

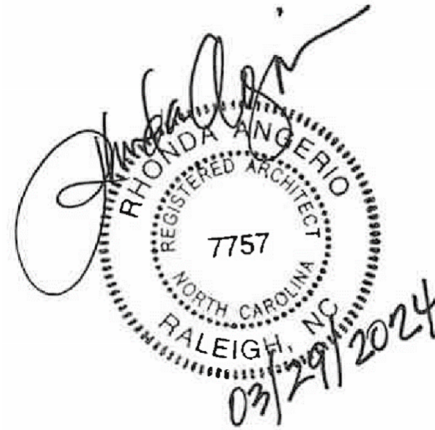
**ADDENDUM DATE:** March 29, 2024

**PROJECT:** Northwoods Park Middle School Gymnasium & Renovation  
904 Sioux Dr.  
Jacksonville, NC 28540

**OWNER:** Onslow County Schools  
200 Broadhurst Rd  
Jacksonville, NC 28540

**ARCHITECT:** Smith Sinnett Architecture, P.A.  
4600 Lake Boone Trail, Suite 205  
Raleigh, North Carolina 27607

**BIDS DUE:** Thursday, **April 11<sup>th</sup>, 2024 at 2:00 p.m.**  
Onslow County Schools Office  
200 Broadhurst Rd.  
Jacksonville, NC 28540  
Meeting Room # 4



**Please note, Project Documents, Addenda, and Contractors list are available at [www.smithsinnett.com](http://www.smithsinnett.com) under the 'Documents' icon on the navigation bar.**

Among other items, this Addendum addresses the Clarifications from GCs questions, changes to sheets and specifications.

This Addendum shall be included in the contract for the above-referenced project. All General, Supplementary and Special Conditions, etc., as originally specified or as modified below shall apply to these items.

### **General**

1. All questions and Requests for Substitution shall be submitted to the Architect prior to April 4<sup>th</sup>, 2024.
2. Exhibit B - Survey has been attached to this addendum.

### **Clarifications**

1. For "damp proofing" referenced in drawings, refer to specification SECTION 07 11 13 – Bituminous Damp Proofing.
2. Subsection 1.9 in specification SECTION 04 20 00 is required.
3. Subsection 1.2 and 1.4 in specification SECTION 05 40 00 is required in the entire scope of the project, including renovation areas.
4. BIM design is necessary for this project.
5. Owner will conduct hazardous material testing if suspected.
6. Refer to Sheet A9-01 for extents of exposed steel painting. Legend states exactly what is to be painted.

7. Sheet C3.1 SITE PLAN shows the gym addition sidewalk to be 5' around entire building. Disregard that note and refer to new sheet A1-02 FLOOR PLAN – GYM ADDITION, included in addendum 1, for the correct sidewalk dimensions.
8. Sheet A1-06 shows an exposed ceiling and a gypsum ceiling in Corridor 1015.
9. Item number 9 in the Equipment schedule is "BEVERAGE COOLER" which is OFCI.
10. Onslow County Schools will: Remove and retain Light Bulbs that are being removed, and Breaker Panels and Breakers that are being removed.
11. Contractor to remove bleacher boards, seats, walking surfaces, and vertical wood members and provide to owner. Contractor to remove all hardware or other fasteners prior to presenting to owner.
12. Contractor to save and present to the owner a minimum of 50% of the wood flooring on the gym floor. Contractor to remove all hardware or other fasteners prior to presenting to owner.
13. Contractor to remove the existing scoreboard in the existing Gymnasium and present to owner. Take care to protect the unit to ensure no damage to the unit.

### **Specifications**

1. **Replace:** SECTION 00 42 00 – PROPOSAL FORM  
Updated to include the addition of Alternate #8.
2. **Replace:** SECTION 01 23 00 – ALTERNATES  
Updated to include the addition of Alternate #8.
3. **Replace:** SECTION 04 20 00 – UNIT MASONRY  
Updated to include 2.3.1 Decorative Concrete Masonry Units.
4. **Revision:** SECTION 00 01 10 – TABLE OF CONTENTS  
Change 224200 PLUMBING FIXTURES TO 224000.
5. **Revision:** SECTION 09 30 00 – TILING  
DALTILE is an approved manufacturer.
6. **Revision:** SECTION 09 65 19 RESILIENT TILE FLOORING:  
ARMSTRONG is an approved manufacturer.
7. **Revision:** SECTION 09 91 13 EXTERIOR PAINTING / 099123 INTERIOR PAINTING / 099700 SPECIAL COATINGS  
SHERWIN WILLIAMS is an approved manufacturer and the basis of design.
8. **Revision:** SECTION 23 74 00 HIGH PERCENTAGE OUTSIDE AIR PACKAGED DX UNIT  
AAON is an approved manufacturer.
9. **Revision:** SECTION 22 30 00 PLUMBING FIXTURES / 2.04 LAVATORIES / C Supply Faucet Manufacturers  
MOEN is an approved manufacturer.

## Architectural – Drawings

1. **Replace:** Sheet S0-01 TYPICAL DETAILS  
The sheet has been revised to show new details.
2. **Replace:** Sheet S1-21 FOUNDATION + FRAMING PLAN – NEW CLASSROOMS  
The sheet has been revised to show new slab cuts.
3. **Replace:** Sheet S2-00 SECTIONS  
The sheet has been revised to show material call out.
4. **Replace:** Sheet S2-01 SECTIONS  
The sheet has been revised to show new section.
5. **Replace:** Sheet A1-05 FLOOR PLAN – RENOVATION  
The sheet has been revised to show new section cuts, new slab cuts, new details and detail reference.
6. **Replace:** Sheet A1-06 REFLECTED CEILING PLAN & SECTIONS – RENOVATION  
The sheet has been revised to show new section cuts, new details, and correct labeling of some details.
7. **Replace:** Sheet A2-01 BUILDING ELEVATIONS – GYM ADDITION  
The sheet has been revised to show concrete bench and material call outs.
8. **Replace:** Sheet A3-11 WALL SECTIONS – GYM ADDITION  
The sheet has been revised to show location of new detail and material call outs.
9. **Replace:** Sheet A3-12 WALL SECTIONS & DETAILS – GYM ADDITION  
The sheet has been revised to show new details.
10. **Replace:** Sheet A4-03 INTERIOR ELEVATIONS – GYM ADDITION  
The sheet has been revised to show stainless steel countertop in detail.
11. **Replace:** Sheet A5-01 PLAN DETAILS  
The sheet has been revised to show new details.
12. **Replace:** Sheet A5-02 WALL DETAILS  
The sheet has been revised to show new detail.
13. **Replace:** Sheet A6-01 DOOR SCHEDULE, ELEVATIONS, AND DETAILS  
The sheet has been revised to show new location, within wall, of coiling door.
14. **Replace:** Sheet E2-02 LIGHTING PLAN – GYM ADDITION  
The sheet has been revised to show new lighting.
15. **Replace:** Sheet M1-02 DUCTWORK PLAN – GYM ADDITION  
The sheet has been revised to show new mechanical work.
16. **Addition:** Sheet M4-03 EXISTING CONTROLS – ALTERNATE 8  
The sheet has been added to show extents of new alternate.

17. **Addition:** Sheet M4-04 EXISTING CONTROLS – ALTERNATE 8  
The sheet has been added to show extents of new alternate.
18. **Revision:** Sheet G0-00 COVER SHEET  
The sheet has the owner's address as 904 Sioux Dr. Jacksonville, NC 28540. The correct owner's address is 200 Broadhurst Rd. Jacksonville, NC 28540
19. **Revision:** Sheet A1-03 REFLECTED CEILING PLAN – GYM ADDITION  
The sheet has incorrect elevation markers at Exterior bulkheads. All three bulkheads are to be installed at 10'-0" A.F.F.
20. **Revision:** Sheet A6-01 – DOOR SCHEDULE, ELEVATIONS, AND DETAILS  
The door schedule shows door 603C is currently as a door material SCWD and door type as N. The correct door material is HM and the correct door type is F.
21. **Revision:** Sheet A9-01 – ALTERNATE 3  
This sheet title is wrong, revise to Alternate 1. This sheet only shows the extent of Alternate 1 not Alternate 3.
22. **Revision:** Shown on multiple sheets - The Glazing schedule currently has IG-1 as "TINTED, LAMINATED" and IG-2 as "TINTED, LAMINATED, TEMPERED" The correct description of these designations are IG-1 "TINTED" and IG-2 "TINTED, TEMPERED". There is no laminated glazing in this project.
23. **Revision:** Shown on multiple sheets - Windows W1 and W2 were inaccurately labeled. The correct designation for these windows is S11 and S12, respectively. The details on A6-03 accurately show a storefront frame for these windows.
24. **Revision:** Shown on multiple sheets: All Z channels are to be installed horizontally, not vertically.

**Attached:**

SECTION 00 42 00 – PROPOSAL FORM  
SECTION 01 23 00 – ALTERNATES  
SECTION 04 20 00 – UNIT MASONRY  
Sheet S0-01 TYPICAL DETAILS  
Sheet S1-21 FOUNDATION + FRAMING PLAN – NEW CLASSROOMS  
Sheet S2-00 SECTIONS  
Sheet S2-01 SECTIONS  
Sheet A1-05 FLOOR PLAN – RENOVATION  
Sheet A1-06 REFLECTED CEILING PLAN & SECTIONS – RENOVATION  
Sheet A2-01 BUILDING ELEVATIONS – GYM ADDITION  
Sheet A3-11 WALL SECTIONS – GYM ADDITION  
Sheet A3-12 WALL SECTIONS & DETAILS – GYM ADDITION  
Sheet A4-03 INTERIOR ELEVATIONS – GYM ADDITION  
Sheet A5-01 PLAN DETAILS  
Sheet A5-02 WALL DETAILS  
Sheet A6-01 DOOR SCHEDULE, ELEVATIONS, AND DETAILS  
Sheet E2-02 LIGHTING PLAN – GYM ADDITION  
Sheet M1-02 DUCTWORK PLAN – GYM ADDITION  
Sheet M4-03 EXISTING CONTROLS – ALTERNATE 8  
Sheet M4-04 EXISTING CONTROLS – ALTERNATE 8  
Exhibit B: Survey



**SECTION 00 42 00 - PROPOSAL FORM**

PROJECT: Northwoods Park Middle School Gymnasium & Renovation  
904 Sioux Dr  
Jacksonville, North Carolina 28540

OWNER: Onslow County Schools  
200 Broadhurst Road  
Jacksonville, North Carolina 28540

ARCHITECT: Smith Sinnett Architecture  
4600 Lake Boone Trail, Suite 205  
Raleigh, North Carolina 27607

The undersigned, as bidder, hereby declares that the only person or persons interested in this proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. The bidder further declares that he has examined the site of the work and the contract documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed.

The Bidder proposes and agrees if this proposal is accepted to contract with Onslow County Schools Board of Education in the form of contract specified below, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of

**Northwoods Park Middle School Gymnasium & Renovation**

in full in complete accordance with the plans, specifications and contract documents, to the full and entire satisfaction of the Onslow County Schools Board of Education, and Smith Sinnett Architecture with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and the contract documents.

The low Bidder will be determined by the total cost of the Contract with the lump sum prices of the alternates accepted being added to or deducted from the Base Bid to give the total cost of the Contract. Bidders are required to give a price for Base Bid, all Alternates, and all Unit Prices as applicable to their Contract. All Bidders are required to be licensed and in good standing with their respective North Carolina Licensing Board.

**SINGLE PRIME CONTRACT:**

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**BASE BID:**

Amount: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**ALTERNATE 1: Paint Existing Exposed Steel**

Amount: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**ALTERNATE 2: Preferred Door Hardware Manufacturers**

Amount: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**ALTERNATE 3: Preferred Plumbing Manufacturers**

Amount: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**ALTERNATE 4: Preferred Mechanical Manufacturers**

Amount: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**ALTERNATE 5: Preferred Electrical Manufacturers**

Amount: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**ALTERNATE 6: Preferred Termite Treatment Manufacturer**

Amount: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**ALTERNATE 7: Preferred Translucent Wall Manufacturer**

Amount: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**ALTERNATE 8: Existing BAS Controls Upgrade**

Amount: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**MAJOR SUBCONTRACTORS if any (Name, City & State)**

General Subcontractor:

Plumbing Subcontractor:

\_\_\_\_\_ Lic \_\_\_\_\_

\_\_\_\_\_ Lic \_\_\_\_\_

Mechanical Subcontractor:

Electrical Subcontractor:

\_\_\_\_\_ Lic \_\_\_\_\_

\_\_\_\_\_ Lic \_\_\_\_\_

GS143-128(d) requires all single prime bidders to identify their subcontractors for the above subdivisions of work. A contractor whose bid is accepted shall not substitute any person as subcontractor in the place of the subcontractor listed in the original bid, except (i) if the listed subcontractor's bid is later determined by the contractor to be non-responsible or non-responsive or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work, or (ii) with the approval of the awarding authority for good cause shown by the contractor.

**ALLOWANCES**

(Refer to Division 01 Section 01 21 00 – Allowances for amounts to be included in bid. Allowance amounts shall be based on the Unit Prices provided as part of Section 01 22 00). Acknowledge Allowances have been included with in the Base Bid and designated Alternates.

Included within **BASE BID**:

Acknowledgement

- |   |                          |
|---|--------------------------|
| <b>UP/A-1: Unsuitable soils removal and disposal off-site</b>               | <input type="checkbox"/> |
| <b>UP/A-2: Replacement with off-site suitable soil in-place</b>             | <input type="checkbox"/> |
| <b>UP/A-3: Replacement with Aggregate Base Course (ABC) stone material</b>  | <input type="checkbox"/> |
| <b>UP/A-4: Replacement with #57 Washed Stone material</b>                   | <input type="checkbox"/> |
| <b>UP/A-5: Woven Geo-Textile Fabric in place</b>                            | <input type="checkbox"/> |
| <b>UP/A-6: Biaxial Geo-Grid in place</b>                                    | <input type="checkbox"/> |
| <b>UP/A-7: Subsurface Drain</b>   | <input type="checkbox"/> |
| <b>UP/A-8: Topical Moisture Mitigation System</b>                           | <input type="checkbox"/> |
| A-9: Access Control – Security Cameras, Intrusion Detection, & Card Readers | <input type="checkbox"/> |
| A-10: Structured Cabling  | <input type="checkbox"/> |
| A-11: Technology, Furnishings, & Gymnasium Sound System                     | <input type="checkbox"/> |
| A-12: Appliances  | <input type="checkbox"/> |
| A-13: Signage   | <input type="checkbox"/> |
| A-14: Bi-directional Amplification  | <input type="checkbox"/> |
| A-15: Contingency   | <input type="checkbox"/> |

**UNIT PRICES**

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(Refer to Division 01 Section 01 22 00 - Unit Prices. For quantities, refer to Section 01 21 00 - Allowances). Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the Base Bid and designated Alternates quantity of the work and in the given Allowances all in accordance with the contract documents.

