNER TO PARTICIPATE IN THIS PROGRAM:

1. ON BEHALF OF THE OWNER, PROVIDE ALL REQUIRED INFORMATION FOR THE RESERVATION APPLICATION AND THE FINAL APPLICATION. REFER TO DTE ENERGY PROGRAM APPLICATION AT www.dteenergy.com/owner.
2. CONTRACTOR BUSINESS INFORMATION.
3. LIGHTING INCENTIVES WORKSHEET/CUSTOM INCENTIVE WORKSHEET, AS REQUIRED.
4. TYPE OF FIXTURES REMOVED, WATTAGE, AND LAMP SIZE.
5. EASY TO READ ITEMIZED INVOICES WITH PART NUMBERS OF ALL LIGHT FIXTURES, BALLASTS AND LAMPS.
6. MANUFACTURERS CUT SHEETS WITH HIGHLIGHTED FIGURES, BALLAST, LAMPS, TYPE OF FIXTURE, ETC. AS REQUIRED BY DTE.
7. MEASURES ARE COMPLETELY INSTALLED WITHIN 90 DAYS OF PROJECT APPROVAL.

IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO CONTACT DTE'S ENERGY SAVINGS TEAM OR ASSIGNED REPRESENTATIVE IF A PROJECT IS DELAYED, OR SUBSTANTIALLY CHANGED.

THE ELECTRICAL CONTRACTOR SHALL WORK WITH AND COORDINATE WITH THE OWNER FOR THE RESERVATION AND FINAL APPLICATION PROCESS PRIOR TO SITE WORK BEING CONDUCTED AND POST REVIEW INSPECTION FOR REMOVAL AND INSTALLATION OF ALL EQUIPMENT RELATED TO THE INCENTIVE PROGRAM.



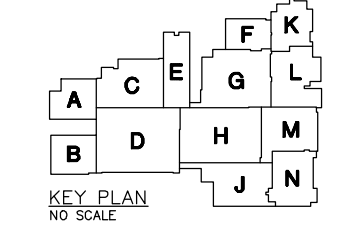
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REG. PROFESSIONAL ENGINEER

FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

LIGHTING FIXTURE
SCHEDULE



- PRELIMINARY ☒
- DESIGN DEVELOPMENT ☐
- CONSTRUCTION ☐
- FINAL RECORD ☐
- DRAWN BY: JRD
- CHECKED BY: GJZ

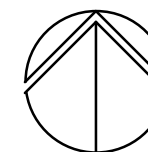
REVISIONS:

ADDENDUM NO. 2 02-17-16
ADDENDUM NO. 1 02-08-16
DATE: February 1, 2016

SHEET NO.:

E2.0

JOB NO. 151626C



SCALE: 1/8" = 1' - 0"

1. THESE DRAWINGS REPRESENT THE GENERAL EXTERIT AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND JOISTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
5. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TRANSFORMER CIRCUIT SIZES SCHEDULED SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
6. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZES SCHEDULED SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
7. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
8. COORDINATE EXACT LOCATIONS OF ALL FLOOR BOXES WITH FINAL FURNITURE LAYOUT DRAWINGS.
9. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT, PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS FOR MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER, WHAT IS NOTED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
10. RE-CIRCUIT EXISTING EXIT LIGHT TO NEAREST HOT LEG OF ADJACENT EMERGENCY CIRCUIT.

1. OCRUIT NEW OCCUPANCY SENSOR TO EXISTING LIGHTING BRANCH CIRCUIT IN ROOM. REFER TO OCCUPANCY SENSOR WIRING DIAGRAM ON SHEET E7.1. REWIRE EXISTING WIRING AS REQUIRED TO tie INTO EXISTING CONTROLS.
2. REMOVE EXISTING LIGHT SWITCH AND PROVIDE NEW OCCUPANCY SENSOR WALL SWITCH.
3. OCRUIT NEW LIGHT FIXTURES TO EXISTING LIGHTING BRANCH CIRCUIT SERVING SPACE VIA NEW AND/OR EXISTING CONDUITS AS INDICATED. FIELD VERIFY EXACT LOCATION OF EXISTING CONTROLS.
4. RELOCATE EXISTING LIGHT FIXTURES, OCCUPANCY SENSORS, SPEAKERS AND CEILING FAN. PROVIDE NEW EXISTING ORCUTTING AS REQUIRED. RE-LAMP LIGHT FIXTURES WITH NEW: FS450H/4100K/RS/BS OR L. LINEAR PENDENT MOUNTED FIXTURES (8" SECTIONS) HAVE 3 LAMPS PER 4" SECTION. 2X4" SURFACE MOUNTED LIGHT FIXTURES HAVE 4 LAMPS.
5. CONNECT EXISTING SEAT ORCUTTING TO NEW SEAT LIGHTING. PROVIDE NEW MIC CONDUIT WHIP FROM FLOOR MOUNTED JBOX TO NEW SEAT CONNECTION POINT. AS INDICATED.
6. PROVIDE NEW EMERGENCY LIGHT TRANSFER DEVICE (ELTD) FOR EXISTING LIGHT FIXTURE. CONDUCT NORMAL. SIDE OF ELTD TO EXISTING LIGHTING BRANCH CIRCUIT IN ROOM. PROVIDE NEW EMERGENCY BRANCH CIRCUIT AS INDICATED. REFER TO E7.1 SERIES DRAWINGS FOR ELTD WIRING DIAGRAM. FIELD VERIFY EXISTING LIGHT SWITCH LOCATIONS.
7. RELOCATED LIGHT FIXTURE. OCRUIT TO EXISTING LIGHTING BRANCH CIRCUIT. CLEAN LENS WITH DETERGENT. PROVIDE NEW LAMPS.
8. REMOVE (2) EXISTING LAMPS IN EACH LIGHT FIXTURE AND PROVIDE (2) PHILIPS INSTANTINIT LED 18 4" LAMPS, PRODUCT #45691-3. LAMPS SHALL BE 4000K COLOR TEMP.
9. REMOVE (3) EXISTING LAMPS IN EACH LIGHT FIXTURE AND PROVIDE (3) PHILIPS INSTANTINIT LED 18 4" LAMPS, PRODUCT #45691-3. LAMPS SHALL BE 4000K COLOR TEMP.
10. REMOVE (4) EXISTING LAMPS IN EACH LIGHT FIXTURE AND PROVIDE (4) PHILIPS INSTANTINIT LED 18 4" LAMPS, PRODUCT #45691-3. LAMPS SHALL BE 4000K COLOR TEMP.
11. REMOVE (2) EXISTING LAMPS IN EACH LIGHT FIXTURE AND PROVIDE (2) PHILIPS INSTANTINIT LED 18 U-LAMPS, PRODUCT #45688-0. LAMPS SHALL BE 4000K COLOR TEMP.
12. REMOVE (4) EXISTING LAMPS IN EACH LIGHT FIXTURE AND PROVIDE (4) PHILIPS INSTANTINIT LED 18 2" LAMPS, PRODUCT #45203-7. LAMPS SHALL BE 4000K COLOR TEMP.
13. PROVIDE BATTERY BALLAST FOR EXISTING FIXTURE IN L7.1 OF EMERGENCY LIGHT TRANSFER DEVICE (ELTD). REFER TO DETAIL ON SHEET E7.1.
14. BASE BID. INSTALL EXTERIOR WALL PACK FIXTURE AS INDICATED. REFER TO ADD ALTERNATE EWS TO REMOVE WALL PACK FROM BASE BID AND PROVIDE NEW SURFACE CANOPY FIXTURE AS INDICATED ON SHEET E0.3.



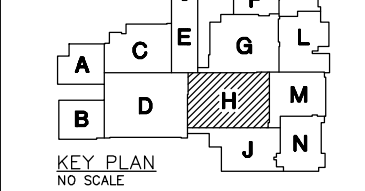
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PBA Project No.: 2015-0142-05

FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

FIRST LEVEL LIGHTING NEW
WORK PLAN - ZONE 'H'



PRELIMINARY	<input checked="" type="checkbox"/>
DESIGN DEVELOPMENT	<input checked="" type="checkbox"/>
CONSTRUCTION	<input checked="" type="checkbox"/>
FINAL RECORD	<input type="checkbox"/>

DRAWN BY: JRD
CHECKED BY: GJZ

REVISIONS:

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ADDENDUM NO. 2	02-17-10
ADDENDUM NO. 1	03-08-10

ADDENDUM NO. 1 02-00-10

DATE: February 1, 2016

SHEET NO.:

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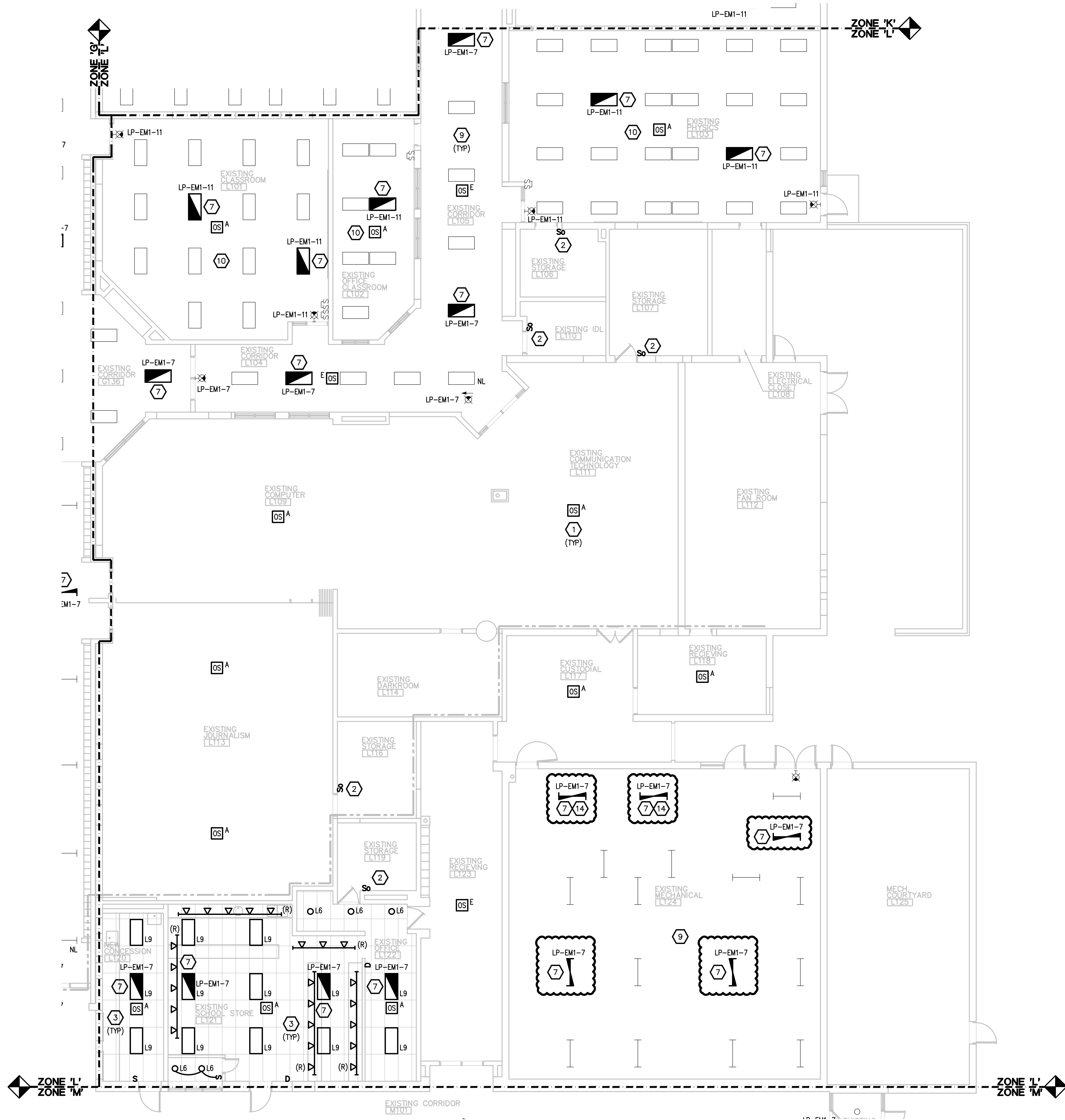
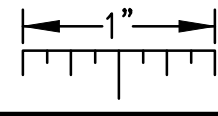
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FIRST LEVEL LIGHTING NEW WORK PLAN - ZONE 'L'
SCALE: 1/8" = 1' - 0"

GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
5. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TRANSFORMER CIRCUIT SIZING SCHEDULE SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
6. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
7. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
8. COORDINATE EXACT LOCATIONS OF ALL FLOOR BOXES WITH FINAL FURNITURE LAYOUT DRAWINGS.
9. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
10. RE-CIRCUIT EXISTING EXIT LIGHT TO NEAREST HOT LEG OF ADJACENT EMERGENCY CIRCUIT.

CONSTRUCTION KEY NOTES:

1. CIRCUIT NEW OCCUPANCY SENSOR TO EXISTING LIGHTING BRANCH CIRCUIT IN ROOM. REFER TO OCCUPANCY SENSOR WIRING DIAGRAM ON SHEET E7.1. REWORK EXISTING WIRING AS REQUIRED TO TIE INTO EXISTING CONTROLS.
2. REMOVE EXISTING LIGHT SWITCH AND PROVIDE NEW OCCUPANCY SENSOR WALL SWITCH.
3. CIRCUIT NEW LIGHT FIXTURES TO EXISTING LIGHTING BRANCH CIRCUIT SERVING SPACE VIA NEW AND/OR EXISTING CONTROLS AS INDICATED. FIELD VERIFY EXACT LOCATION OF EXISTING CONTROLS.
4. RELOCATE EXISTING LIGHT FIXTURES, OCCUPANCY SENSORS, SPEAKERS AND CEILING FANS. EXTEND EXISTING CIRCUITING AS REQUIRED. RE-LAMP LIGHT FIXTURES WITH NEW: FS4TSHD/4100K/RS/85 CRI. LINEAR PENDENT MOUNTED FIXTURES (8" SECTIONS) HAVE 3 LAMPS PER 4' SECTION. 2'X4' SURFACE MOUNTED LIGHT FIXTURES HAVE 4 LAMPS.
5. CONNECT EXISTING SEAT CIRCUITING TO NEW SEAT LIGHTING. PROVIDE NEW MC CONDUIT WHIP FROM FLOOR MOUNTED JBOX TO NEW SEAT CONNECTION POINT.
6. CIRCUIT NEW FIXTURES TO EXISTING CORRIDOR LIGHTING CIRCUIT AND CONTROLS AS INDICATED.
7. PROVIDE NEW EMERGENCY LOAD TRANSFER DEVICE (ELTD) FOR EXISTING LIGHT FIXTURE. CONNECT NORMAL SIDE OF ELTD TO EXISTING LIGHTING BRANCH CIRCUIT IN ROOM. PROVIDE NEW EMERGENCY BRANCH CIRCUIT AS INDICATED. REFER TO E7 SERIES DRAWINGS FOR ELTD WIRING DIAGRAM. FIELD VERIFY EXISTING LIGHT SWITCH LOCATIONS.
8. RELOCATED LIGHT FIXTURE. CIRCUIT TO EXISTING LIGHTING BRANCH CIRCUIT. CLEAN LENS WITH DETERGENT. PROVIDE NEW LAMPS.
9. REMOVE (2) EXISTING LAMPS IN EACH LIGHT FIXTURE AND PROVIDE (2) PHILIPS INSTANTTRIT LED T8 4' LAMPS, PRODUCT #45691-3. LAMPS SHALL BE 4000K COLOR TEMP.
10. REMOVE (3) EXISTING LAMPS IN EACH LIGHT FIXTURE AND PROVIDE (3) PHILIPS INSTANTTRIT LED T8 4' LAMPS, PRODUCT #45691-3. LAMPS SHALL BE 4000K COLOR TEMP.
11. REMOVE (4) EXISTING LAMPS IN EACH LIGHT FIXTURE AND PROVIDE (4) PHILIPS INSTANTTRIT LED T8 4' LAMPS, PRODUCT #45691-3. LAMPS SHALL BE 4000K COLOR TEMP.
12. REMOVE (2) EXISTING LAMPS IN EACH LIGHT FIXTURE AND PROVIDE (2) PHILIPS INSTANTTRIT LED T8 U-LAMPS, PRODUCT #45268-0. LAMPS SHALL BE 4000K COLOR TEMP.
13. REMOVE (4) EXISTING LAMPS IN EACH LIGHT FIXTURE AND PROVIDE (4) PHILIPS INSTANTTRIT LED T8 2' LAMPS, PRODUCT #45203-7. LAMPS SHALL BE 4000K COLOR TEMP.
14. PROVIDE BATTERY BALLAST FOR EXISTING FIXTURE IN LIEU OF EMERGENCY LOAD TRANSFER DEVICE (ELTD). REFER TO DETAIL ON SHEET E7.1
15. BASE BID, INSTALL EXTERIOR WALL PACK FIXTURE AS INDICATED. REFER TO ADD ALTERNATE EHS TO REMOVE WALL PACK FROM BASE BID AND PROVIDE NEW SURFACE CANOPY FIXTURE AS INDICATED ON SHEET E0.3.

WA

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ARCHITECTS

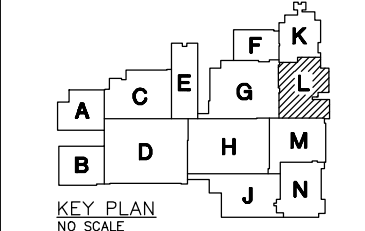
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PEL No. 10151-0103

FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

FIRST LEVEL LIGHTING NEW
WORK PLAN - ZONE 'L'



PRELIMINARY
DESIGN DEVELOPMENT
CONSTRUCTION
FINAL RECORD

DRAWN BY: JRD
CHECKED BY: G.J.Z

REVISIONS:

ADDENDUM NO. 2 02-17-16

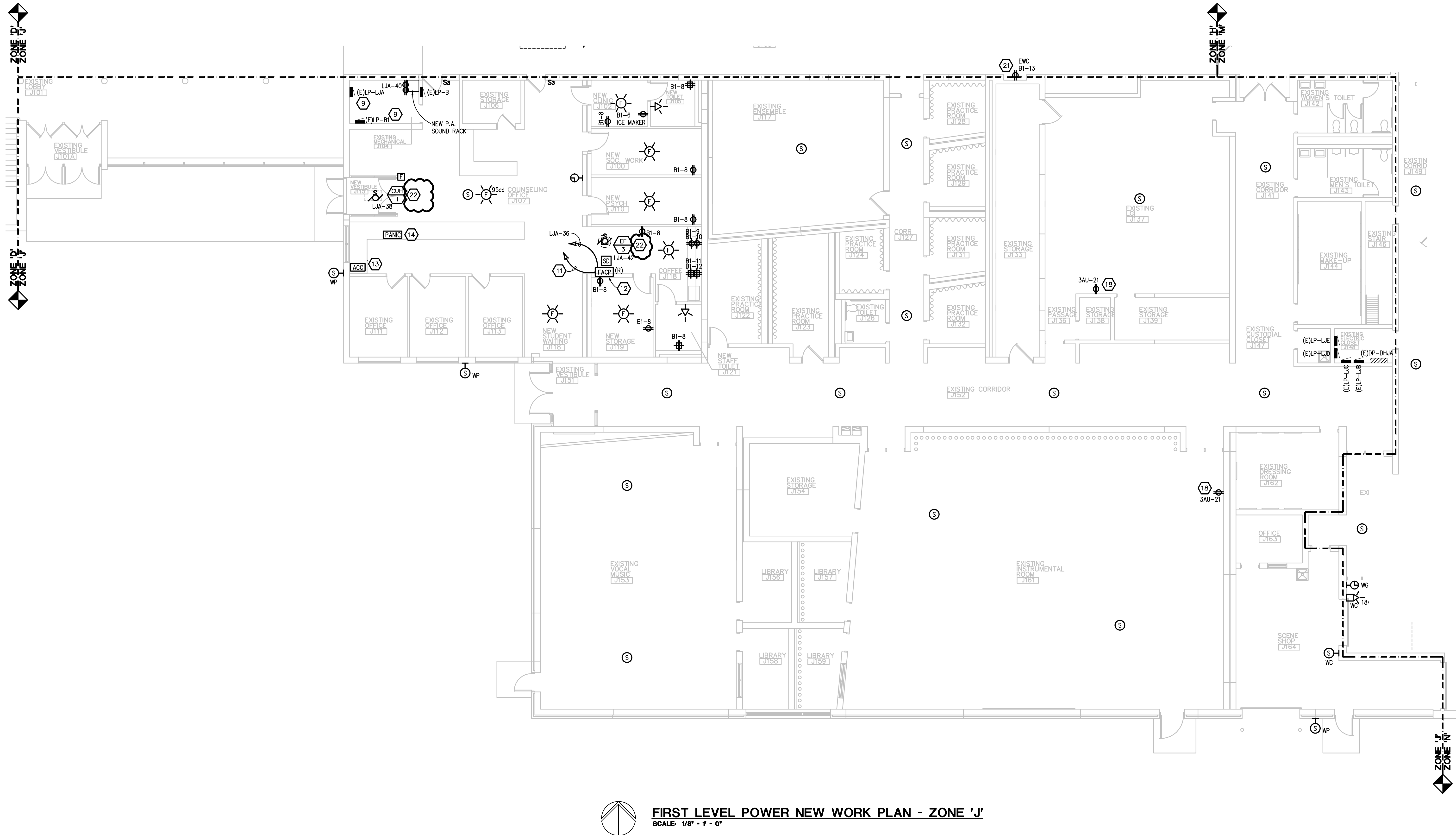
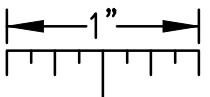
DATE: February 1, 2016