BASE BID Unit Prices:

- Unit Price No. UP/A-1:** Unsuitable Soils Removal and Disposal off-site: per cy. Unit Price (\$)\_\_\_\_\_
- Unit Price No. UP/A-2:** Replacement with Off-site Suitable Soil In-place: per cy. Unit Price (\$)\_\_\_\_\_
- Unit Price No. UP/A-3:** Replacement with Aggregate Base Course stone material: per cy. Unit Price (\$)\_\_\_\_\_
- Unit Price No. UP/A-4:** Replacement with #57 Washed Stone Material: per cy. Unit Price (\$)\_\_\_\_\_
- Unit Price No. UP/A-5:** Woven Geo-Textile Fabric in place: per square yard. Unit Price (\$)\_\_\_\_\_
- Unit Price No. UP/A-6:** Biaxial Geo-Grid in place: per square yard. Unit Price (\$)\_\_\_\_\_
- Unit Price No. UP/A-7:** Subsurface Drain: per lf. Unit Price (\$)\_\_\_\_\_
- Unit Price No. UP/A-8:** Topical Moisture Mitigation System: per square foot Unit Price (\$)\_\_\_\_\_

The bidder further proposes and agrees hereby to commence work under this contract on a date to be specified in a written order of the designer and shall fully complete all work thereunder within the time specified in the Supplementary General Conditions Article 9. Applicable liquidated damages amount is also stated in the Supplementary General Conditions Article 9.

The bidder certifies that as of the date of this bid, the bidder submitting this bid is not listed on the Final Divestment List created by the State Treasurer pursuant to N.C. Gen. Stat. § 143-6A-4. The individual signing this bid form certifies that he or she is authorized by the bidder to make the foregoing statement.

**ADDENDUM**

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(Addendum received and used in computing bid)

Addendum No. 1 \_\_\_\_\_ Addendum No. 3 \_\_\_\_\_ Addendum No. 5 \_\_\_\_\_

Addendum No. 2 \_\_\_\_\_ Addendum No. 4 \_\_\_\_\_ Addendum No. 6 \_\_\_\_\_

**PROPOSAL SIGNATURE**

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The undersigned further agrees that in the case of failure on his part to execute the said contract and the bonds within ten (10) consecutive calendar days after being given written notice of the award of contract, the certified check, cash or bid bond accompanying this bid shall be paid into the funds of the owner's account set aside for the project, as liquidated damages for such failure; otherwise the certified check, cash or bid bond accompanying this proposal shall be returned to the undersigned. No proposal may be withdrawn after the scheduled closing time for the receipt of Bids for a period of sixty (60) days.

Respectfully submitted this day of \_\_\_\_\_

\_\_\_\_\_  
(Name of firm or corporation making bid)

WITNESS:

By: \_\_\_\_\_

Signature

\_\_\_\_\_  
(Proprietorship or Partnership)

Name: \_\_\_\_\_

Print or type

Title: \_\_\_\_\_

(Owner/Partner/Pres./V.Pres)

Address: \_\_\_\_\_

ATTEST:

\_\_\_\_\_

By: \_\_\_\_\_

License No. \_\_\_\_\_

Title: \_\_\_\_\_

Federal I.D. No. \_\_\_\_\_

(Corp. Sec. or Asst. Sec. only)

(CORPORATE SEAL)

**MINORITY BUSINESS PARTICIPATION REQUIREMENTS**

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*Provide with the bid* - Under GS 143-128.2(c) the undersigned bidder shall identify **on its bid** (Identification of Minority Business Participation Form) the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. **Also** list the good faith efforts (Affidavit A) made to solicit minority participation in the bid effort.

**NOTE:** A contractor that performs all of the work with its own workforce may submit an Affidavit **(B)** to that effect in lieu of Affidavit **(A)** required above. The MB Participation Form must still be submitted even if there is zero participation.

*After the bid opening* - The Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low bidder, the bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

An Affidavit **(C)** that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the 10% goal established. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort and Affidavit **D** is not necessary;

**\* OR \***

If less than the 10% goal, Affidavit **(D)** of its good faith effort to meet the goal shall be provided. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

**Note:** Bidders must always submit **with their bid** the Identification of Minority Business Participation Form listing all MB contractors, vendors and suppliers that will be used. If there is no MB participation, then enter none or zero on the form. Affidavit A **or** Affidavit B, as applicable, also must be submitted with the bid. Failure to file a required affidavit or documentation with the bid or after being notified apparent low bidder is grounds for rejection of the bid.

**END OF SECTION 00 42 00**

**SECTION 01 23 00 - ALTERNATES**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. The cost or credit for each alternate is the net addition to the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
- B. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- C. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- D. Execute accepted alternates under the same conditions as other work of the Contract.
- E. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES



- A. **Alternate No. 1; Paint Existing Exposed Steel:** State the amount to be added to the Base Bid for providing all labor and materials to prepare and paint all exterior exposed steel as shown and noted in the Contract Drawings per the plans and specifications.
- B. **Alternate No. 2; Owner Preferred Door Hardware Manufacturers:** State the amount to be added to the Base Bid for providing all labor and materials indicated and required to accomplish Work involved in providing the Owner Preferred Manufacturers Listed Below:
1. Door Locks: Manufacturer
    - a. Schlage
  2. Exit Devices: Manufacturer
    - a. Von Duprin
  3. Closers: Manufacturer
    - a. LCN
- C. **Alternate No. 3; Owner Preferred Plumbing Manufacturer:** State the amount to be added to the Base Bid for providing all labor and materials indicated and required to accomplish Work involved in providing the Owner Preferred Manufacturers Listed Below:
1. Water Cooler with Bottle Filler: Manufacturer
    - a. Elkay
- D. **Alternate No. 4; Owner Preferred Mechanical Manufacturers:** State the amount to be added to the Base Bid for providing all labor and materials indicated and required to accomplish Work involved in providing the Owner Preferred Manufacturers Listed Below:
1. HVAC Equipment for Chillers and Air Handlers: Manufacturer
    - a. Trane – For the Existing Building Renovation portion of the project
    - b. Aeon – For the new Gymnasium Building
  2. HVAC Controls: Manufacturer
    - a. Schneider **OR** Brady
- E. **Alternate No. 5; Owner Preferred Electrical Manufacturers:** State the amount to be added to the Base Bid for providing all labor and materials indicated and required to accomplish Work involved in providing the Owner Preferred Manufacturers Listed Below:
1. Fire Alarm System: Manufacturer
    - a. Notifier
  2. Electrical Equipment: Manufacturer
    - a. Square D
  3. Intercom Equipment: Manufacturer
    - a. Nyquist Paging
- F. **Alternate No. 6; Owner Preferred Termite Treatment Manufacturer:** State the amount to be added to the Base Bid for providing all labor and materials indicated and required to accomplish Work involved in providing the Owner Preferred Manufacturers Listed Below:
1. Termiticide
    - a. Termidor SC
- G. **Alternate No. 7; Owner Preferred Translucent Wall Manufacturer:** State the amount to be added to the Base Bid for providing all labor and materials indicated and required to accomplish Work involved in providing the Owner Preferred Manufacturers Listed Below:
1. Translucent Wall Assemblies
    - a. Kalwall
- H. **Alternate No. 8; Existing BAS Controls Upgrade:** State the amount to be added to the Base Bid for providing all labor and materials as shown and noted in the Contract Drawings per the plans and specifications.:

1. Upgrade and integrate the existing building automated system (BAS) controls onto the new building energy management controls system.
- 
- I. Note that for any and all Preferred Alternates, equal products are **ONLY** allowed in the Base Bid.

**END OF SECTION 01 23 00**



**SECTION 04 20 00 - UNIT MASONRY**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:
  - 1. Concrete masonry units (CMUs).
  - 2. Concrete brick.
  - 3. Face brick.
  - 4. Grout.
  - 5. Reinforcing steel.
  - 6. Masonry joint reinforcement.
  - 7. Ties and anchors.
  - 8. Embedded flashing.
  - 9. Miscellaneous masonry accessories.
- B. Related Sections include the following:
  - 1. Division 04 Section "Masonry Mortaring" for mortar specifications.
  - 2. Division 07 Section "Dampproofing" for dampproofing applied to cavity face of backup wythes of cavity walls.
  - 3. Division 07 Section "Water Repellents" for water repellents applied to unit masonry assemblies.
  - 4. Division 07 Section "Thermal Insulation" for cavity wall insulation type, thickness, and r value.
  - 5. Division 07 Section "Foam in Place Insulation" for cavity wall insulation at areas indicated.
  - 6. Division 07 Section "Sheet Metal Flashing and Trim" for exposed sheet metal flashing.
  - 7. Division 07 Section "Joint Sealants" for sealing control and expansion joints in unit masonry.
- C. Products furnished, but not installed, under this Section include the following:
  - 1. Anchor sections of adjustable masonry anchors for connecting to structural frame, installed under Division 05 Section "Structural Steel Framing."
- D. Products installed, but not furnished, under this Section include the following:
  - 1. Steel lintels and shelf angles for unit masonry, furnished under Division 05 Section "Metal Fabrications."

1.3 DEFINITIONS

- A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 PERFORMANCE REQUIREMENTS

- A. Provide structural unit masonry that develops indicated net-area compressive strengths ( $f_m$ ) at 28 days.
  - 1. Determine net-area compressive strength ( $f_m$ ) of masonry by testing masonry prisms according to **ASTM C 1314**.

## 1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Certification:
  - 1. The producer shall furnish a letter of certification stating the following;
    - a. All aggregate used in the manufacture of the units was produced conforming to ASTM C33.
    - b. Product has been tested and certificated by ASTM C 90.
- C. Shop drawings:
  - 1. For reinforcing steel detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."
  - 2. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
- D. Samples for Verification: For each type and color of the following:
  - 1. Face brick, in the form of straps of five or more bricks.
  - 2. Decorative concrete masonry units, in the form of small-scale units.
  - 3. Colored mortar samples showing the full range of colors available.
  - 4. Weep holes/vents.
  - 5. Accessories embedded in masonry.
- E. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.

## 1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1093 for testing indicated, as documented according to ASTM E 548.
- B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.
  - 1. Manufacturer shall not have less than 10 years of experience for each type of unit.
- C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.
- D. Source Limitations for Concrete Masonry Units: Obtain CMU units from a manufacturer with a demonstrated history for providing first quality CMU units suitable for use in exposed work of the type and scope of this project, with units showing dense uniform face texture, square sides, corners, edges and faces, and free of chipped edges and broken corners when delivered to the site. Manufacturers with outdated equipment and worn molds incapable of providing consistently high quality materials will not be considered.
- E. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.
- F. Sample Panels: Build sample panels to verify selections made under sample submittals and to demonstrate aesthetic effects. Comply with requirements in Division 01 Section "Quality Requirements" for mockups.
  - 1. Build sample panels for typical exterior wall in sizes approximately **48 inches** long by **48 inches** high by full thickness.
  - 2. Where masonry is to match existing, erect panels adjacent and parallel to existing surface.
  - 3. Clean exposed faces of panels with masonry cleaner indicated.
  - 4. Protect approved sample panels from the elements with weather-resistant membrane.
  - 5. Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of

workmanship; and other material and construction qualities specifically approved by Architect in writing.

- a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels unless such deviations are specifically approved by Architect in writing.
- G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Ordering: Comply with manufacture's ordering instructions and lead time requirements to avoid construction delays.
- B. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry. Do not double stack pallets of masonry units.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- E. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.
- F. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

#### 1.8 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
  1. Extend cover a minimum of **24 inches** down both sides and hold cover securely in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
  1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
  2. Protect sills, ledges, and projections from mortar droppings.
  3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
  4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
  1. Cold-Weather Construction: When the ambient temperature is within the limits indicated, use the following procedures:
    - a. **40 to 32 deg F**: Heat mixing water or sand to produce mortar temperatures between **40 and 120 deg F**.
    - b. **32 to 25 deg F**: Heat mixing water and sand to produce mortar temperatures between **40 and 120 deg F**. Heat grout materials to produce grout temperatures between **40 and 120 deg F**. Maintain mortar and grout above freezing until used in masonry.
    - c. **25 to 20 deg F**: Heat mixing water and sand to produce mortar temperatures between **40 and 120 deg F**. Heat grout materials to produce grout temperatures between **40 and 120**

- deg F. Maintain mortar and grout above freezing until used in masonry. Heat masonry units to 40 deg F if grouting. Use heat on both sides of walls under construction.
- d. 20 deg F and Below: Heat mixing water and sand to produce mortar temperatures between 40 and 120 deg F. Heat grout materials to produce grout temperatures between 40 and 120 deg F. Maintain mortar and grout above freezing until used in masonry. Heat masonry units to 40 deg F. Provide enclosures and use heat on both sides of walls under construction to maintain temperatures above 32 deg F within the enclosures.
2. Cold-Weather Protection: When the mean daily temperature is within the limits indicated, provide the following protection:
    - a. 40 to 25 deg F : Cover masonry with a weather-resistant membrane for 48 hours after construction.
    - b. 25 to 20 deg F: Cover masonry with insulating blankets or provide enclosure and heat for 48 hours after construction to prevent freezing. Install wind breaks when wind velocity exceeds 15 mi./h .
    - c. 20 deg F and Below: Provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for 48 hours after construction.
  3. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
1. Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of 100 deg F and above.

## 1.9 SPECIAL REQUIREMENTS

- A. The work of this section shall be bid and performed by a firm certified as a “North Carolina Masonry Contractors Association Certified Masonry Contractor” as described in the most current version of the NCMCA’s “Guide to Masonry Contractor Certification.” The masonry subcontractor shall at all times when work is in progress, provide an individual from its own staff, acting as superintendent, designated by the North Carolina Masonry Contractors Association Masonry Contractor Certification Program as a “CMP-Certified Masonry Professional” or “CME-Certified Masonry Executive” (as described in the most current version of the NCMCA’s “Guide to Masonry Contractor Certification”) on-site to supervise work in progress.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

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

### 2.2 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.



2.3 CONCRETE MASONRY UNITS (CMUs)

- A. Shapes: Provide shapes indicated and as follows:
1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
  2. Provide square-edged units for outside corners, unless otherwise indicated.
- B. Concrete Masonry Units: **ASTM C 90 (latest edition)**.
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2000 psi net average of three units.
  2. Weight Classification: Units shall be lightweight blended with aggregates that comply with ASTM C331 and ASTM C33 with a total mix weight not more than 105 lbs./cuft. and not less than 90lbs/cuft.
  3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
  4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.
  5. Aggregates: Do not use aggregates made from pumice, scoria, or tuff. All units will be free of organic impurities that will cause rusting, staining, or popouts and will not contain combustible material. The use of coal cinders, coal ash, bottom ash or other similar waste products are not permitted and shall not be allowed.
  6. CMU used in fire rated walls shall meet UL Design Assembly criteria.
  7. Basis for Design: Oldcastle APG - Adams: Redline
  8. Approved Manufacturers:
    - a. Oldcastle APG - Adams
    - b. Johnson Concrete
    - c. York Building Products
    - d. Martinsville Concrete Products
  9. Products offered for substitution shall be pre-approved prior to bidding in accordance with the conditions of the contract documents and shall be so indicated in an addendum prior to bid only. Any other approval shall not be valid.
- C. Concrete Building Brick: ASTM C 55.
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of **3500 psi**.
  2. Weight Classification: Normal Weight
  3. Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long.