SHEET NO.:

E2.1L

JOB NO. 151626C

THE FOLLOWING DIMENSION EQUALS
ONE INCH WHEN PRINTED TO SCALE.



GENERAL NOTES:

- THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
- INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
- COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
- PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
- TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TRANSFORMER CIRCUIT SIZING SCHEDULE SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
- MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
- COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
- COORDINATE EXACT LOCATIONS OF ALL FLOOR BOXES WITH FINAL FURNITURE LAYOUT DRAWINGS.
- REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
- RE-CIRCUIT EXISTING EXIT LIGHT TO NEAREST HOT LEG OF ADJACENT EMERGENCY CIRCUIT.

CONSTRUCTION KEY NOTES:

- RELOCATED PANELBOARD LP-GLKA. PROVIDE SPLICE BOX ABOVE CEILING IN OFFICE K113 AND EXTEND EXISTING BRANCH CIRCUITS TO NEW PANEL LOCATION. PROVIDE NEW CONDUIT AND WIRE AS REQUIRED.
- PROVIDE NEW STRUCTURAL STEEL SUPPORT RACK FOR NEW DISTRIBUTION EQUIPMENT. COORDINATE STRUCTURAL SUPPORT REQUIREMENTS WITH DISTRIBUTION EQUIPMENT MANUFACTURER AND PROVIDE HORIZONTAL CROSS BRACING AS REQUIRED.
- CIRCUIT NEW MECHANICAL EQUIPMENT TO EXISTING CIRCUIT. EXTEND CIRCUITING AS REQUIRED.
- REPLACE EXISTING RECEPTACLE WITH NEW. (EXTEND EXISTING J-BOX OUT FOR NEW WALL SURFACES IN AUDITORIUM) EXTEND EXISTING CIRCUITING AS REQUIRED. PROVIDE STEEL COVER PLATE. COVER PLATE AND RECEPTACLE COLOR BY ARCHITECT.
- CIRCUIT TO NEAREST AVAILABLE 120V CIRCUIT.
- DUCT SMOKE DETECTORS. COORDINATE REQUIRED QUANTITIES AND MOUNTING LOCATIONS WITH THE EXISTING DUCT WORK TO MEET CODE. PROVIDE 4 DUCT SMOKE DETECTORS PER AHU/RTU/AC FOR BID PURPOSES. QUANTITIES WILL BE ADJUSTED IN FIELD BASED ON THE EXISTING DUCT WORK PENETRATIONS AND ROUTING LOCATIONS. COORDINATE INSTALLATION WITH THE EXISTING MECHANICAL DUCT WORK SO THAT UPON DETECTION OF SMOKE, THE SUPPLY/RETURN FAN WILL SHUT DOWN. CONTRACTOR SHALL WIRE DUCT SMOKE DETECTOR TO FIRE ALARM SYSTEM. CONTROL OF AIR HANDLING EQUIPMENT IS VIA THE FIRE ALARM CONTROL PANEL. PROVIDE ALL REQUIRED FIRE ALARM CONTROL MODULES AND RELAYS TO INTERFACE WITH SUPPLY FAN AND ASSOCIATED RETURN FAN (OR EXHAUST FAN). PROVIDE ALL CONTROL MODULES, RELAYS, ETC FOR A COMPLETE OPERATING SYSTEM.
- DISCONNECT AND RECONNECT EXISTING CIRCUITING FOR BLEACHER REPLACEMENT. REMOVE AND REINSTALL QUAD RECEPTACLE AND MICROPHONE OUTLETS MOUNTED INTO FRONT OF BLEACHERS.
- RELOCATED BACKBOARD, DIVIDER CURTAIN AND BATTING CAGE. KEY SWITCH CONTROLS. EXTEND CIRCUITING AS REQUIRED. DISCONNECT AND RECONNECT EXISTING CIRCUITING FOR BACKBOARD MOTOR REPLACEMENT.
- PROVIDE NEW 20A-1P BREAKERS IN EXISTING PANELBOARD FOR NEW CIRCUITING AS INDICATED ON PLAN.
- ELECTRICAL CONTRACTOR SHALL PROVIDE FIRE ALARM CONTROL MODULE AND SMOKE DETECTORS FOR DOOR RELEASE. COORDINATE MOUNTING WITH DOOR CONTRACTOR. ALL RELATED DOOR HARDWARE IS PROVIDED BY OTHERS. WIRE TO FIRE ALARM PANEL SO THAT UPON DETECTION OF SMOKE AT ASSOCIATED DOOR SMOKE DETECTORS, DOOR WILL RELEASE AND FIRE ALARM SYSTEM WILL BE ACTIVATED. ELECTRICAL SHALL PROVIDE 120V POWER (FROM DEDICATED CIRCUIT) OR 24V POWER (FROM NEAREST FIRE ALARM SYSTEM) AS REQUIRED. PROVIDE (2) 4" CONDUITS STUBBED THROUGH SMOKE PARTITION, EXTENDING 4" FROM EACH SIDE OF THE PARTITION. PROVIDE REMOVABLE/RESEAL ABLE FIRE STOPPING FOR EACH CONDUIT.
- FIRE ALARM CONTROL PANEL: PROVIDE 3/4" C; WITH 2 DEDICATED LINES TO HEAD END ROOM FOR MODEM DIALER IN FIRE ALARM CONTROL PANEL. ELECTRICAL CONTRACTOR SHALL PROVIDE THE TELEPHONE CABLING (CAT 5) AND TERMINATIONS AT THE TELEPHONE EQUIPMENT AND FIRE ALARM CONTROL PANEL. THE ELECTRICAL CONTRACTOR SHALL SUB-CONTRACT THIS WORK TO THE ON SITE TELEPHONE/DATA CONTRACTOR.
- RELOCATE EXISTING FIRE ALARM PANEL. EXTEND EXISTING EXISTING WIRING TO NEW LOCATION. RECESS EXISTING PANEL IN WALL.
- PA. ADMINISTRATIVE HANDSET. COORDINATE EXACT LOCATION WITH OWNER.
- PA. SYSTEM REMOTE PANIC BUTTON. COORDINATE EXACT LOCATION WITH OWNER.
- RE-ABLE PANEL AS INDICATED ON ONE-LINE DIAGRAM.
- PROVIDE FLIP-UP TABLE TOP USB RECEPTACLE LEGRAND DEQUORIUM MODEL# DOP15U IN TABLE. CIRCUIT AS INDICATED. DIRECTION ARROW INDICATES DIRECTION RECEPTACLES SHALL FACE WHEN OPEN. COORDINATE EXACT LOCATIONS WITH ARCHITECTURAL ELEVATIONS. CUT AND PATCH EXISTING CONCRETE FLOOR AS REQUIRED FOR ROUTING OF CONDUITS TO TABLE IN CENTER OF ROOM.
- COORDINATE FINAL LOCATION WITH OWNER PRIOR TO ROUGH-IN.
- RECEPTACLES FOR AV EQUIPMENT. COORDINATE FINAL LOCATION AND MOUNTING HEIGHT AND LOCATION WITH AV CONSULTANT PRIOR TO ROUGH-IN.
- RELOCATE EXISTING CAFETERIA SOUND CONSOLE. EXTEND ALL EXISTING SPEAKER AND MICROPHONE WIRING TO NEW LOCATION. PROVIDE WIREMOLD V500 DOWN WALL WITH NEW SURFACE J-BOX. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.
- REFER TO DEMOLITION NOTE 'V' ON SHEET ED1.1H FOR WORK IN GREENHOUSE.
- PROVIDE NEW GFCI CIRCUIT BREAKER FOR ELECTRIC WATER COOLER.
- PROVIDE NEW 15A-1P BREAKER IN PANELBOARD CIRCUITING AS INDICATED.
- DRAW CURTAIN MACHINE WITH CONTROLS. COORDINATE FINAL LOCATION FOR CONTROLS WITH ARCHITECT PRIOR TO ROUGH-IN.

REFER TO IDS TECHNOLOGY DRAWINGS FOR ALL DATA POWER LOCATIONS ASSOCIATED WITH TECHNOLOGY. ELECTRICAL CONTRACTOR SHALL BID BOTH SETS OF DOCUMENTS RECEPTACLES/DATA AND RACEWAYS FROM BOTH SETS COMBINED.