2.3.1 DECORATIVE CONCRETE MASONRY UNITS

- A. Decorative Concrete Masonry Units: **ASTM C 90 (latest edition)**.
1. Unit Compressive Strength: Average of three units 3000PSI, individual unit 2700 PSI.
  2. Weight Classification: Normal weight.
  3. Size (Width): Size: Nominal 4 x 8 x 16 and 8 x 8 x 16 All exposed faces to be finished. Refer to drawings for locations.
  4. Pattern and Texture: High Polished Face
  5. Special Spaces:
    - a. Provide all special shapes as required. This includes but not limited to clipped sills.
  6. Manufacture of Decorative Concrete Masonry Units: Basis of Design:
    - a. Oldcastle Echelon 4301 or comparable product by one of the of the following:
      - 1) York Building Products
      - 2) Martinsville Concrete Products
      - 3) Johnson Concrete Company
    - b. Products offered for substitution shall be pre-approved prior to bidding in accordance with the conditions of the contract documents and shall be so indicated in an addendum prior to bid only. Any other approval shall not be valid.
    - c. Products offered for substitution shall be judged on the variety of colors offered, brightness of colors offered, consistency of color, quality of splitting (four blade

- splitter required), weight, ability of manufacturer to offer and/or control color matching of mortars, method for blending water repellent admix into mixing process, and past performance.
7. Maximum Absorption: Low Absorption unit. The unit shall contain specific amounts of the integral water repellent compound so the absorption is less than (7.5%) and/or 10 lbs/CF.
  8. Integral Water Repellent: Provide units produced with liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive according to ASTM E 514, with test period extended to 4 hours, show no visible water or leaks on the back of the test specimen. Product: Subject to compliance with requirements, provide units made with Rainbloc by ACM Chemistries, Dry- Block by W.R. Grace & Co, or equal.
  9. Aggregates: Do not use aggregates made from pumice, scoria, or tuff. All units will be free of organic impurities that will cause rusting, staining, or popouts and will not contain combustible material. All lightweight material to be manufactured by rotary kiln process. Coal Cinders are not permitted.

## 2.4 BRICK

- A. General: Provide shapes indicated and as follows:
  1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
- B. Face Brick: ASTM C 216, Grade SW Type FBX.
  1. Size (Actual Dimensions): **3 5/8 inches** wide by **2-1/4 inches** high by **7-5/8 inches** long.
  2. Bond Pattern: Unless otherwise indicated, lay exposed masonry in **running bond**.
  3. Basis for Design:
    - a. Type 1: Palmetto Brick- Flashed Wirecut
    - b. Type 2: Palmetto Brick- Whitestone
  4. Provide for one of the following:
    - a. Type 1:
      - 1) Palmetto Brick: Flashed Wirecut
      - 2) Palmetto Brick: Flashed Smooth
      - 3) Triangle Brick: Flashed Common
      - 4) Approved Equal
    - b. Type 2:
      - 1) Palmetto Brick: Whitestone
      - 2) Approved Equal

## 2.5 MASONRY LINTELS

- A. General: Provide masonry lintels complying with requirements below.
- B. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam concrete masonry units with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

## 2.6 GROUT MATERIALS

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
- B. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

- C. Aggregate for Grout: ASTM C 404.
  - 1. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
  - 2. Available Products:
    - a. Addiment Incorporated; Mortar Kick.
    - b. Euclid Chemical Company (The); Accelguard 80.
    - c. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Morset.
    - d. Sonneborn, Div. of ChemRex; Trimix-NCA.
- D. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with concrete masonry units, containing integral water repellent by same manufacturer.
  - 1. Available Products:
    - a. Rainbloc by ACM Chemistries
    - b. Addiment Incorporated; Mortar Tite.
    - c. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Dry-Block Mortar Admixture.
    - d. Master Builders, Inc.
- E. Water: Potable.
- F. Grout for Unit Masonry: Comply with ASTM C 476, Proportions Specifications. Provide grout with a slump of 8 to 11 inches when placed in the masonry

## 2.7 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M, **Grade 60**.
- B. Masonry Joint Reinforcement, General: ASTM A 951.
  - 1. Interior Walls: galvanized, carbon steel.
  - 2. Exterior Walls: Hot-dip galvanized, carbon steel.
  - 3. Wire Size for Side Rods Interior: **0.148-inch** diameter.
  - 4. Wire Size for Side Rods Exterior: ~~0.188-inch~~ **0.148-inch** diameter.
  - 5. Wire Size for Cross Rods: W1.7 or **0.148-inch** diameter.
  - 6. Wire Size for Veneer Ties: **0.148-inch** diameter.
  - 7. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than **16 inches** o.c.
  - 8. Provide in lengths of not less than **10 feet**, with prefabricated corner and tee units.
- C. Masonry Joint Reinforcement for Single-Wythe Masonry: Truss type with single pair of side rods.
- D. Masonry Joint Reinforcement for Multiwythe Masonry:
  - 1. Adjustable (two-piece) type, truss design, with one side rod at each face shell of backing wythe and with separate ties that extend into facing wythe. Ties have two hooks that engage eyes or slots in reinforcement and resist movement perpendicular to wall. Ties extend at least halfway through facing wythe but with at least **5/8-inch** cover on outside face. Ties have hooks or clips to engage a continuous horizontal wire in the facing wythe.
- E. Masonry Joint Reinforcement for Veneers Anchored with Seismic Masonry-Veneer Anchors: Single **0.148-inch-** diameter, hot-dip galvanized, carbon-steel continuous wire.

## 2.8 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in subsequent paragraphs that are made from materials that comply with eight subparagraphs below, unless otherwise indicated.
  - 1. Mill-Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 641/A 641M, Class 1 coating.
  - 2. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153/A 153M, Class B-2 coating.
- B. Adjustable Anchors for Connecting to Structure: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
  - 1. Anchor Section for Welding to Steel Frame: Crimped **1/4-inch-** diameter, hot-dip galvanized steel wire. Mill-galvanized wire may be used at interior walls, unless otherwise indicated.

2. Tie Section for Steel Frame: Triangular-shaped wire tie, sized to extend within **1 inch** of masonry face, made from **0.188-inch-** diameter, hot-dip galvanized steel wire. Mill-galvanized wire may be used at interior walls, unless otherwise indicated.
- C. Rigid Anchors: Fabricate from steel bars **1-1/2 inches** wide by **1/4 inch** thick by **24 inches** long, with ends turned up **2 inches** or with cross pins, unless otherwise indicated.
  1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A 153/A 153M.
- D. Stone Anchors: Fabricate dowels, cramps, and other stone anchors from stainless steel.
- E. Adjustable Masonry-Veneer Anchors
  1. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:
    - a. Structural Performance Characteristics: Capable of withstanding a **100-lbf** load in both tension and compression without deforming or developing play in excess of **0.05 inch**.
    2. Contractor's Option: Unless otherwise indicated, provide any of the following types of anchors:
    3. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal anchor section.
      - a. Anchor Section: Rib-stiffened, sheet metal plate with screw holes top and bottom, **2-3/4 inches** wide by **3 inches** high; with projecting tabs having slotted holes for inserting vertical legs of wire tie specially formed to fit anchor section.
      - b. Anchor Section: Sheet metal plate, **1-1/4 inches** wide by **6 inches** long, with screw holes top and bottom and with raised rib-stiffened strap, **5/8 inch** wide by **3-5/8 inches** long, stamped into center to provide a slot between strap and plate for inserting wire tie.
      - c. Anchor Section: Gasketed sheet metal plate, **1-1/4 inches** wide by **6 inches** long, with screw holes top and bottom; top and bottom ends bent to form pronged legs of length to match thickness of insulation or sheathing; and raised rib-stiffened strap, **5/8 inch** wide by **6 inches** long, stamped into center to provide a slot between strap and plate for inserting wire tie. Provide anchor manufacturer's standard, self-adhering, modified bituminous gaskets manufactured to fit behind anchor plate and extend beyond pronged legs.
      - d. Anchor Section: Zinc-alloy barrel section with flanged head with eye and corrosion-resistant, self-drilling screw. Eye designed to receive wire tie and to serve as head for drilling fastener into framing. Barrel length to suit sheathing thickness, allowing screw to seat directly against framing with flanged head covering hole in sheathing.
      - e. Fabricate sheet metal anchor sections and other sheet metal parts from **0.067-inch-** thick, steel sheet, galvanized after fabrication **0.078-inch-** thick,.
      - f. Wire Ties: Triangular-, rectangular-, or T-shaped wire ties fabricated from **0.25-inch-** diameter, hot-dip galvanized steel wire.
  4. Available Products:
    - a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 213 or D/A 210 with D/A 700-708.
    - b. Heckmann Building Products Inc.; 315-D with 316 or Pos-I-Tie.
    - c. Hohmann & Barnard, Inc.; DW-10 DW-10HS or DW-10-X.
    - d. Wire-Bond; 1004, Type III or RJ-711.

## 2.9 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Provide metal flashing **where flashing is exposed or partly exposed and where indicated**, complying with **Division 07 Section "Sheet Metal Flashing and Trim"**.
- B. Cavity Wall Flashing
  1. Metal Sub Flashing with integral Drip Edge: Provide continuous under Flexible Flashing. Fabricate from stainless steel. Extend at least 3 inches into wall inner wythe CMU backup and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
    - a. Stainless Steel: ASTM A 240/A 240M, Type 304, **0.016 inch** thick.
    - b. Metal Flashing Terminations: Fabricate from stainless steel. Extend at least **3 inches** into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for **3/4 inch** and down into joint **3/8 inch** to form a stop for retaining sealant backer rod.

2. Flexible Flashing: For flashing not exposed to the exterior, use one of the following, unless otherwise indicated:
  - a. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than **0.040 inch**.
    - 1) Available Products:
      - a) Advanced Building Products Inc.; Peel-N-Seal.
      - b) Carlisle Coatings & Waterproofing; CCW-705-TWF Thru-Wall Flashing.
      - c) Dayton Superior Corporation, Dur-O-Wal Division; Dur-O-Barrier-44.
      - d) Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Perm-A-Barrier Wall Flashing.
      - e) Heckmann Building Products Inc.; No. 82 Rubberized-Asphalt Thru-Wall Flashing.
      - f) Henry Company; Blueskin TWF
      - g) Hohmann & Barnard, Inc.; Textroflash.
      - h) Polyguard Products, Inc.; Polyguard 300.
      - i) Polytite Manufacturing Corp.; Poly-Barrier Self-Adhering Wall Flashing.
      - j) Williams Products, Inc.; Everlastic MF-40.
    - b. Provide mechanically fastened stainless steel termination bar with continuous sealant at top.

#### 2.10 MISCELLANEOUS MASONRY ACCESSORIES

- A. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- B. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
- C. Weep/Vent Products: Use the following, unless otherwise indicated:
  1. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth **1/8 inch** less than depth of outer wythe; in color selected from manufacturer's standard.
    - a. Provide at 32" o.c. unless otherwise noted.
- D. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
  1. Provide one of the following configurations:
    - a. Strips, full-depth of cavity and **10 inches** wide, with dovetail shaped notches **7 inches** deep that prevent mesh from being clogged with mortar droppings.
  2. Available Products:
    - a. Advanced Building Products Inc.; Mortar Break II.
    - b. Archovations, Inc.; CavClear Masonry Mat.
    - c. Dayton Superior Corporation, Dur-O-Wal Division; Polytite MortarStop.
    - d. Mortar Net USA, Ltd.; Mortar Net.
    - e. Hohmann & Barnard, Inc.

#### 2.11 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
  1. Available Manufacturers:
    - a. Diedrich Technologies, Inc.

- b. EaCo Chem, Inc.
- c. ProSoCo, Inc.

## 2.12 SOURCE QUALITY CONTROL

- A. Clay Masonry Unit Test: For each type of unit furnished, per ASTM C 67.
- B. Concrete Masonry Unit Test: For each type of unit furnished, per ASTM C 140.
- C. Grout Test (Compressive Strength): For each mix provided, per ASTM C 1019.
- D. Prism Test: For each type of construction provided, per ASTM C 1314 UBC Standard 21-17 at 28 days.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
  - 1. Mix units from several pallets or cubes as they are placed.
- F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.
- G. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds **30 g/30 sq. in.** per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.
- H. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:
  - 1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than **1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch** maximum.
  - 2. For vertical alignment of exposed head joints, do not vary from plumb by more than **1/4 inch in 10 feet, or 1/2 inch** maximum.
  - 3. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than **1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch** maximum.
  - 4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus **1/8 inch**, with a maximum thickness limited to **1/2 inch**. Do not vary from bed-joint thickness of adjacent courses by more than **1/8 inch**.
  - 5. For exposed head joints, do not vary from thickness indicated by more than plus or minus **1/8 inch**. Do not vary from adjacent bed-joint and head-joint thicknesses by more than **1/8 inch**.
  - 6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than **1/16 inch** except due to warpage of masonry units within tolerances specified for warpage of units.



7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than **1/16 inch** from one masonry unit to the next.

### 3.3 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in **one-third running bond for Brick and running bond for CMU (all types)**; do not use units with less than nominal **4-inch** horizontal face dimensions at corners or jambs.
- C. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- E. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.
- F. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- G. Fill cores in hollow concrete masonry units with grout **24 inches** under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
- H. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above, unless otherwise indicated.
  1. Install compressible filler in joint between top of partition and underside of structure above.
  2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide **1/2-inch** clearance between end of anchor rod and end of tube. Space anchors **48 inches** o.c., unless otherwise indicated.
  3. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
  4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Division 07 Section "Fire-Resistive Joint Systems."

### 3.4 CAVITY WALLS

- A. Bond wythes of cavity walls together using one of the following methods:
  1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for **2.67 sq. ft.** of wall area spaced not to exceed **16 inches** o.c. horizontally and **16 inches** o.c. vertically. Stagger ties in alternate courses. Provide additional ties within **12 inches** of openings and space not more than **36 inches** apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than **24 inches** o.c. vertically.
    - a. Where bed joints of wythes do not align, use adjustable (two-piece) type ties.
    - b. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type ties to allow for differential movement regardless of whether bed joints align.
  2. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
    - a. Where bed joints of both wythes align, use Truss type reinforcement extending across both wythes
    - b. Where bed joints of wythes do not align, use adjustable (two-piece) type reinforcement with continuous horizontal wire in facing wythe attached to ties.
- B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.



- C. Coat cavity face of backup wythe to comply with Division 07 Section "Bituminous Dampproofing."

### 3.5 INSTALLATION OF CAVITY WALL INSULATION: RIGID

- A. Installing Cavity-Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.
  - 1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation and masonry. Tape joints.

### 3.6 MASONRY JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of **5/8 inch** on exterior side of walls, **1/2 inch** elsewhere. Lap reinforcement a minimum of **6 inches**.
  - 1. Space reinforcement not more than **16 inches** o.c. Provide reinforcement not more than **8 inches** above and below wall openings and extending **12 inches** beyond openings.
    - a. Reinforcement above is in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

### 3.7 ANCHORING MASONRY TO STRUCTURAL MEMBERS

- A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
  - 1. Provide an open space not less than **1/2 inch** in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar and other rigid materials.
  - 2. Anchor masonry to structural members with anchors embedded in masonry joints and attached to structure.
  - 3. Space anchors as indicated, but not more than **24 inches** o.c. vertically and horizontally.