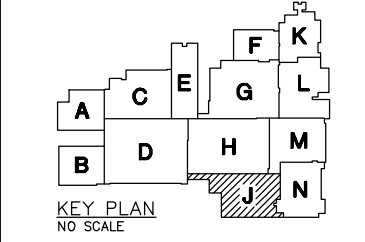
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FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

FIRST LEVEL POWER NEW
WORK PLAN - ZONE 'J'



- PRELIMINARY ■
DESIGN DEVELOPMENT ■
CONSTRUCTION ■
FINAL RECORD □

DRAWN BY: JRD
CHECKED BY: G.J.Z

REVISIONS:

ADDENDUM NO. 2 02-17-16
ADDENDUM NO. 1 02-08-16
DATE: February 1, 2016

SHEET NO.:

E3.1J

JOB NO. 151626C



SCALE: 1/8" = 1' - 0"

1. THESE DRAWINGS REPRESENT THE GENERAL EXIST AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
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3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
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8. COORDINATE EXACT LOCATIONS OF ALL FLOOR BOXES WITH FINAL FURNITURE LAYOUT DRAWINGS.
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10. RE-CIRCUIT EXISTING EIGHT LIGHT TO NEAREST HOT LEG OF ADJACENT EMERGENCY CIRCUIT.

1. RELOCATED PANELBOARD LP-Q-LKA. PROVIDE SPURCE BOX ABOVE CEILING IN OFFICE K113 AND EXTEND EXISTING BRANCH CIRCUITS TO NEW PANEL LOCATION. PROVIDE NEW CONDUIT AND WIRE AS REQUIRED.
2. PROVIDE NEW STRUCTURAL STEEL SUPPORT RACK FOR NEW DISTRIBUTION EQUIPMENT. COORDINATE STRUCTURAL SUPPORT REQUIREMENTS WITH DISTRIBUTION EQUIPMENT MANUFACTURER AND PROVIDE HORIZONTAL CROSS BRACING AS REQUIRED.
3. GROUT NEW MECHANICAL EQUIPMENT TO EXISTING CIRCUIT. EXTEND CIRCUITING AS REQUIRED.
4. REPLACE EXISTING RECEPTACLE WITH NEW. (EXTEND EXISTING "BOX OUT" FOR NEW WALL SURFACES IN AUDITORIUM) EXTEND EXISTING CIRCUITING AS REQUIRED. PROVIDE STEEL COVER PLATE. COVER PLATE AND RECEPTACLE COLOR BY ARCHITECT.
5. CIRCUIT TO NEAREST AVAILABLE 120V CIRCUIT.
6. DETECT SMOKE DETECTORS, COORDINATE REQUIRED QUANTITIES AND MOUNTING LOCATIONS WITH THE EXISTING DUCT WORK TO MEET CODE. (PROVIDE 4 DETECT SMOKE DETECTORS PER AHU/RTU/CAQ FOR BID PURPOSES. QUANTITIES WILL BE ADJUSTED BASED ON THE EXISTING DUCT WORK, PENETRATIONS AND ROUTING LOCATIONS). COORDINATE INSTALLATION WITH THE EXISTING MECHANICAL DUCT WORK SO THAT UPON DETECTION OF SMOKE, THE SUPPLY/RETURN FAN WILL SHUT DOWN. CONTRACTOR SHALL WIRE DETECT SMOKE DETECTOR TO FIRE ALARM SYSTEM. CONTROL OF AIR HANDLING EQUIPMENT IS VIA THE FIRE ALARM CONTROL PANEL. ALL REQUIRED FIRE ALARM CONTROL MODULES AND RELAYS TO INTERLOCK WITH SUPPLY FAN AND ASSOCIATED RETURN FAN (OR EXHAUST FAN). PROVIDE ALL CONTROL WIRE, RELAYS, AND DETECTOR FAN OPERATING VOLTAGE.
7. DISCONNECT AND RECONNECT EXISTING CIRCUITING FOR BLEACHER REPLACEMENT. REMOVE AND REINSTALL QUAD RECEPTACLE AND MICROPHONE OUTLETS MOUNTED INTO FRONT OF BLEACHERS.
8. RELOCATED BACKBOARD, DIVIDER CURTAIN AND BATTING CAGE. KEY SWITCH CONTROLS. EXTEND CIRCUITING AS REQUIRED. DISCONNECT AND RECONNECT EXISTING CIRCUITING FOR BACKBOARD MOUNT REPLACEMENT.
9. PROVIDE NEW 20A-1P BREAKERS IN EXISTING PANELBOARD FOR NEW CIRCUITING AS INDICATED ON PLAN.
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11. FIRE ALARM CONTROL PANEL: REMOVE 3/4"X, WITH 2 DEDICATED LINES TO HEAD END ROOM FOR MODEM DIALER IN FIRE ALARM CONTROL PANEL. ELECTRICAL CONTRACTOR SHALL PROVIDE THE TELEPHONE CABLE (CAT 5) AND TERMINATIONS AT THE TELEPHONE EQUIPMENT. PROVIDE FIRE ALARM CONTROL PANEL. THE CONTRACTOR SHALL SUB-CONTRACT THIS WORK TO THE ON SITE TELEPHONE/DATA CONTRACTOR.
12. RELOCATE EXISTING FIRE ALARM PANEL. EXTEND EXISTING EXISTING WIRING TO NEW LOCATION. RECESS EXISTING PANEL IN WALL.
13. PA. ADMINISTRATIVE HANDSET. COORDINATE EXACT LOCATION WITH OWNER.
14. PA. SYSTEM REMOTE PANC BUTTON. COORDINATE EXACT LOCATION WITH OWNER.
15. RE-ABLE PANEL AS INDICATED ON ONE-LINE DIAGRAM.

REFER TO IDS TECHNOLOGY DRAWINGS FOR ALL DATA POWER LOCATIONS ASSOCIATED WITH TECHNOLOGY. ELECTRICAL CONTRACTOR SHALL BID BOTH SET OF DOCUMENTS RECEPTACLES/DATA AND RACEWAYS FROM BOTH SETS COMBINED.

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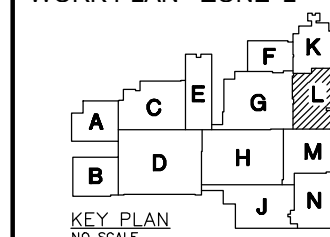
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FARMINGTON PUBLIC SCHOOLS
2015 RENOVATIONS
FARMINGTON HIGH SCHOOL

FIRST LEVEL POWER NE
WORK PLAN - ZONE 'I'



PRELIMINARY	<input checked="" type="checkbox"/>
DESIGN DEVELOPMENT	<input checked="" type="checkbox"/>
CONSTRUCTION	<input checked="" type="checkbox"/>
FINAL RECORD	<input type="checkbox"/>

DRAWN BY: JRD
CHECKED BY: GJZ

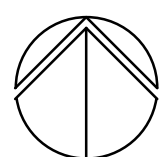
REVISIONS:

ADDENDUM NO. 2	02-17-10
ADDENDUM NO. 1	02-08-10

SHEET NO :