### 3.8 ANCHORING MASONRY VENEERS

- A. Anchor masonry veneers to wall framing concrete and masonry backup with seismic masonry-veneer anchors to comply with the following requirements:

### 3.9 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry as follows:
  - 1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
  - 2. Install preformed control-joint gaskets designed to fit standard sash block.

3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.
  4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.
  5. Where control joints extend from window or door head lintels and shelf angles, install bond breaker of building felt in horizontal joint below lintel and rake horizontal joint at lintel for installation of sealant.
- C. Form expansion joints in brick made from clay or shale as follows:
1. Build flanges of metal expansion strips into masonry. Lap each joint **4 inches (100 mm)** in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints if any.
  2. Build flanges of factory-fabricated, expansion-joint units into masonry.
  3. Build in compressible joint fillers where indicated.
  4. Form open joint full depth of brick wythe and of width indicated, but not less than **3/8 inch** for installation of sealant and backer rod specified in Division 07 Section "Joint Sealants."

### 3.10 LINTELS

- A. Install steel lintels where indicated.
- B. Provide masonry lintels where shown and where openings of more than **12 inches** for brick-size units and **24 inches** for block-size units are shown without structural steel or other supporting lintels.
- C. Provide minimum bearing of **8 inches** at each jamb, unless otherwise indicated.

### 3.11 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.
- B. Install flashing as follows, unless otherwise indicated:
  1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
  2. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of **8 inches**, and through inner wythe to within **1/2 inch** of the interior face of wall in exposed masonry. Where interior face of wall is to receive furring or framing, carry flashing completely through inner wythe and turn flashing up approximately **2 inches** on interior face.
  3. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of **8 inches**, and **1-1/2 inches** into the inner wythe.
  4. At masonry-veneer walls, extend flashing through veneer, across air space behind veneer, and up face of sheathing at least **8 inches**; with upper edge tucked under building paper or building wrap, lapping at least **4 inches**.
  5. At lintels and shelf angles, extend flashing a minimum of **6 inches** into masonry at each end. At heads and sills, extend flashing **6 inches** at ends and turn up not less than **2 inches** to form end dams.
  6. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than **1-1/2 inches** or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Division 07 Section "Joint Sealants" for application indicated.
  7. Install metal drip edges and sealant stops with ribbed sheet metal flashing by interlocking hemmed edges to form hooked seam. Seal seam with elastomeric sealant complying with requirements in Division 07 Section "Joint Sealants" for application indicated.
  8. Install metal sub flashing and integral drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing **1/2 inch** back from outside face of wall and adhere flexible flashing to metal for the entire length.

9. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.
  10. Install flexible flashing with continuous stainless steel termination bar with continuous sealant at top.
- C. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in Part 2 "Miscellaneous Masonry Accessories" Article.
- D. Install vents in head joints in exterior wythes at spacing indicated. Use specified weep/vent products.

### 3.12 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
  2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
  2. Limit height of vertical grout pours to not more than **60 inches**.

### 3.13 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections indicated below and prepare test reports:
1. Payment for these services may be made by Owner.
  2. Retesting of materials failing to comply with specified requirements shall be done at Contractor's expense.
- B. Allow inspectors access to scaffolding and work areas, as needed to perform inspections.
1. Place grout only after inspectors have verified compliance of grout spaces and grades, sizes, and locations of reinforcement.
- C. Testing Frequency: One set of tests for each **5000 sq. ft.** of wall area or portion thereof. If retaining paragraph below, select either or both tests listed; insert others if required. Testing for mortar air content is especially desirable for reinforced masonry. Testing for compressive strength is desirable if the property specification for mortar is used.

### 3.14 SPECIAL INSPECTIONS

- A. Special Inspections and tests shall be performed by the Special Inspector or Special Inspection Agency.
- B. Preconstruction Testing: Perform preconstruction testing as follows:
1. Concrete Masonry Unit Test: For each type of unit required, according to ASTM C 140 for compressive strength.
  2. Mortar Test (Property Specification): For each mix required, according to ASTM C 780 for compressive strength.
  3. Grout Test (Compressive Strength): For each mix required, according to ASTM C 1019.
- C. Construction Testing: Perform construction testing as follows:
1. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
  2. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.

3. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test mortar for compressive strength.
4. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.
- D. Verification and inspection of masonry construction shall be Level 1 in accordance with Table 1704.5.1 of North Carolina State Building Code 2018 and as follows:
  1. Perform periodic inspections of the installed masonry construction to verify compliance with the details shown on the construction documents such as use of proper mortar and grout, construction of mortar joints, size, location, spacing and lapping of reinforcing steel, installation of anchors into masonry construction.
  2. Perform continuous inspections during grout placement to verify use of proper grout mix, locations of grout, cleanliness of grout spaces, cleanouts as required and proper consolidation of grout.
    - a. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
    - b. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
    - c. Place grout only after inspectors have verified proportions of site-prepared grout.
- E. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- F. Additional testing performed to determine compliance of corrected work with specified requirements shall be at Contractor's expense.

### 3.15 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
  1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
  2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
  3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
  4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
  5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
  6. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
  7. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.
  8. Clean stone trim to comply with stone supplier's written instructions.
  9. Clean limestone units to comply with recommendations in ILI's "Indiana Limestone Handbook."

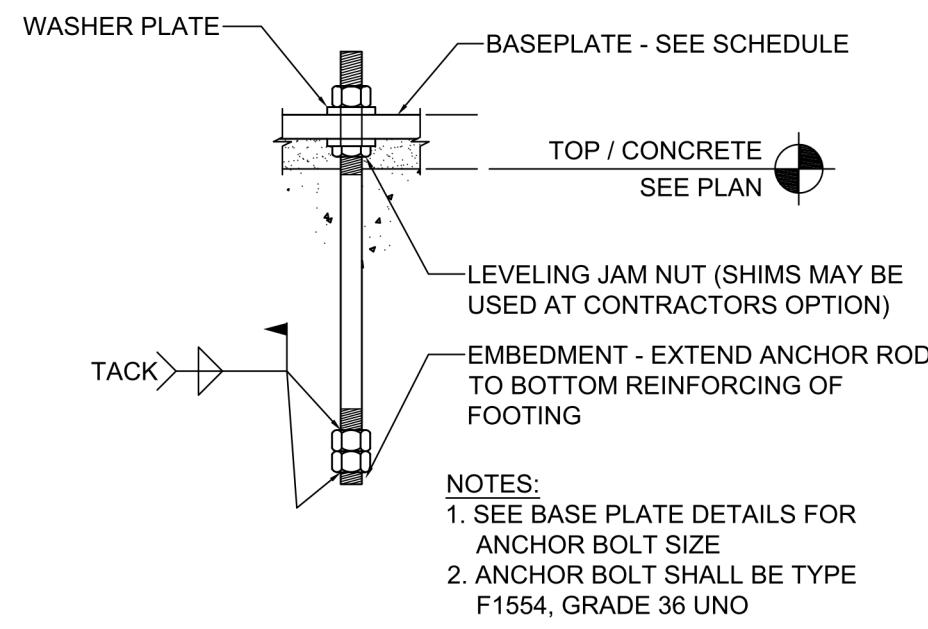
### 3.16 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

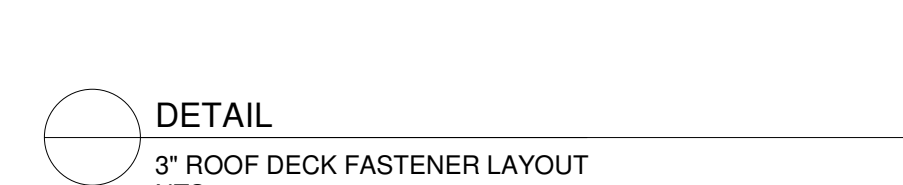
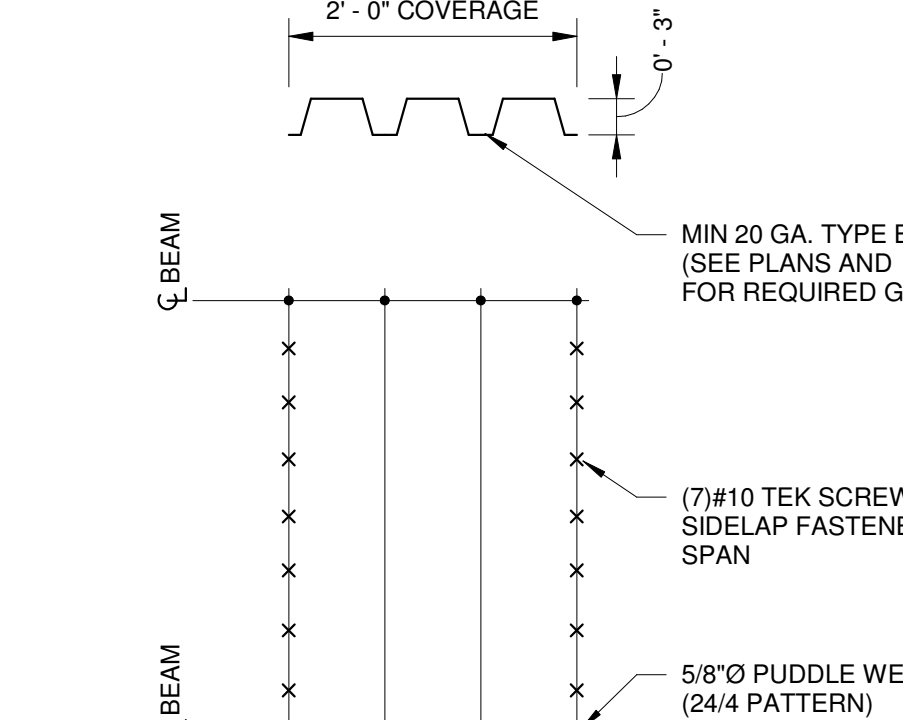
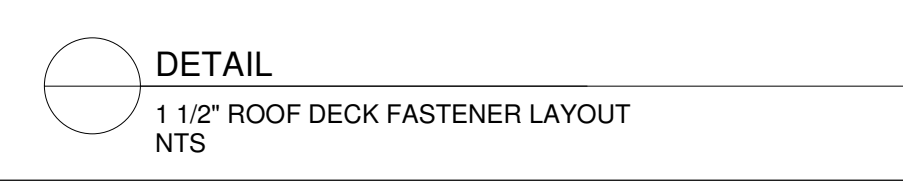
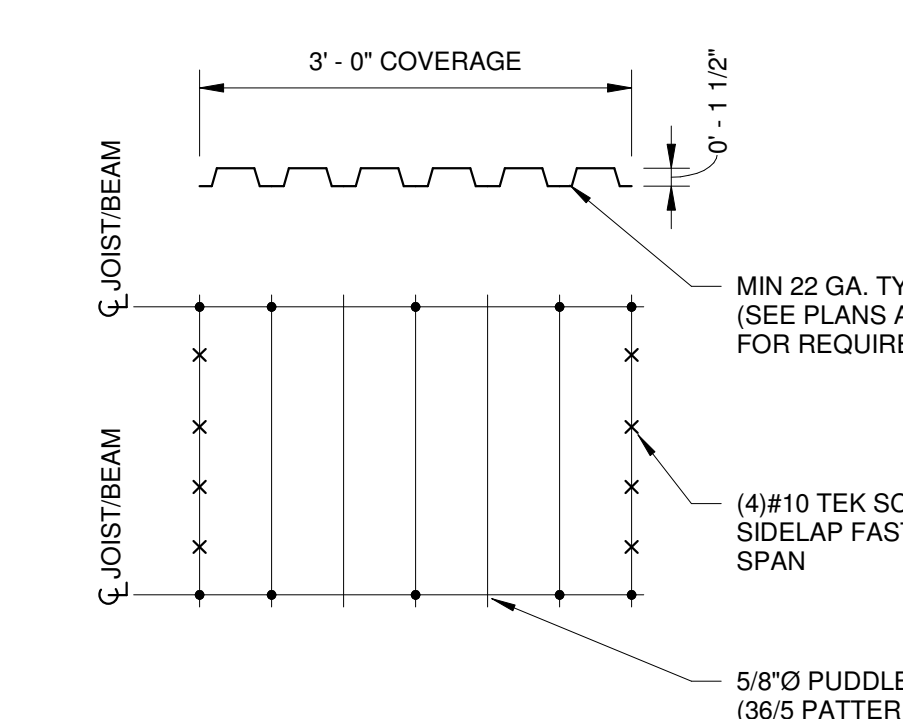
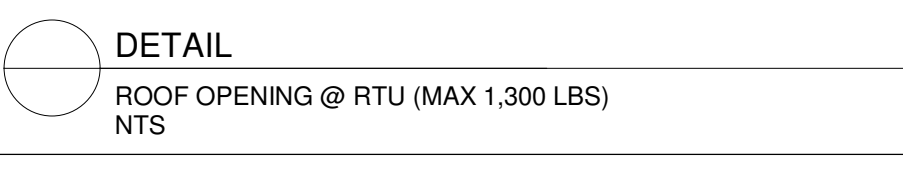
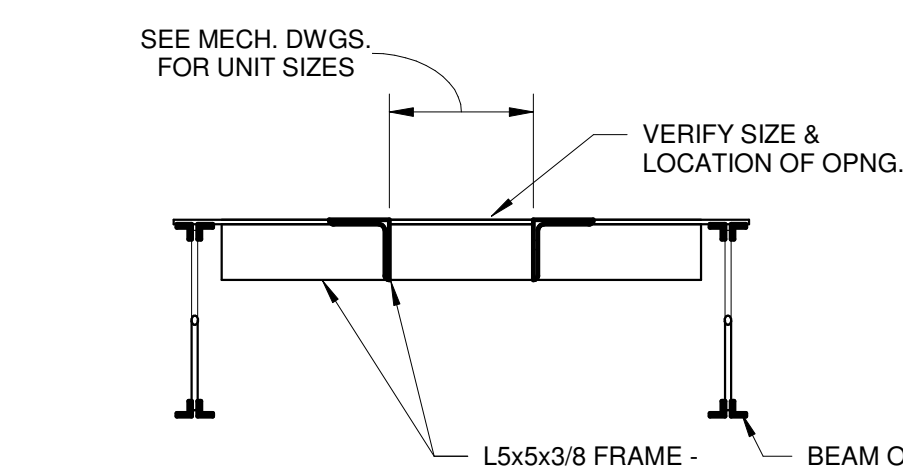
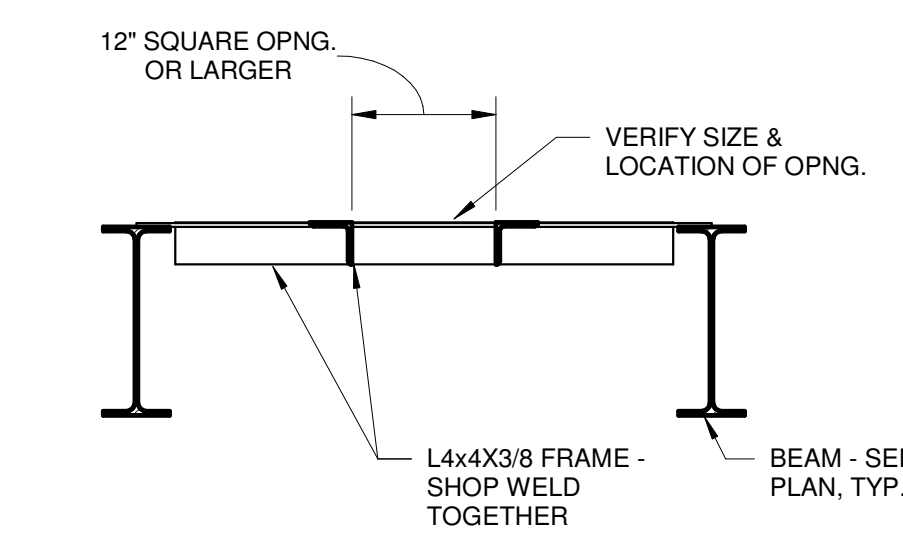
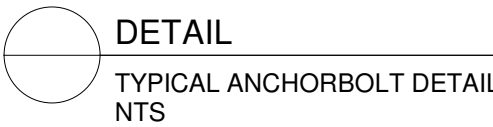
- B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
  - 1. Crush masonry waste to less than **4 inches** in each dimension.
  - 2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Division 31 Section "Earth Moving."
  - 3. Do not dispose of masonry waste as fill within **18 inches** of finished grade.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

**END OF SECTION 04 20 00**



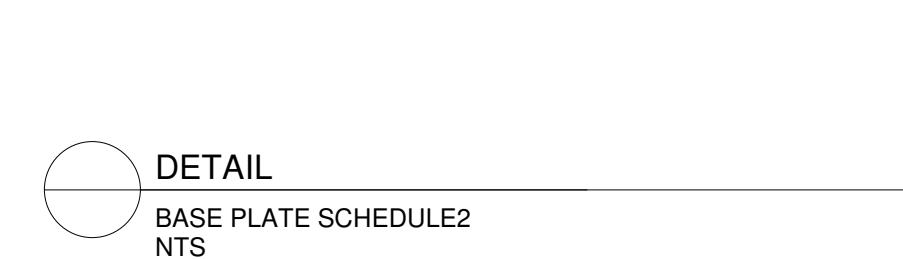


**ANCHORBOLT DETAILS AND ADDITIONAL PLATES AND NUTS**



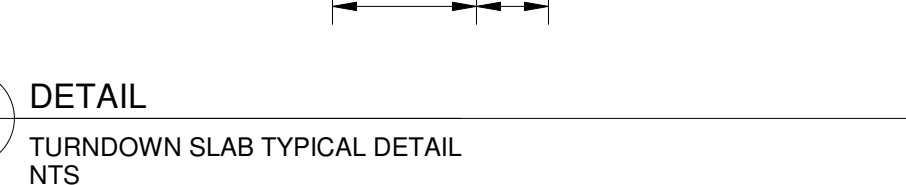
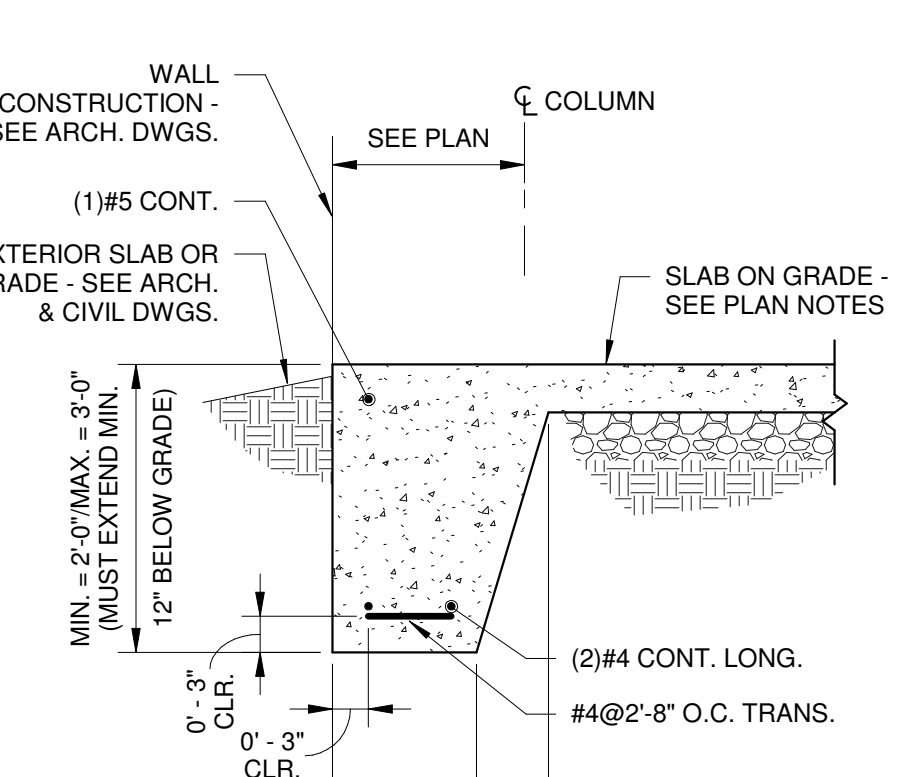
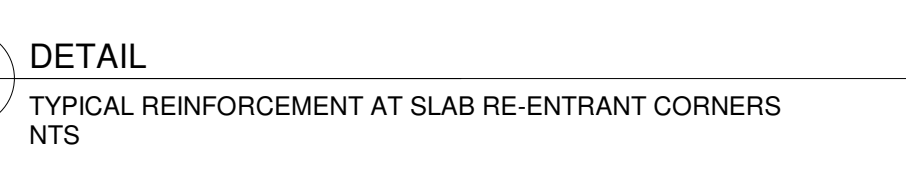
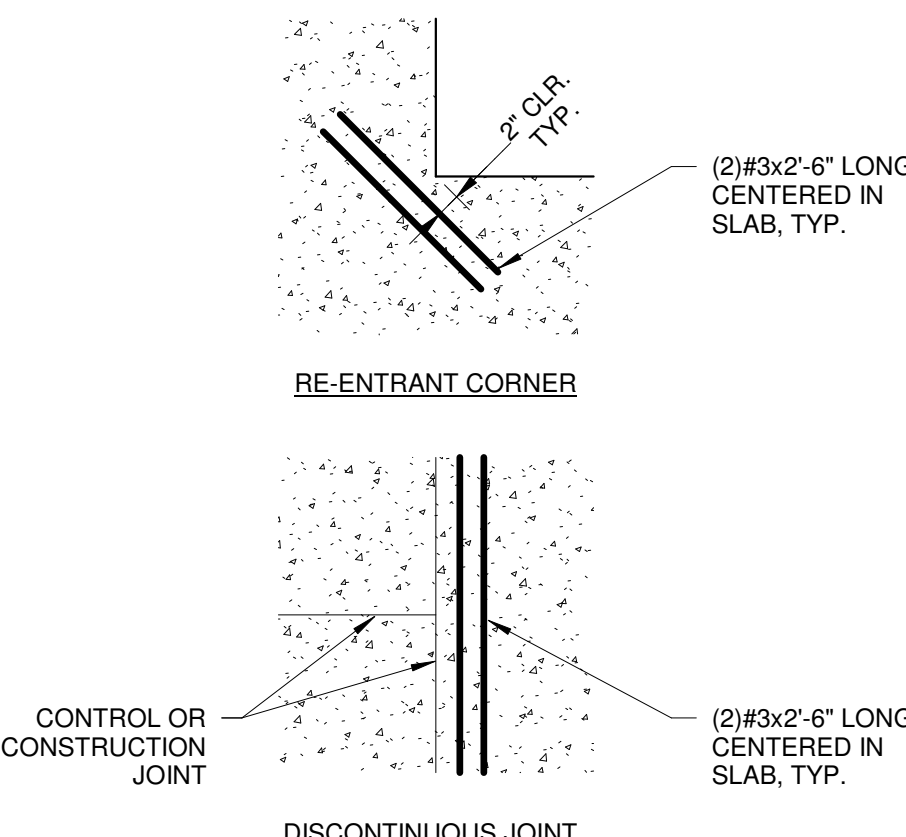
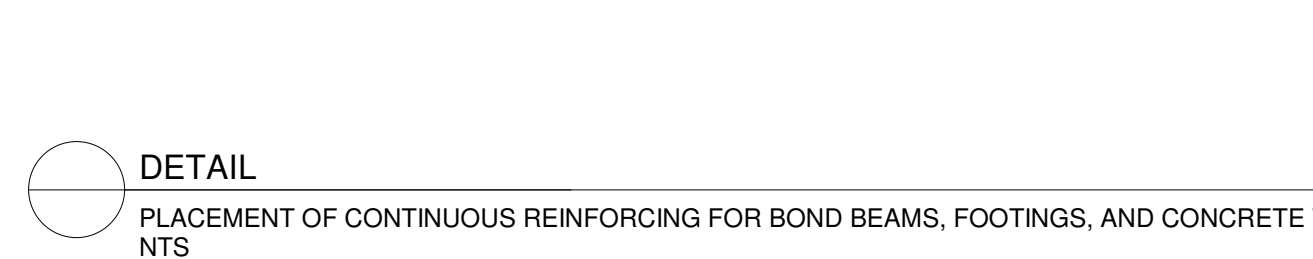
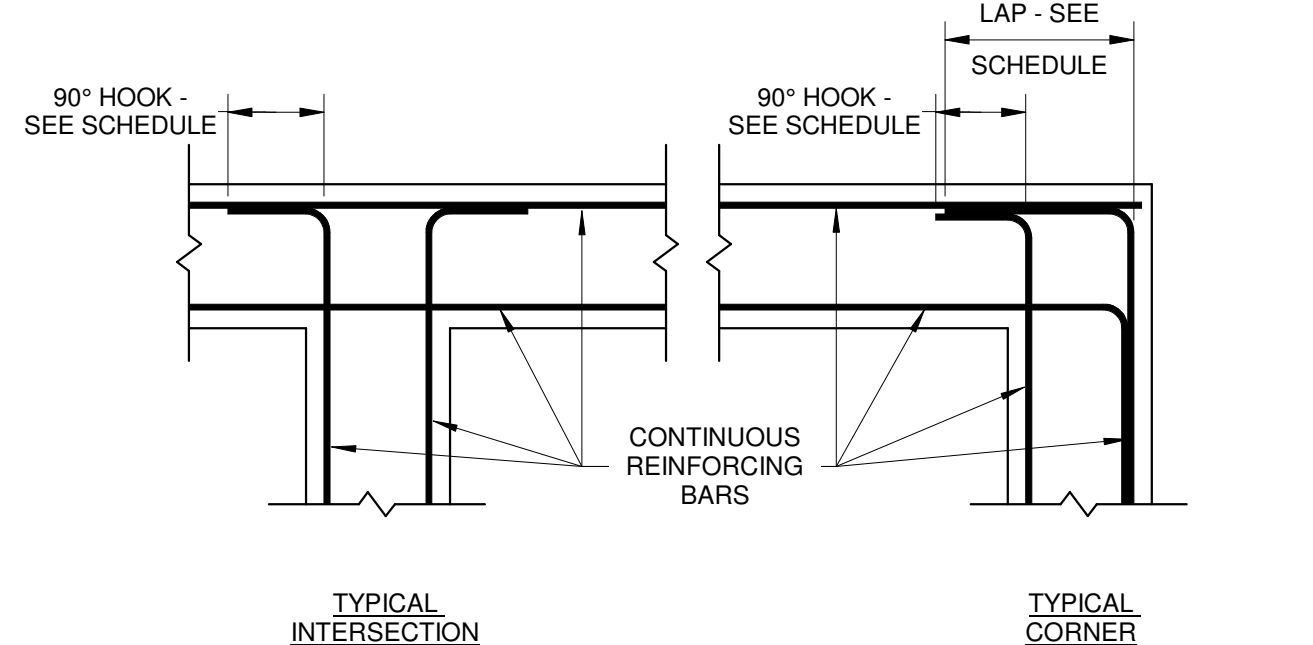
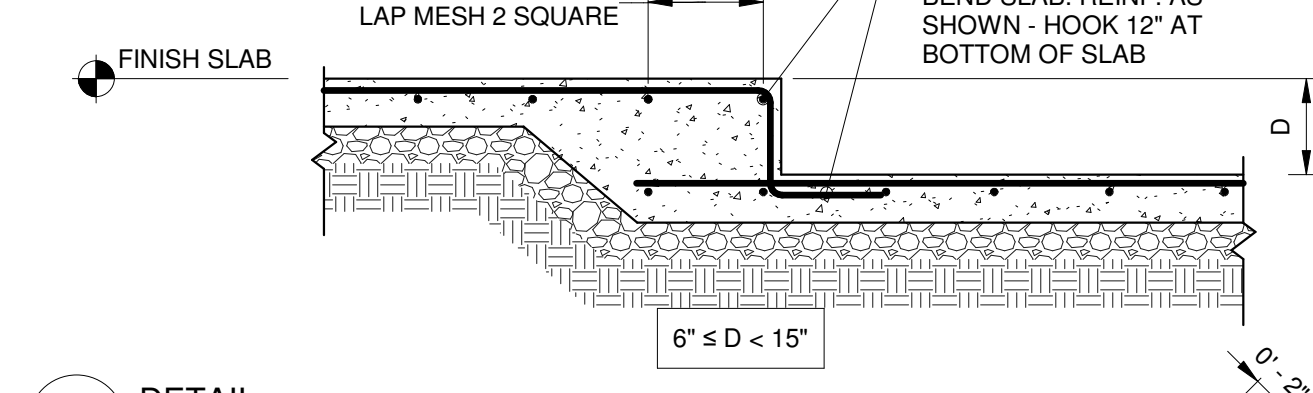
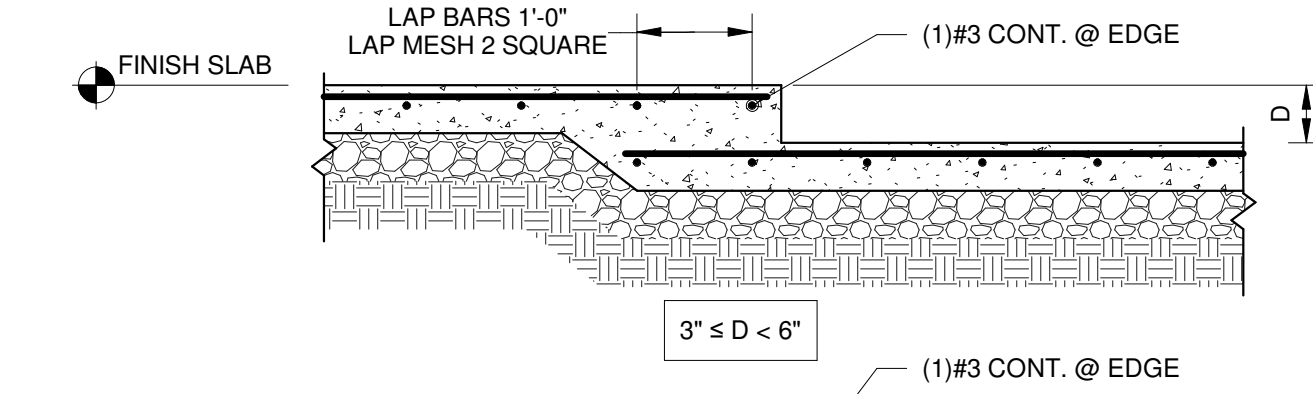
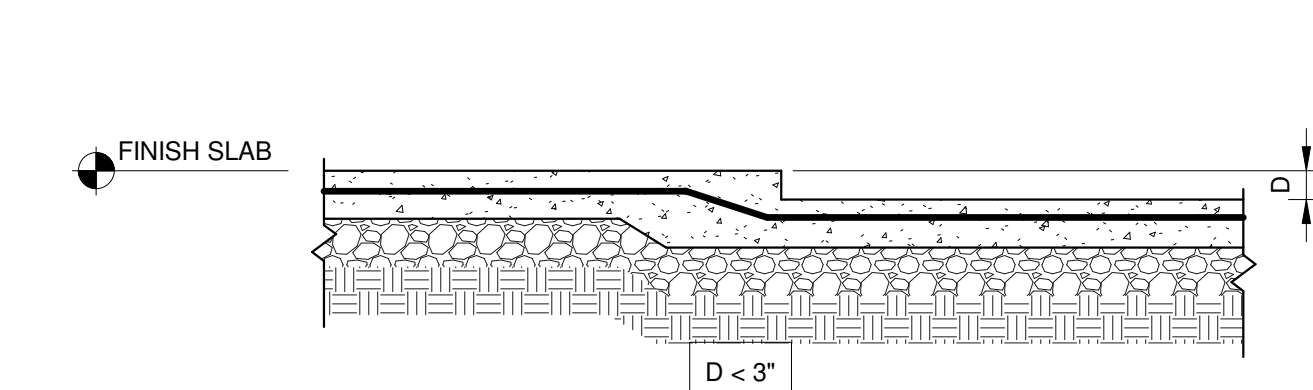
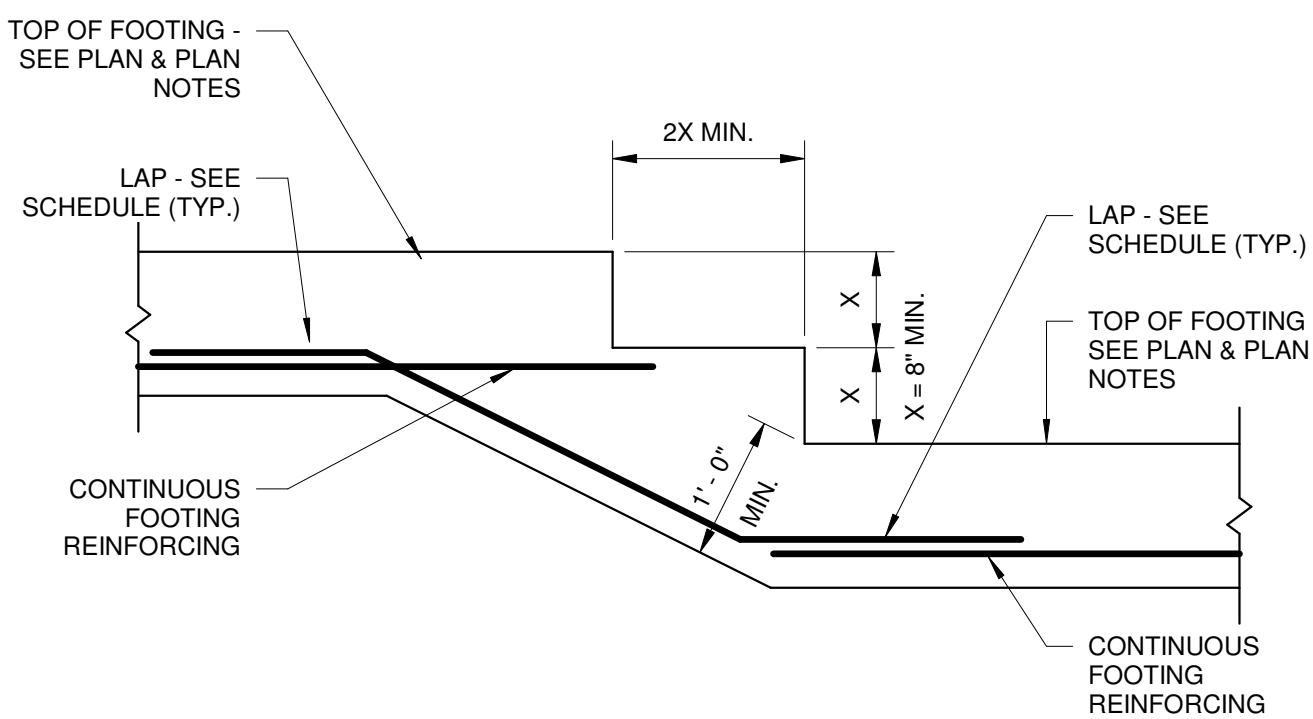
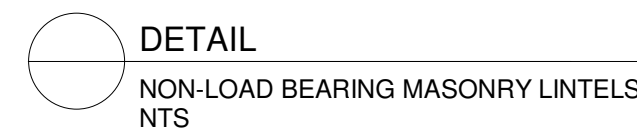
COLUMN BASE PLATE SCHEDULE		
COLUMN SIZE	BASE PLATE	ANCHOR BOLTS
W10x33 OR SMALLER	1" x 16" x 1'-4"	(4) 1"Ø
HSS4x4	3/4" x 10" x 0'-10"	(4) 1"Ø
W10x45 OR LARGER	1-1/2" x 16" x 1'-4"	(4) 1-1/2"Ø