E3.1L

JOB NO. 151626C

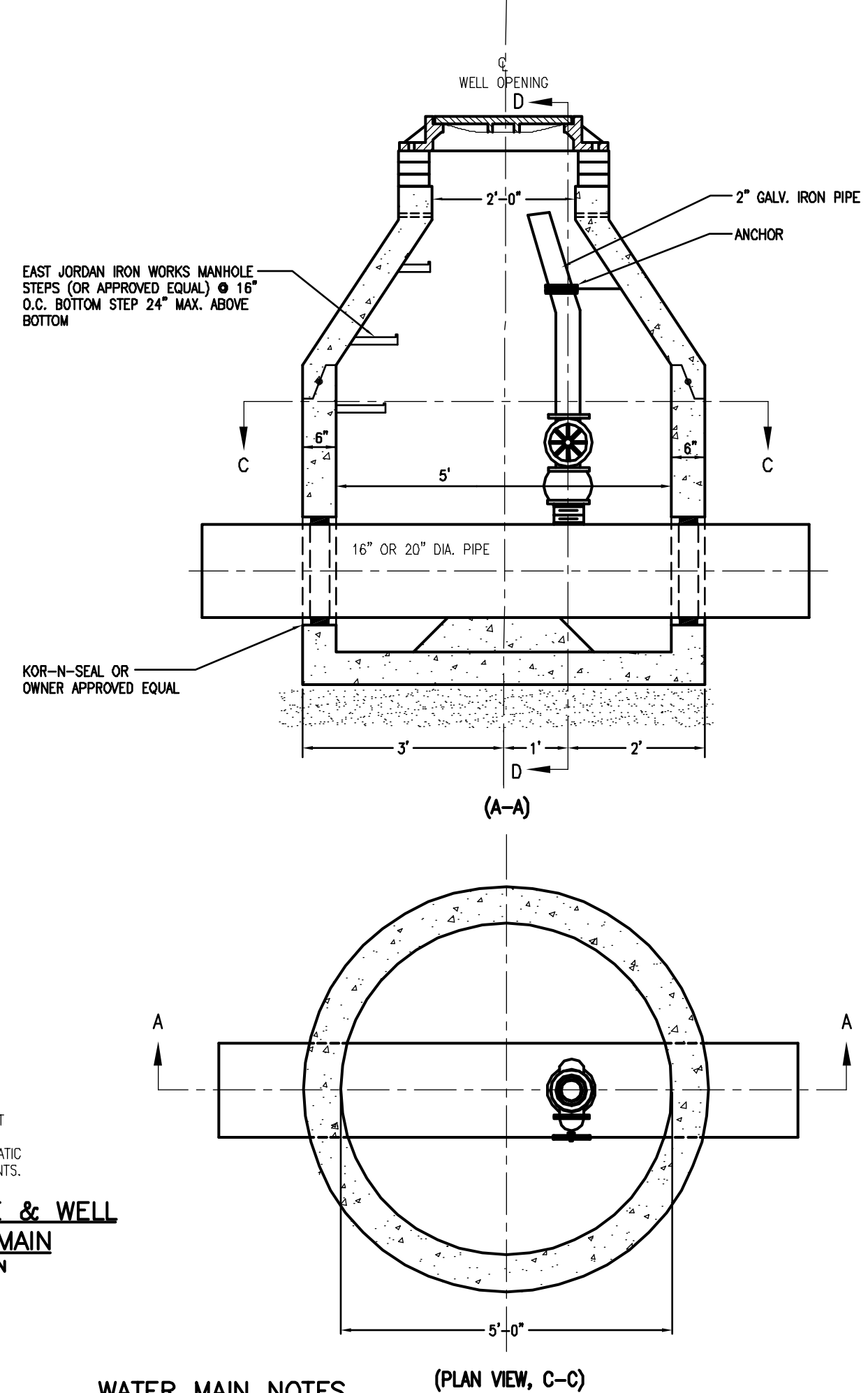
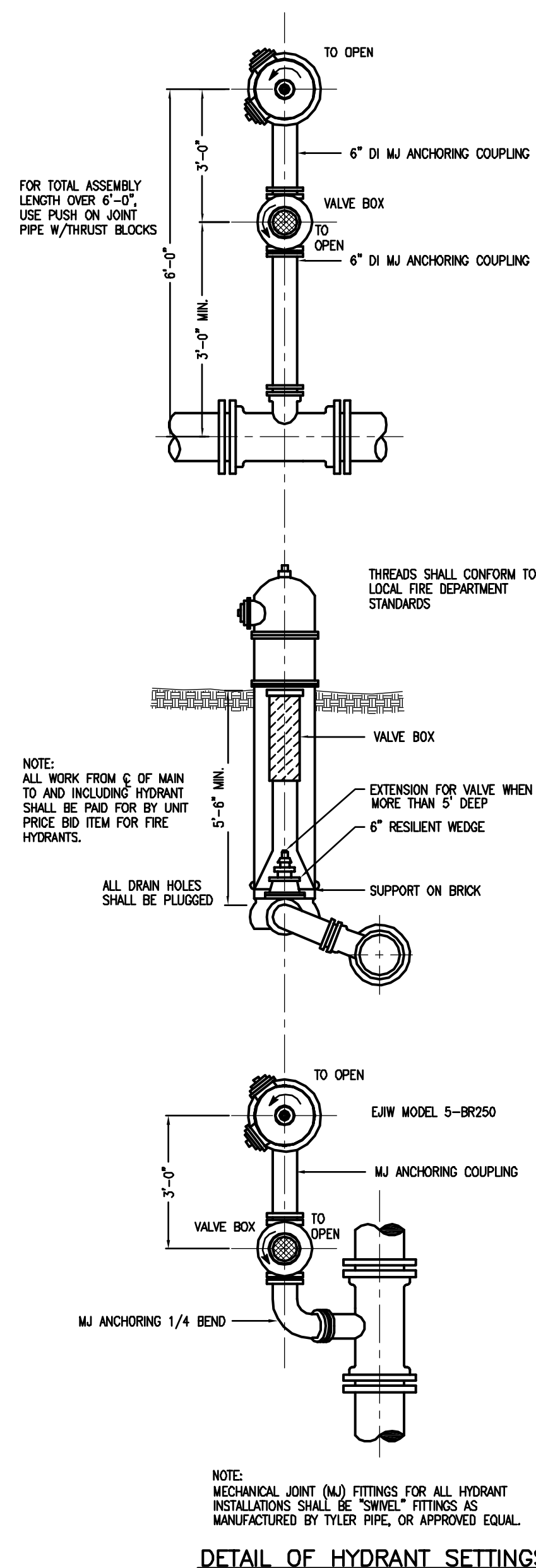
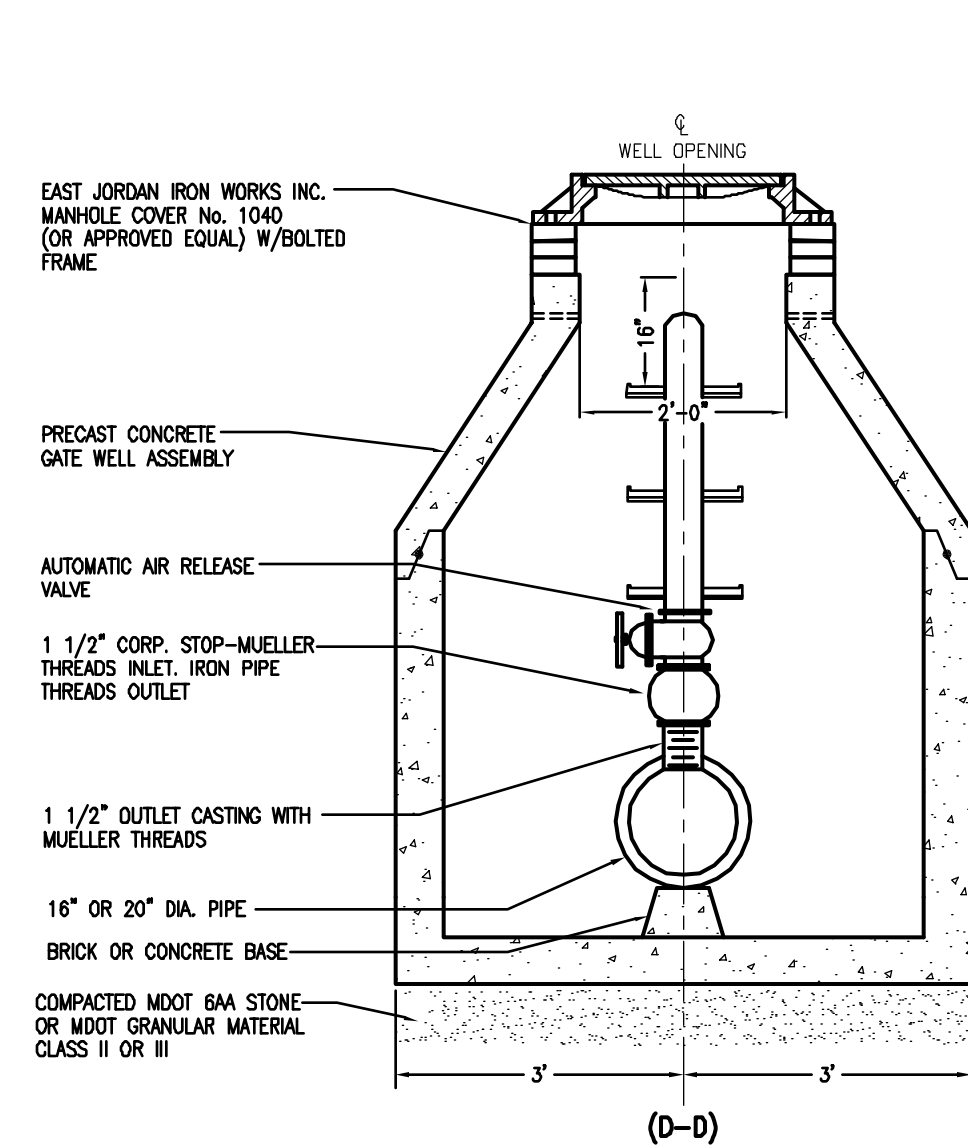