NOTES:  
1. EXTEND ANCHOR BOLTS TO FOOTING BOTTOM REINFORCING.



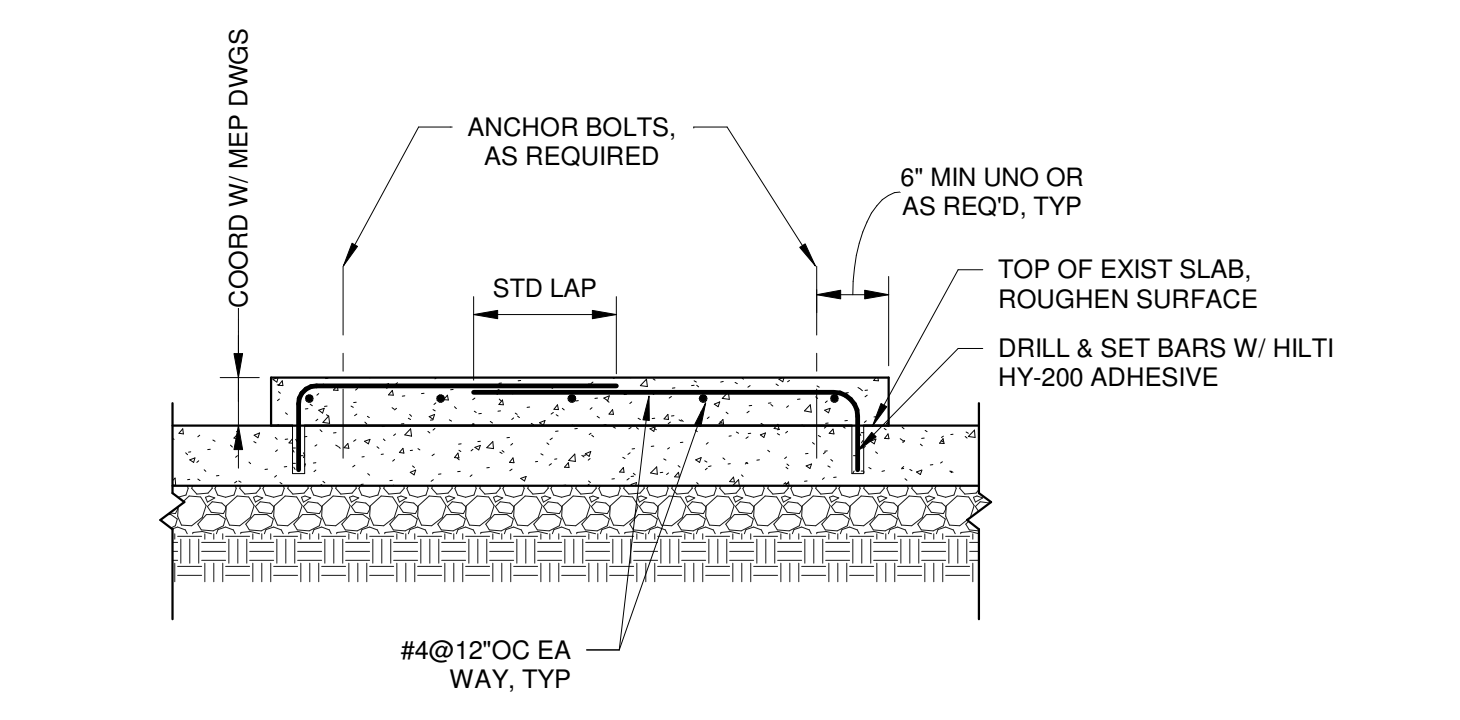
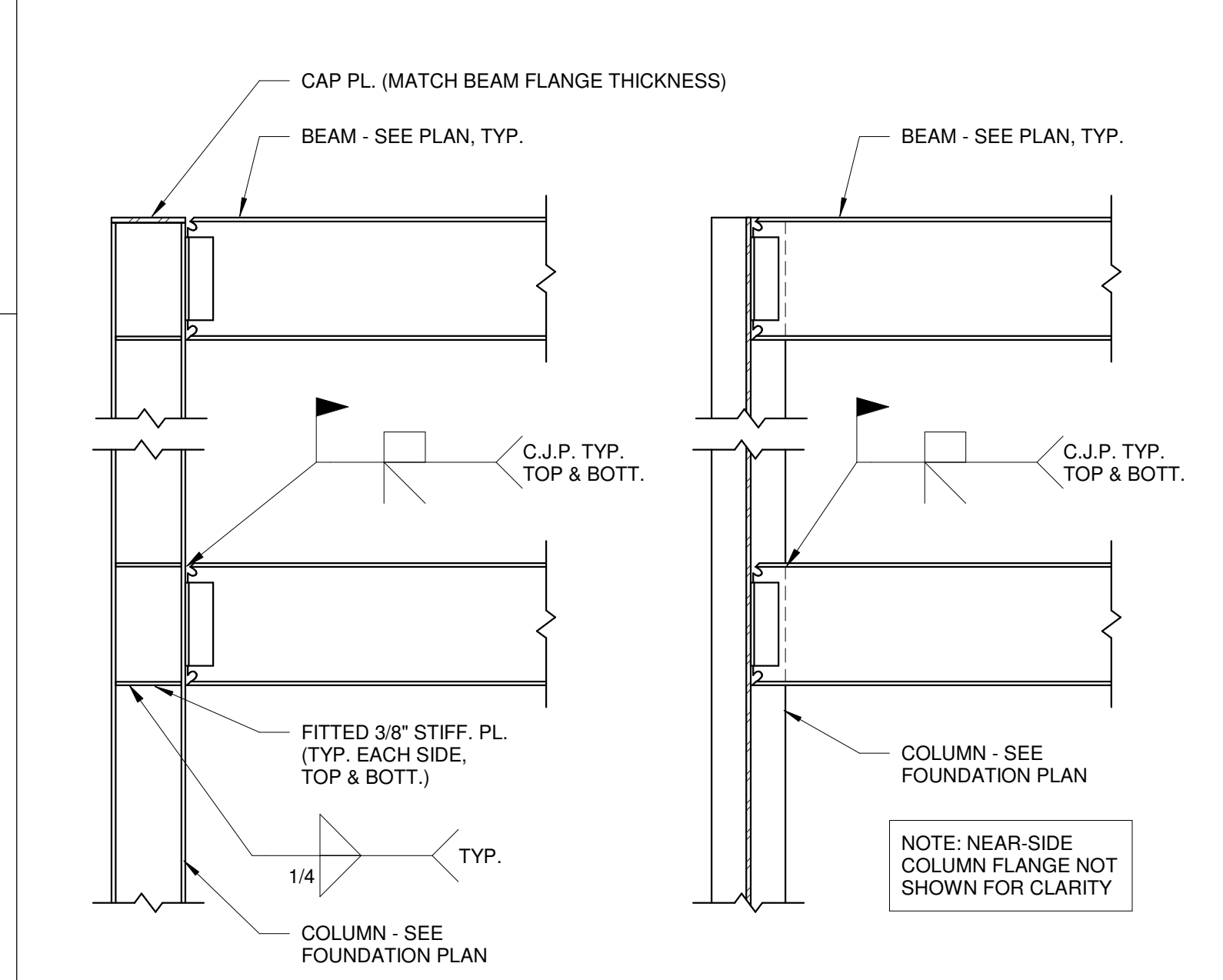
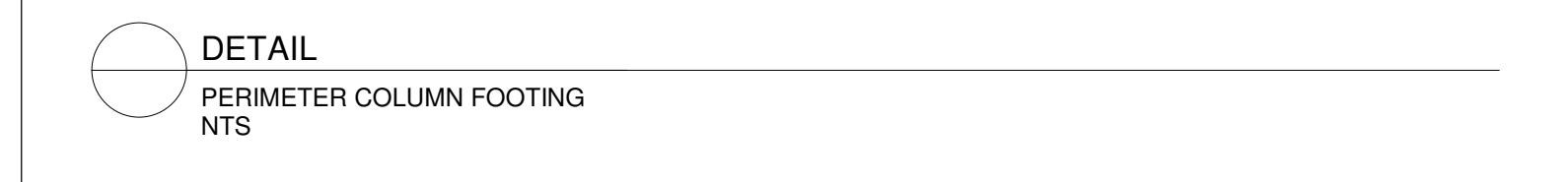
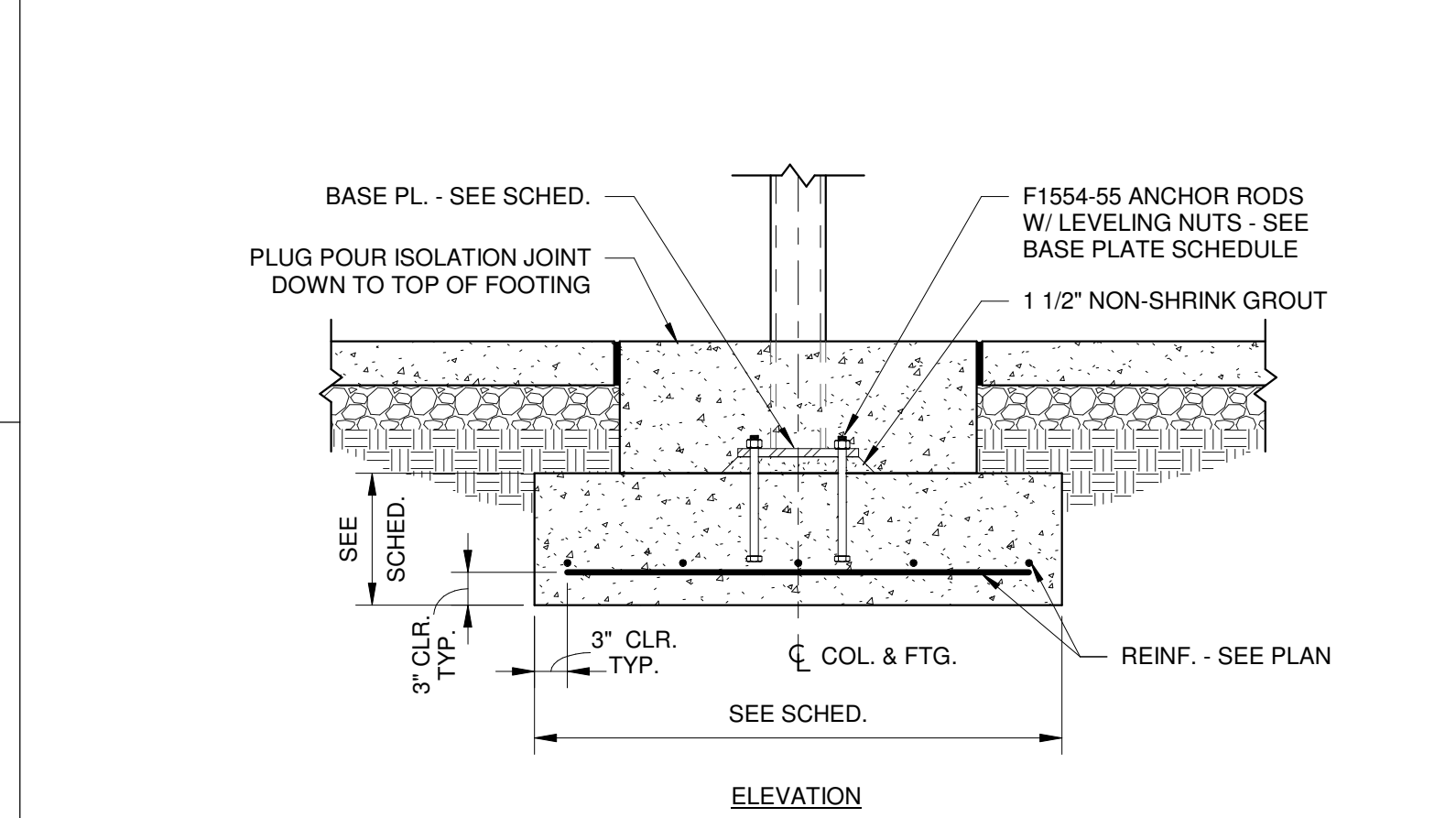
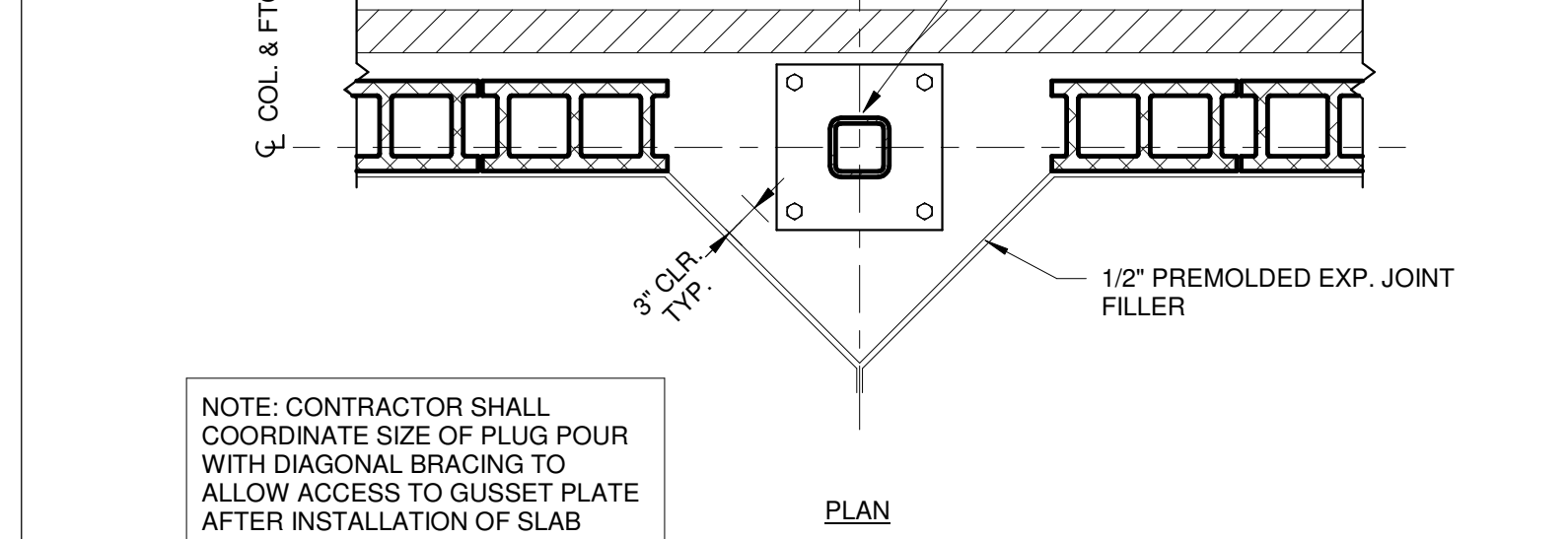
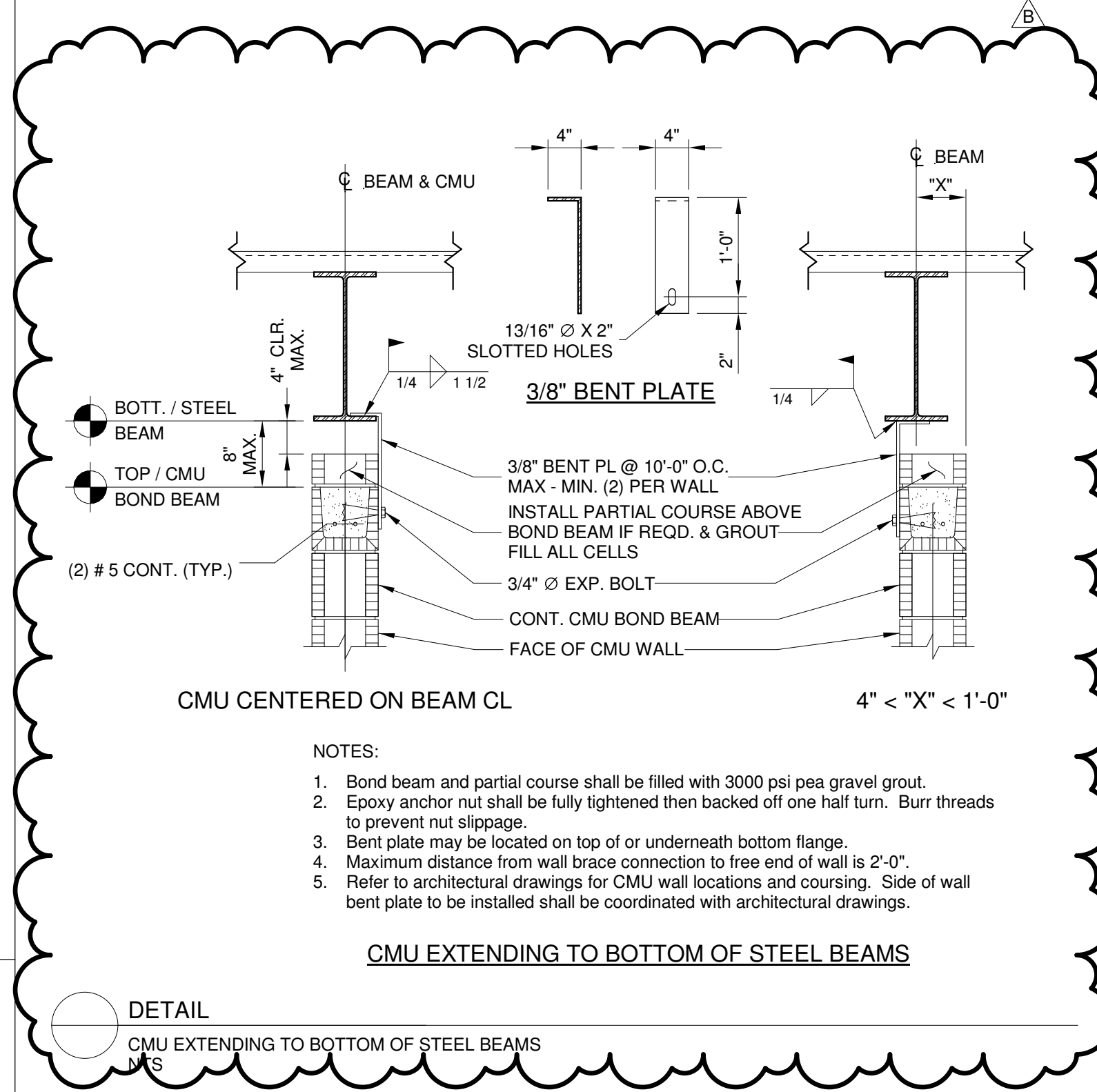
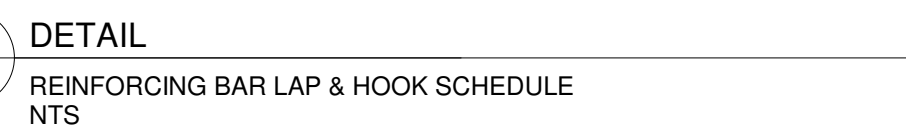
MASONRY LINTEL SCHEDULE				
WALL TYPE	MASONRY OPENING (M.O.)	TYPE	SIZE	REMARKS
4" BRICK	M.O. ≤ 8'-8"		L6x4x3/8, LLV	NOTE 5
6" CMU	M.O. ≤ 8'-0"		(2) 6" X 8" W/ (1) #5	NOTE 6
8" CMU	M.O. ≤ 6'-0"		8" X 8" W/ (2) #5	
	6'-0" < M.O. ≤ 12'-0"		8" X 16" W/ (2) #6	
4" BRICK AND 8" OR 12" CMU	M.O. ≤ 7'-4"		12" X 8" W/ (2) #5 + L6x4x3/8, LLV	
	7'-4" < M.O. ≤ 12'-0"		W8x18 + PL 3/8 x W-1" X M.O.-1"	NOTE 4

NOTES:  
1. PROVIDE LINTELS AS SHOWN UNLESS NOTED OTHERWISE ON PLANS, SECTIONS, OR DETAILS FOR ALL OPENINGS WIDER THAN 1'-0".  
2. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF REQUIRED LINTELS.  
3. BEAR MASONRY LINTELS MINIMUM 6" EACH END.  
4. FOR OPENINGS 6'-0" TO 12'-0", THE W8 BEAM BEARS ON MASONRY MINIMUM 8" EACH END. REFER TO STEEL BEAM BEARING ON MASONRY WALL DETAIL FOR BEARING PLATES & ANCHOR BOLTS REQUIRED EACH END.  
5. CMU OR METAL STUD BACK-UP WALL.  
6. GROUT BOTH COURSES OF CMU MONOLITHICALLY

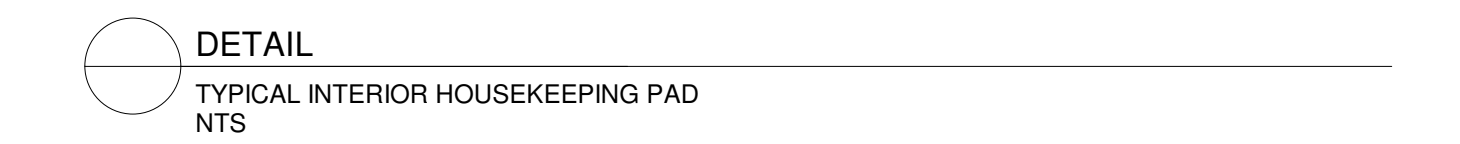


LAP SPLICE AND 90° HOOK SCHEDULE			
BAR SIZE	LAP (in.)		90° HOOK (in.)
	TOP BARS*	OTHER BARS	
#3	22	17	6
#4	29	22	8
#5	36	28	10
#6	43	33	12
#7	63	48	14
#8	72	55	16
#9	81	62	19
#10	91	70	22
#11	101	78	24

NOTE: \*TOP BARS\* REFERS TO HORIZONTAL REINFORCING PLACED WITH MORE THAN 12" FRESH CONCRETE CAST BELOW THE REINFORCING.