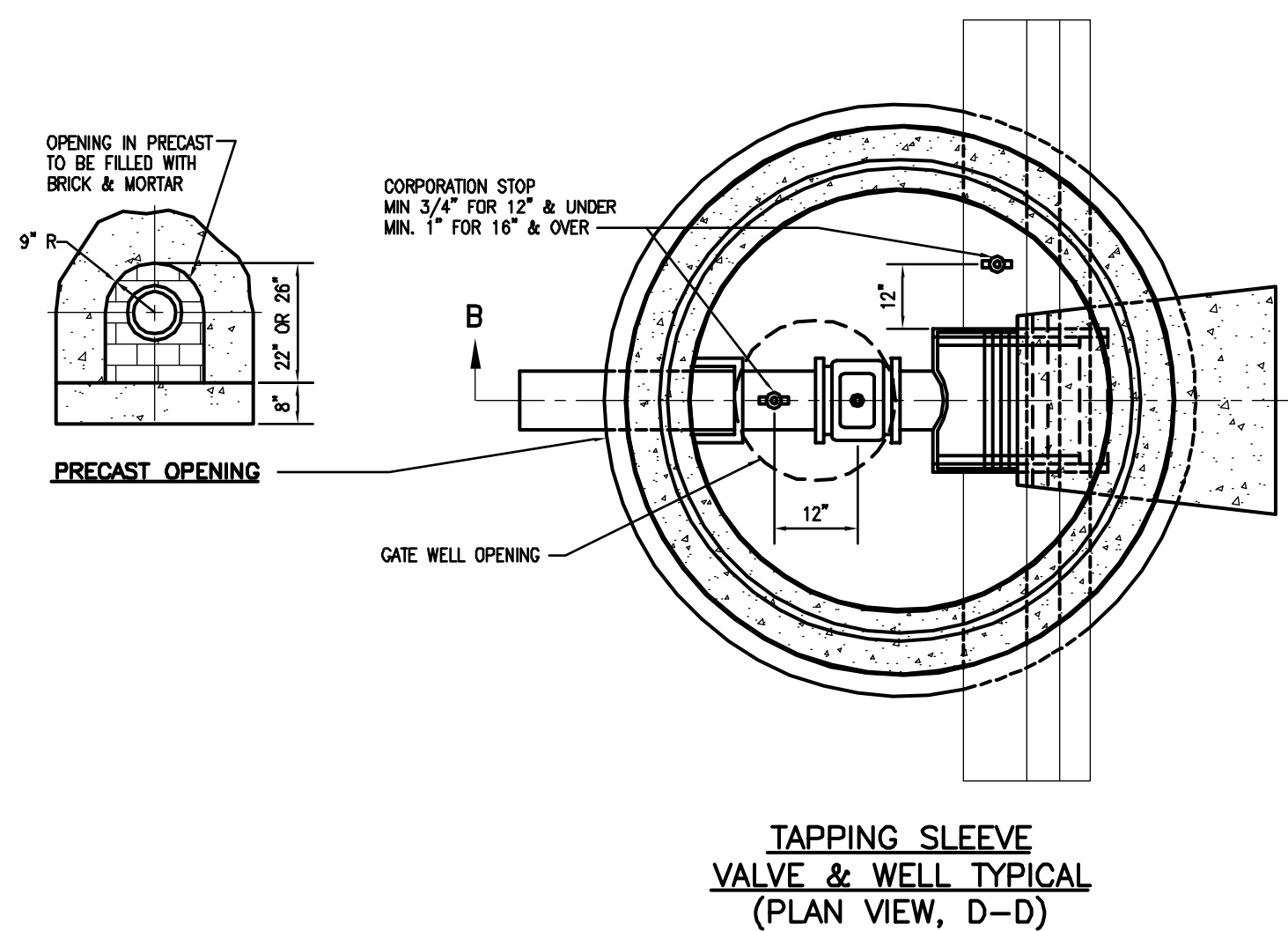
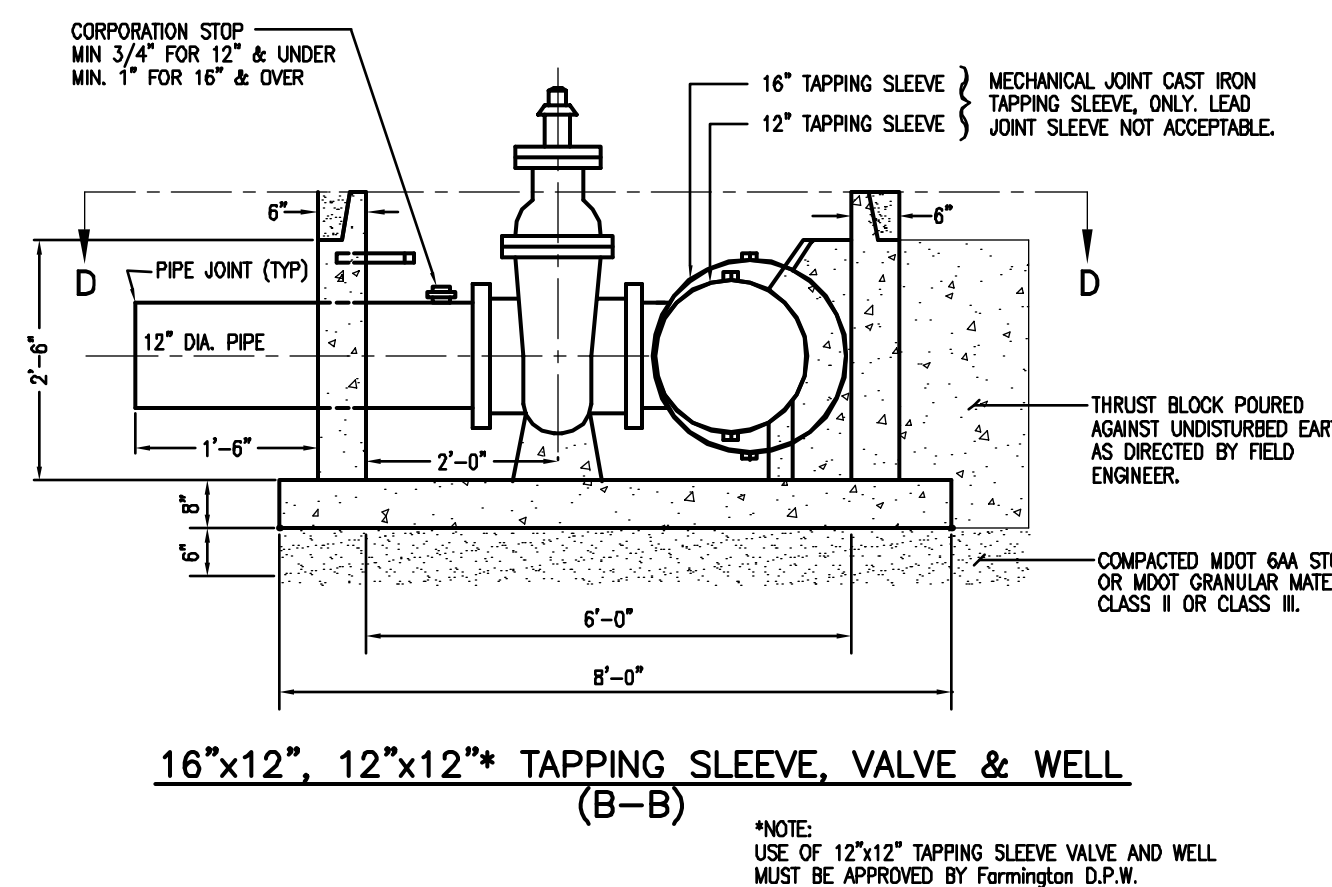
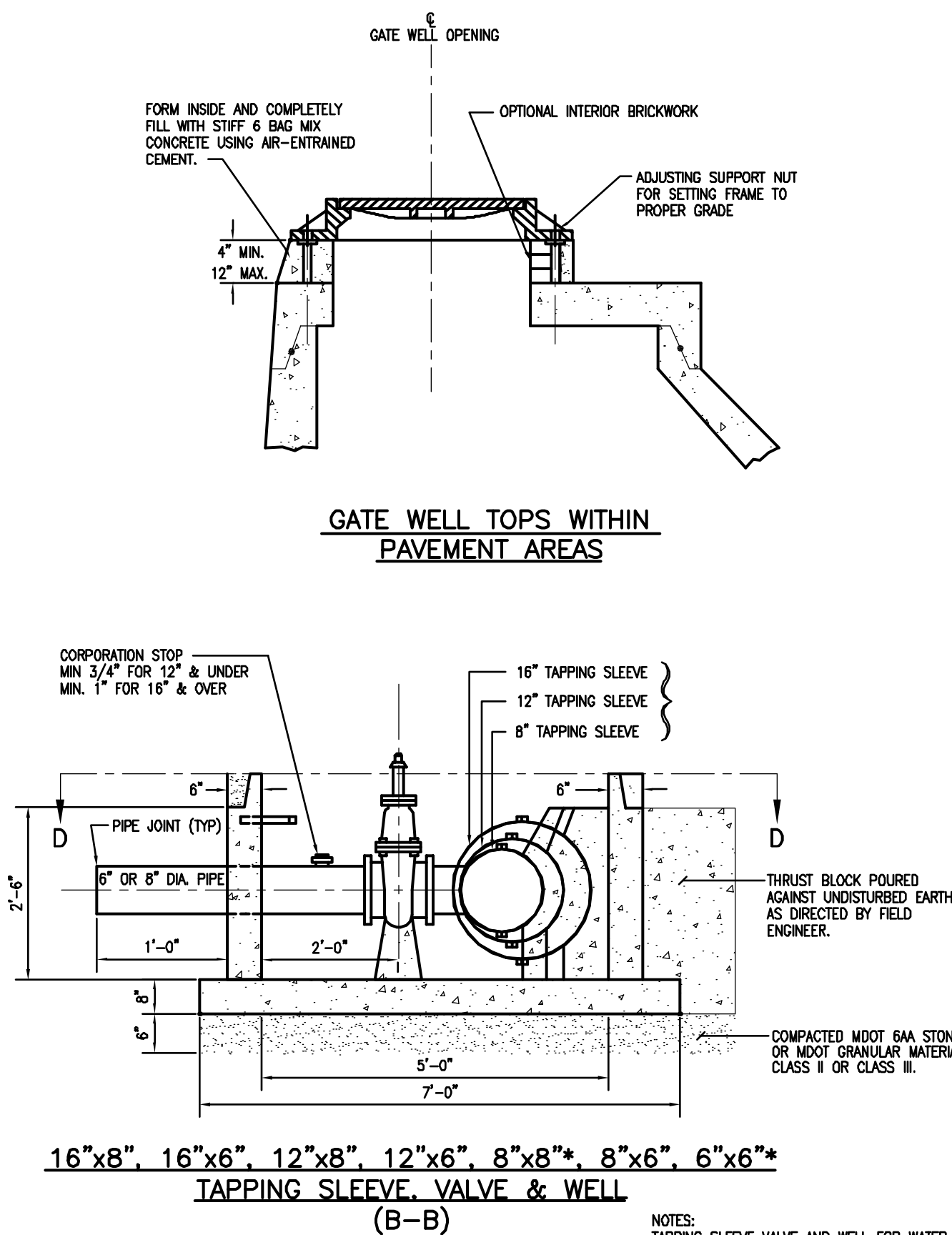
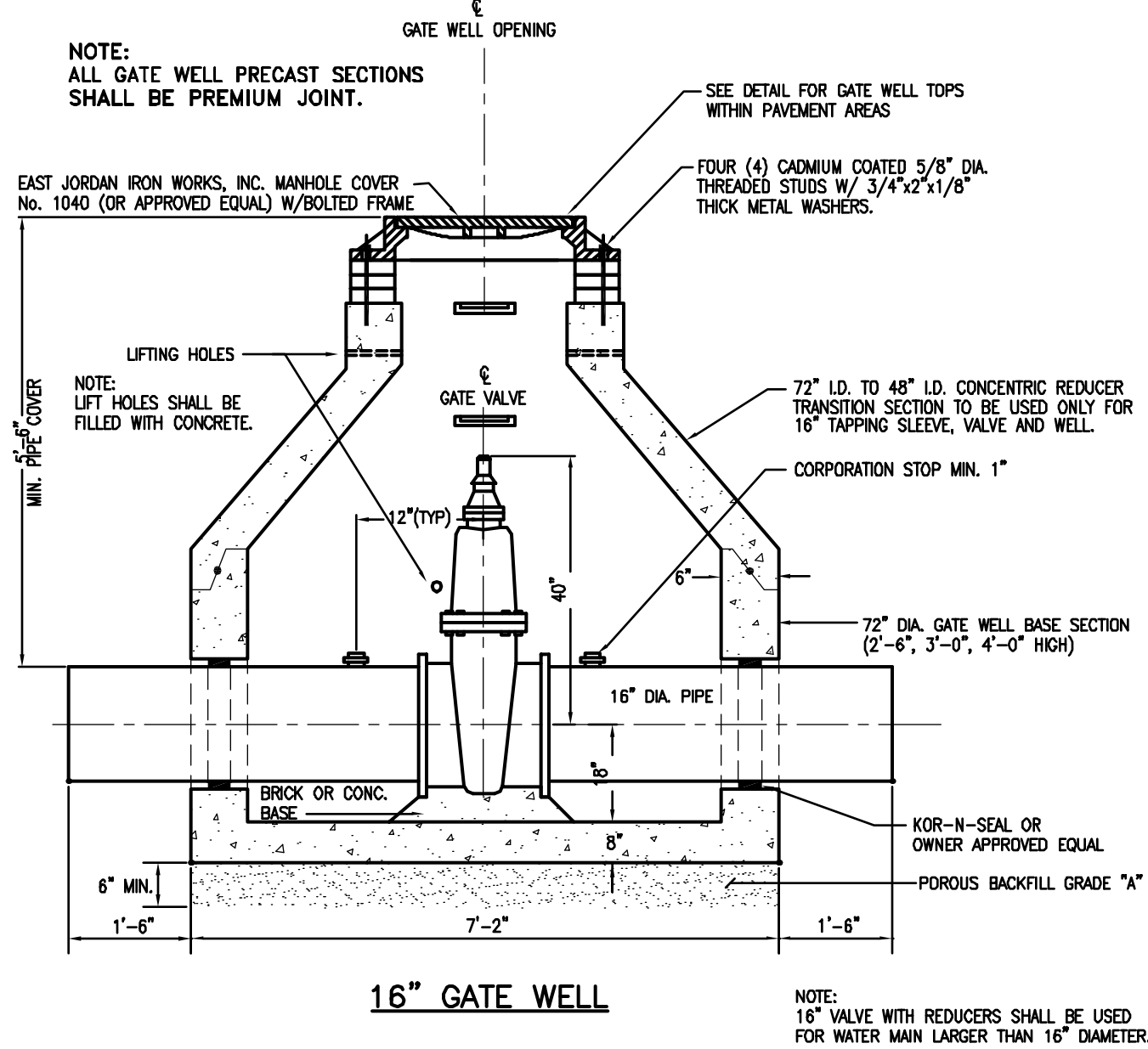
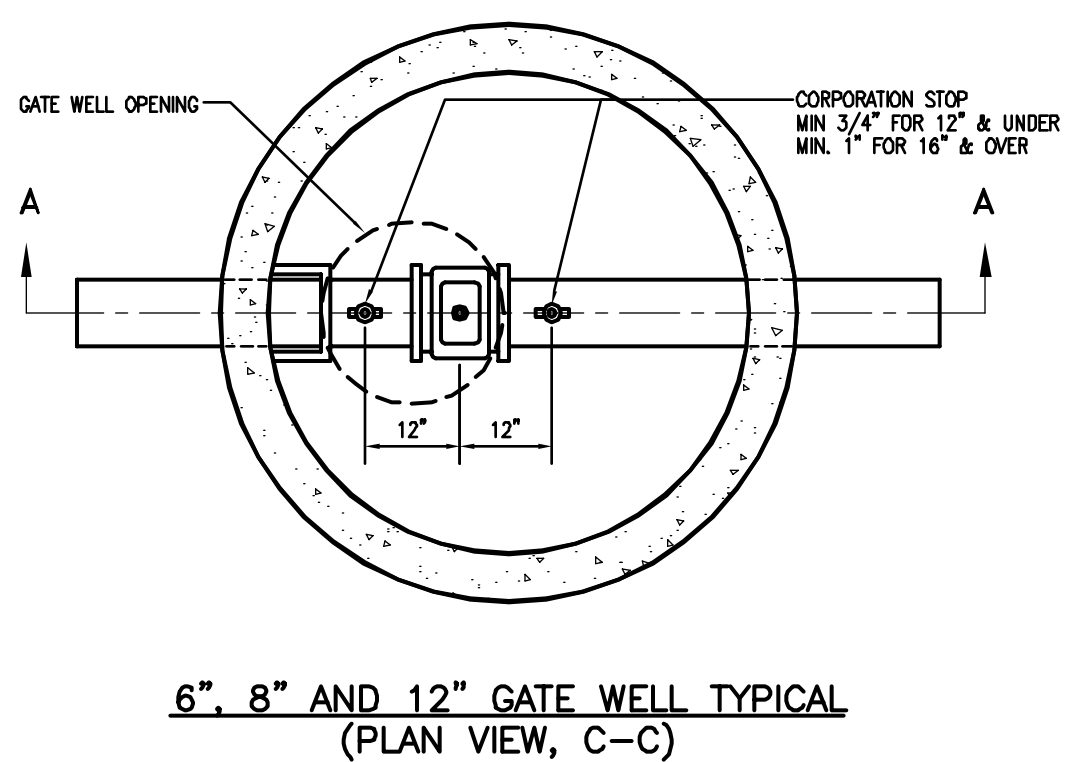
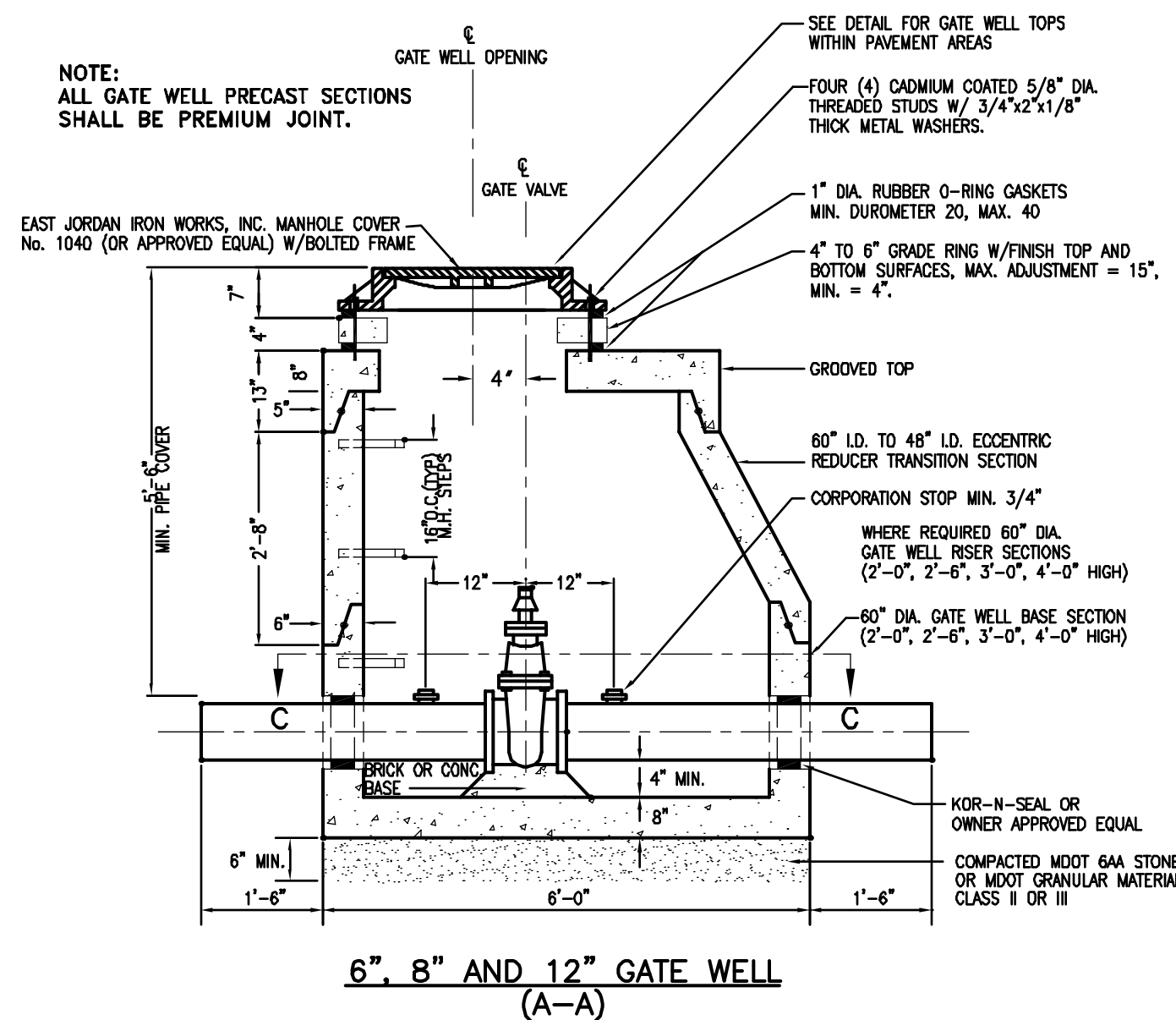
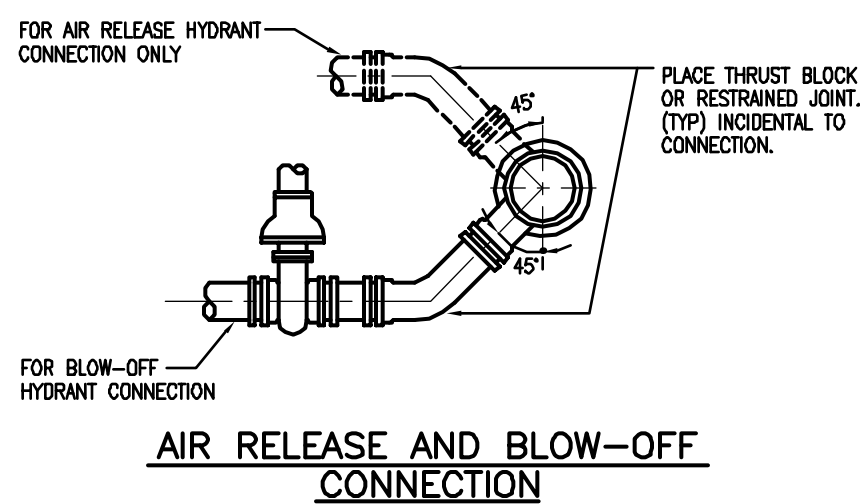


SCALE: 1/8" = 1' - 0"

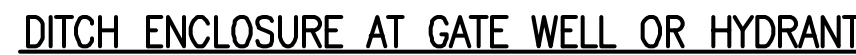
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JOB NO. 151626C



1. All construction procedures and materials used on all water main projects shall conform to Detroit Water and Sewerage Department and The City of Farmington current Standards and Specifications.
2. All hydrants shall be E.I.I.W. #5BR-250 WaterMaster and shall conform to AWWA specification C502 as amended and shall have a minimum 5 1/4" valve opening which meets with the water pressure. Hydrants shall meet all test requirements and be listed by Underwriters Laboratories, Inc. and meet the requirements of Factory Mutual. They must also be in accordance with the East Jordan Iron Works SBR-250 Fire Hydrant Specifications- Farmington. Hydrants shall be traffic style with breakable flange and coupling. Hydrants shall have a swivel flange to allow bonnet to be turned 360 degrees without removing the bonnet, and barrel flanges shall be integrally cast with the barrel. Inlet shoe shall have a bronze valve seat, which can be removed without digging. Inlet connection shall be 6" mechanical joint, ASA-A21-11. Stem threads shall be sealed with double "O" rings and shall be permanently lubricated with all weather grease. Hose connections: two (2) 2 1/2" hose nozzles, and One (1) 4 1/2" pumper nozzle, with National Standard threads. Operating Nut: (1) 1 1/2" P-Pentagon, open left. All hydrants shall have a Carroll drain. Hydrants shall be painted red above the ground and black below, with a finish coat of Glomortex 501 enamel or approved equal. Nozzle caps shall be painted red.
3. All water mains shall be ductile iron, as per the following specification Ductile iron pipe shall be ANSI 1-A21.51 (AWWA-C151) standard wall thickness, cement lined with bituminous seal coat Class 54 for sizes 6" through 20" and Class 55 for 24" pipe.
4. Gate Valves shall be iron body, fully bracket mounted, E.I.W.W. resilient wedge, non-rising stem, opening counter clockwise conforming to City of Detroit Water and Sewerage Department specifications. All gate valves with operating nuts at a distance greater than 5' below ground surface shall be provided with an extension stem. The length of the extension shall be such that it will be within 5' of ground surface when an extension stem is used. It shall be held in place by two extension stem guide assemblies. Each assembly shall be comprised of a "J" bracket and "L" bracket supplied by E.I.W.W. The stem guides shall be located opposite from each other, and shall be suitably fastened to the wall of the gate well. In addition, a "stop" shall be welded to the extension stem in a location that will prevent the extension stem from slipping off the operating nut. Details of extension stem and method of installation shall be approved by the engineer prior to installation. All precast concrete gate well sections shall be manufactured to conform with ASTM C478, standard specifications for precast reinforced concrete manhole sections, except wall thickness, shall be shown on these details. All joints for precast concrete gate well sections shall be "modified grooved tongue" with gasket manufactured to conform with ASTM C443, standard specification for joints for circular concrete sewer and culvert pipe rubber gaskets. All gate well covers shall be E.I.W.W. #1040 with bolted and have words "Water Dept" in raised letters on the frame cover, or approved equal.
5. Tapping sleeve shall be mechanical joint with DWS Mechanical Joint Tapping Gate Valve. Lead joint sleeves shall not be used.
6. Water mains shall be laid at least 10 feet horizontally from any existing or proposed gravity sewer line, or subsoil treatment system. The distance shall be measured edge to edge. In cases where it is not practical to maintain a 10 foot separation, the reviewing authority may allow deviation on a case-by-case basis, if supported by data from the design engineer.
7. No installation of water main shall be attempted without City's inspector being present. Unless otherwise specified on plans, top of all water mains shall be 5.5 ft. below existing or proposed road centerline, or 5.5 ft. below existing or proposed ground, whichever results in lower elevation. An 18" minimum vertical clearance between storm or sanitary sewer shall be maintained. This shall be the case where the water main is either above or below the sewer with preference to the water main located above the sewer.
8. Installed pipe shall be pressure tested and leak tested in accordance with AWWA standards. New, cleaned and repaired water mains shall be disinfected in accordance with AWWA standard C651. The specifications shall include detailed procedures for adequate flushing, disinfection, and microbiological testing of all water mains.
9. The design engineer shall furnish The City of Farmington with mylar "As-Built" water main plans along with a computer disk using the most recent release of AutoCad, upon job completion. Plans shall locate all water mains, hydrants and gate valves and wells.
10. All required cross connection devices shall be installed as required by the local plumbing inspector and in accordance with the standards of the Michigan Department of Public Health.
11. Three (3) working days before you dig, dial MISS DIG at 1-800-482-7171.
12. Where work is to be performed in the vicinity of a City of Detroit water main, the contractor shall notify the Detroit Metropolitan Water Services Inspection Department, (Bill Gowing) at (313) 833-8649 (7:30-9:30 AM, 3:30-4:30 PM), 3 working days prior to start of construction and request an inspection of the job.
13. All pipe and all fittings shall be made in U.S.A.
14. All bolts on all flanged and mechanical joint fittings shall be domestic origin high strength, low alloy COR-BLUE steel bolts or approved equal. These bolts shall meet the current provisions of American National Standard ANSI/AWWA C111/A21.11-90 for rubber gasket joints for ductile iron pressure pipes and fittings. Bolt manufacturer's certificate of compliance must accompany each shipment.
15. All bolts used in securing fittings to the water main shall be "COR-BLUE" bolts or approved equal.
16. BACKFILL NOTE: Under road surfaces, pavement, sidewalk, curb, driveways and where the edge of the trench is within 3 (three) feet of the pavement or as called for on the plans, the trench depth shall be 4 (four) inches lower than the proposed water main elevation. The trench width shall be the outside diameter plus 16 (sixteen) inches for pipe diameters up to 36 (thirty-six) inches and larger. The trench shall be backfilled by placing granular material by the "Controlled Density Method" or other means having approval of the engineer and compacting it to 95 (ninety-five) percent of its maximum unit weight.
17. Tracing wire shall be provided for all water main. Wire shall be copper, 12 gage, stranded, insulated per city requirements. Connection is required at all service laterals, hydrants and gate well, with exposed wire above the ground surface. Conductivity shall be tested by the City prior to the acceptance of the main. All splices shall be made using a gel-cap product which provides a waterproof seal, such as 3M's Direct Burial Splice kit #P054007/09964 or approved equal.
18. Polywrap shall be placed as required by the City.
19. Like size to like size tapping sleeves shall not be used with transite pipe.
20. Where water main is located under pavement, the City shall not be responsible for repairing pavement within the easement in the event that maintenance or repairs to the water main become necessary.



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- 5' 4" STANDARD COVER
- 4' MIN. COVER
- WATER MAIN
- USE 22 1/2" BENDS
PROVIDE JOINT RESTRAINT BY
MEANS OF THRUST BLOCKS
AND VERTICAL ANCHORAGES
OR OTHER METHOD THAT IS
APPROVED BY THE ENGINEER
- DITCH OR STREAM CROSSING**



* NOTE: IF THE EXISTING SUBGRADE SOILS MEET THE REQUIREMENTS FOR MDOT GRANULAR MATERIAL CLASS II (MINIMUM 4" THICK), THEN THE WATER MAIN MAY BE LAID DIRECTLY ON THE COMPACTED NATIVE SUBGRADE SOILS.



STANDARD MANHOLE STEP

SECTION X-X

VERTICAL ANCHORAGE DETAIL



NOTE:
ADDITIONAL CONCRETE TO BE PLACED PER ENGINEER'S DIRECTION FOR HYDRANTS
REQUIRING THRUST BLOCKS. THE THRUST BLOCKS ARE INCIDENTAL TO HYDRANT INSTALLATION.

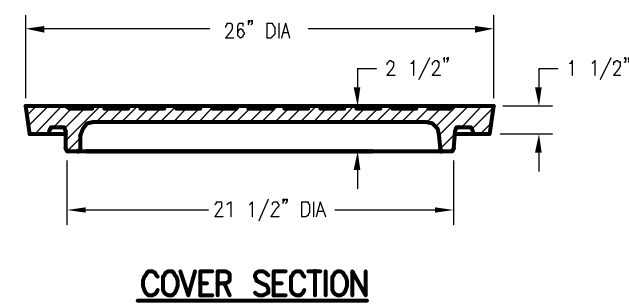
D	A	B	C MIN.
20"	7"	5"	2.5"
16"	4'-10"	4'-10"	2'
12"	4'-4"	3'	1'-9"
10"	3'	2'	1'-6"
8"	2'-10"	2'-6"	1'-6"
6"	1'-6"	1'-6"	3"

D	A	B	C	E MIN
20"	6.5'	4.5'	3.5'	3'
16"	4'-8"	4'-8"	2.5'	2.75'
12"	4'	3'	2.5'	2.5'
10"	3'	2'	2'	2.25'
8"	2'-6"	2'	2'	2.25'
6"	2'	2'	2'	2.25'



CASING SHALL BE SPIRAL
WELDED STEEL PIPE A.S.T.M
A-252, GR. 2.

PLACE WOLMANIZED SKID ALONG THE TOP OF THE CARRIER PIPE IN ORDER TO PREVENT THE CARRIER PIPE FROM ROLLING OVER OR FLOATING. IF THE CONTROLLING AGENCY PERMIT REQUIREMENTS INDICATE THAT SAND OR GROUT MUST BE PLACED BETWEEN THE CASING PIPE AND CARRIER PIPE, THEN THE SAND OR GROUT SHALL BE PLACED IN ACCORDANCE WITH THE PERMIT SPECIFICATIONS. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, RESTRAINED JOINTS SHALL BE REQUIRED FOR WATER MAIN JOINTS THAT ARE LOCATED INSIDE THE CASING PIPE IN THE EVENT THAT NO GROUT OR SAND IS PLACED BETWEEN THE CASING PIPE AND CARRIER PIPE.



COVER SECTION



CAST IRON GATE WELL COVER
E.J.I.W. 1040 TYPE "C" SOLID COVER



16" WATER MAIN ENCASEMENT
UNDER DRAINS & DITCHES