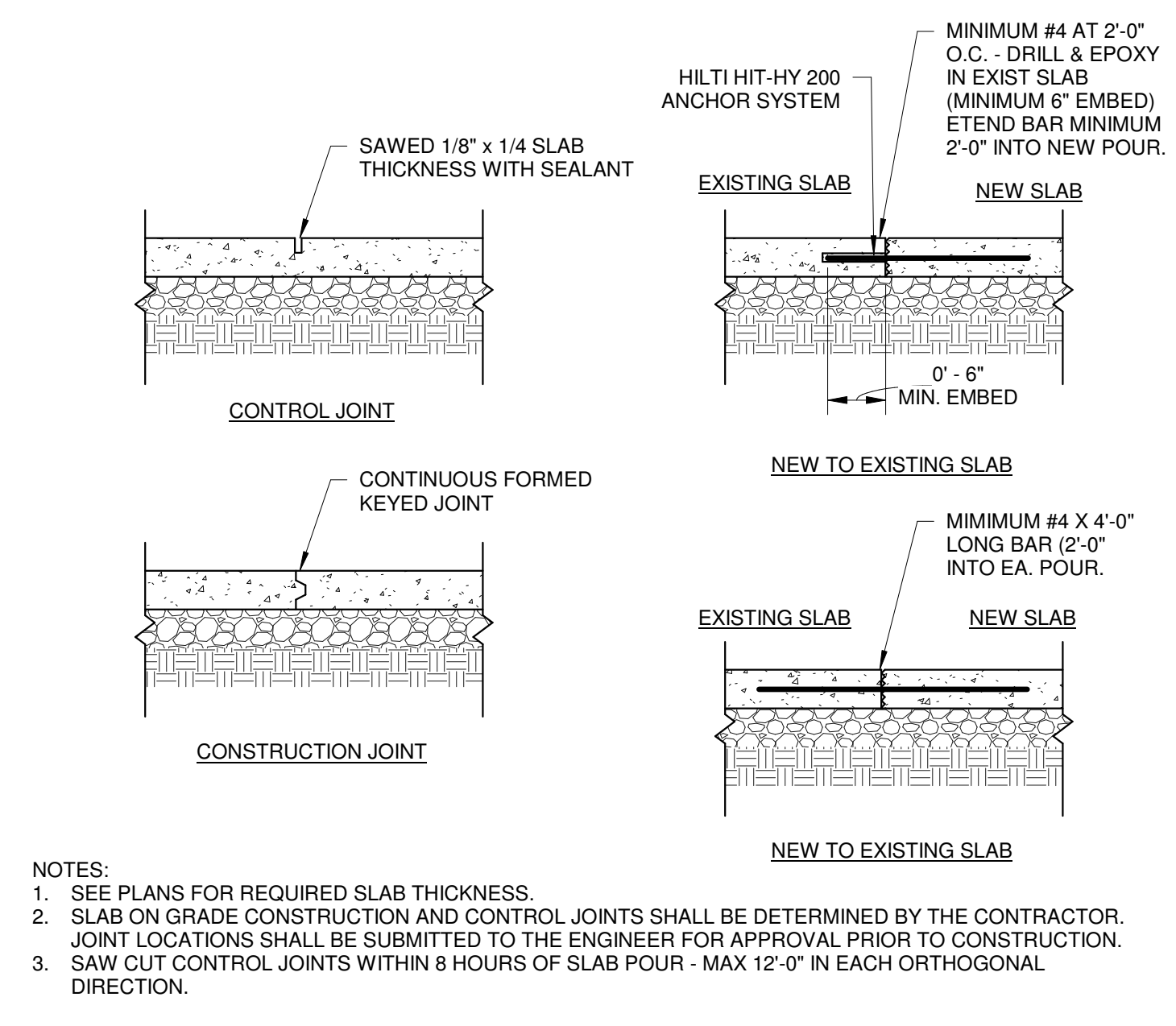
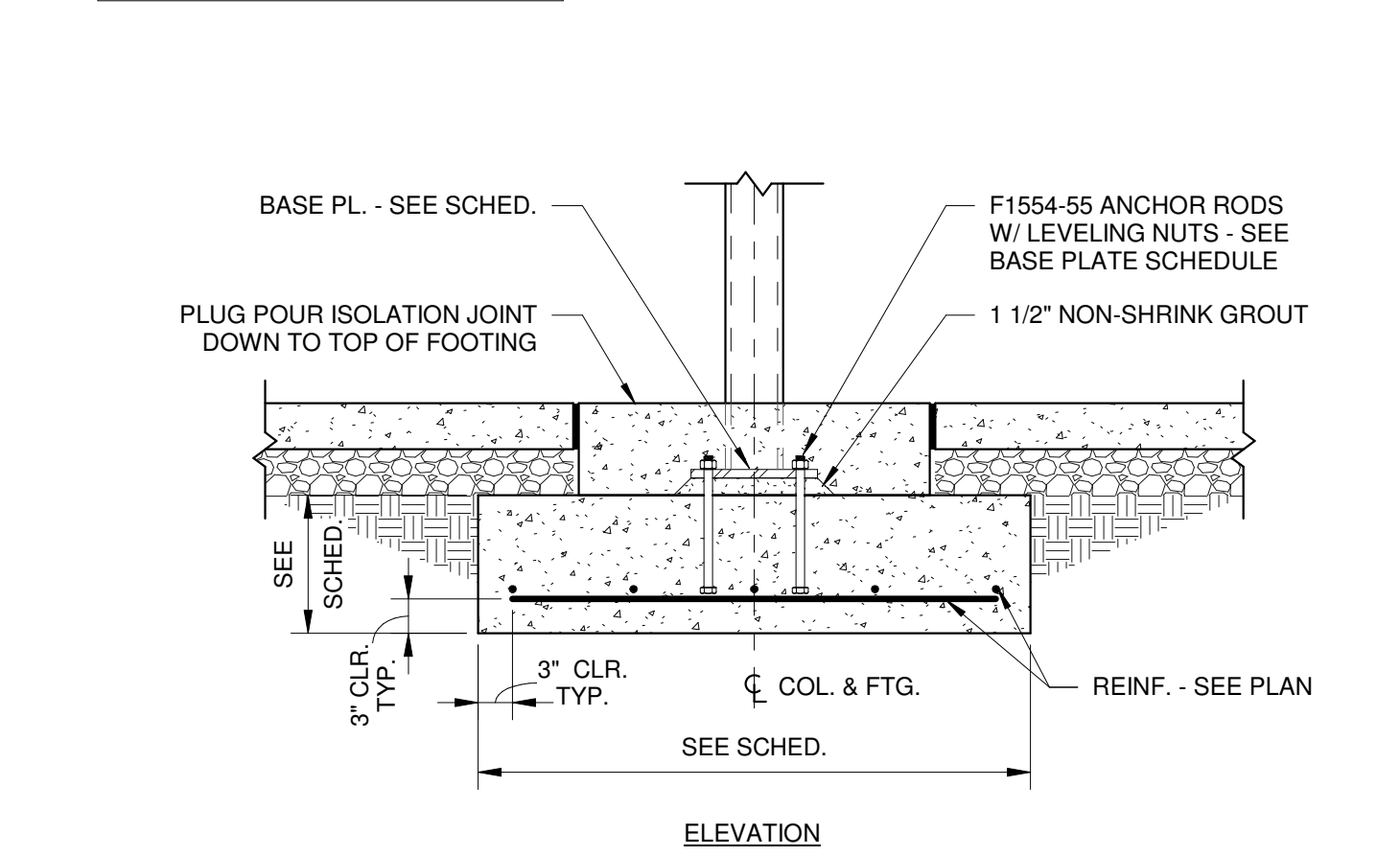
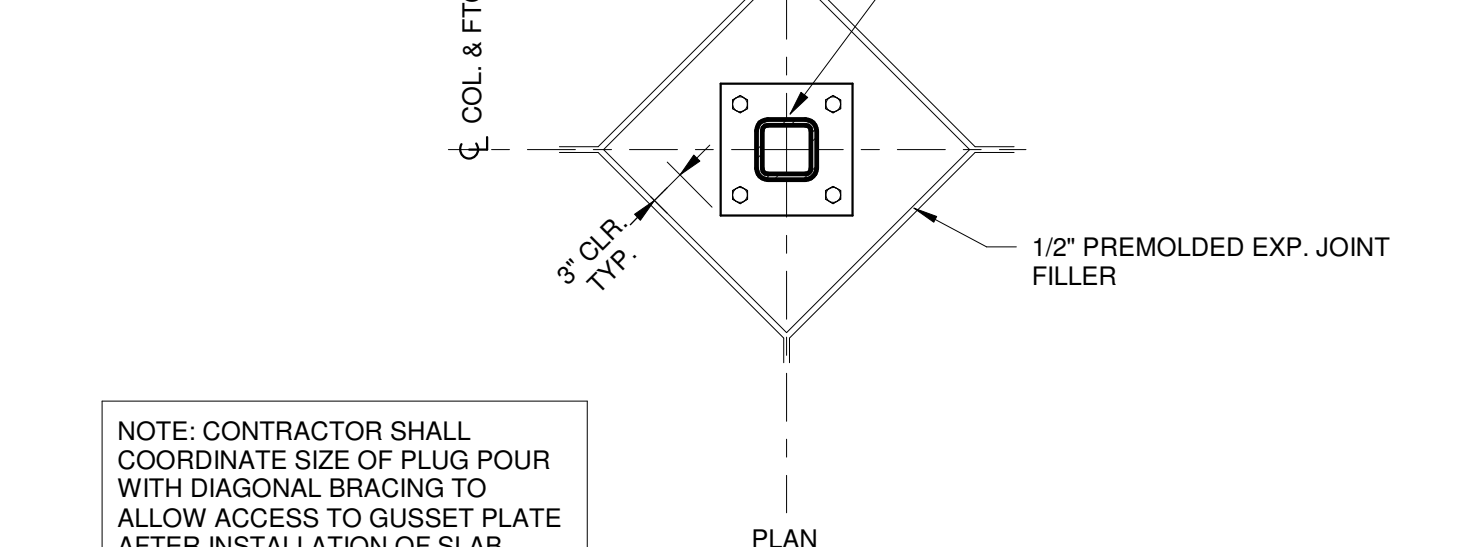
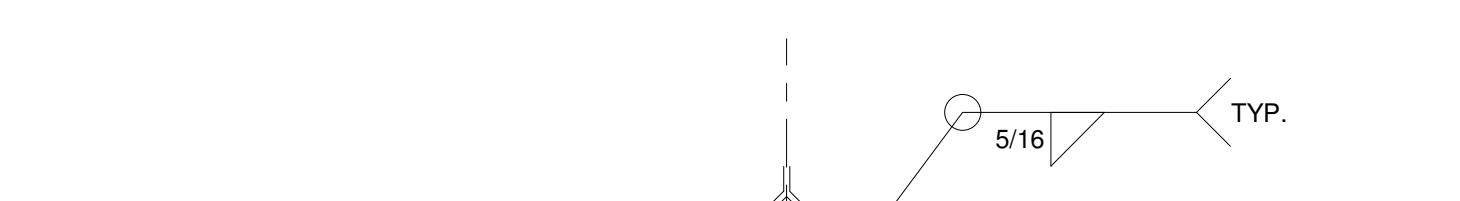


NOTES:  
1. PAD DIMENSIONS, ANCHOR BOLT SIZES AND LOCATIONS, AND OTHER EMBEDDED ITEMS SHALL CONFORM TO EQUIPMENT MANUFACTURER'S REQUIREMENTS.



FOOTING SCHEDULE		
TYPE	DIMENSIONS	REINFORCING
F5	5' - 0" x 5' - 0" x 1' - 0"	(6) #6 EA. WAY TOP + BOT.
F6	6' - 0" x 6' - 0" x 1' - 2"	(7) #6 EA. WAY TOP + BOT.
F7	7' - 0" x 7' - 0" x 1' - 6"	(8) #6 EA. WAY TOP + BOT.

F.A INDICATES TOP AND BOTTOM REINFORCING



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**CONSTRUCTION DOCUMENT**

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 4 919 821 4800  
 0 3 1 4 6 7  
 03 29 24  
 ENGINEER  
 ANDREW K. WARRING

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**ONSLOW COUNTY SCHOOLS  
 NORTHWOODS PARK MIDDLE SCHOOL  
 ADDITION & RENOVATION  
 904 SIOUX DR, JACKSONVILLE, NC 28540**

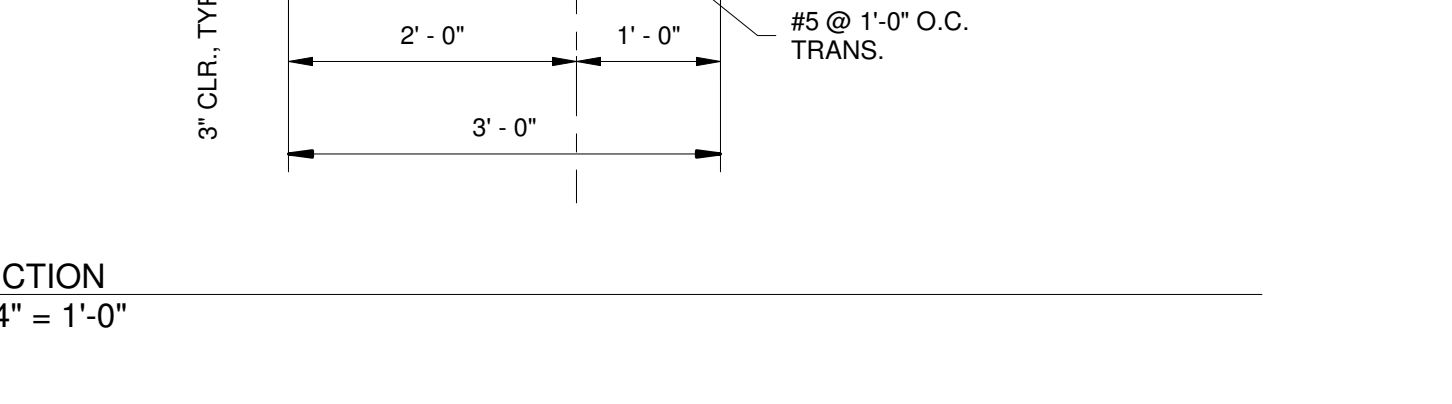
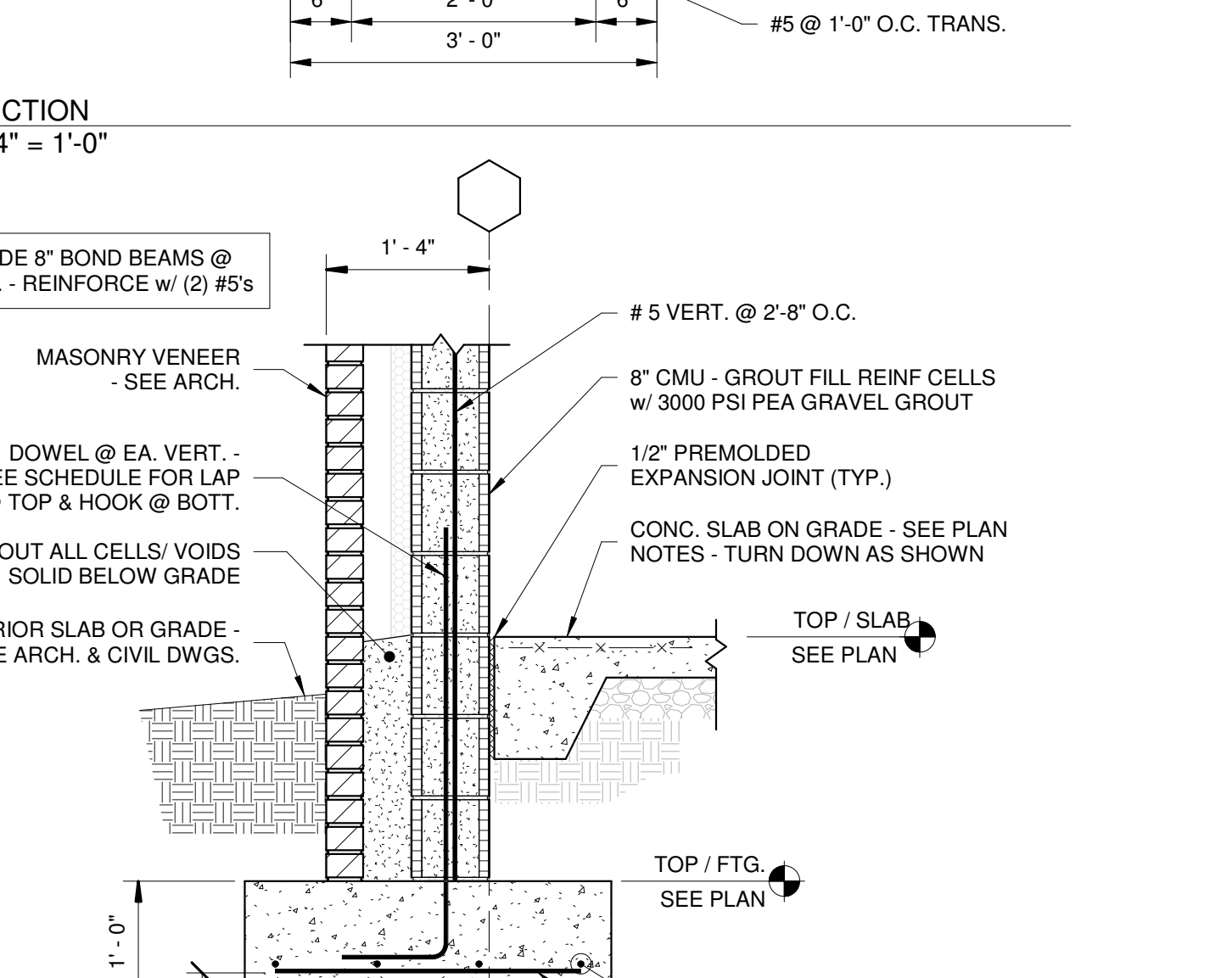
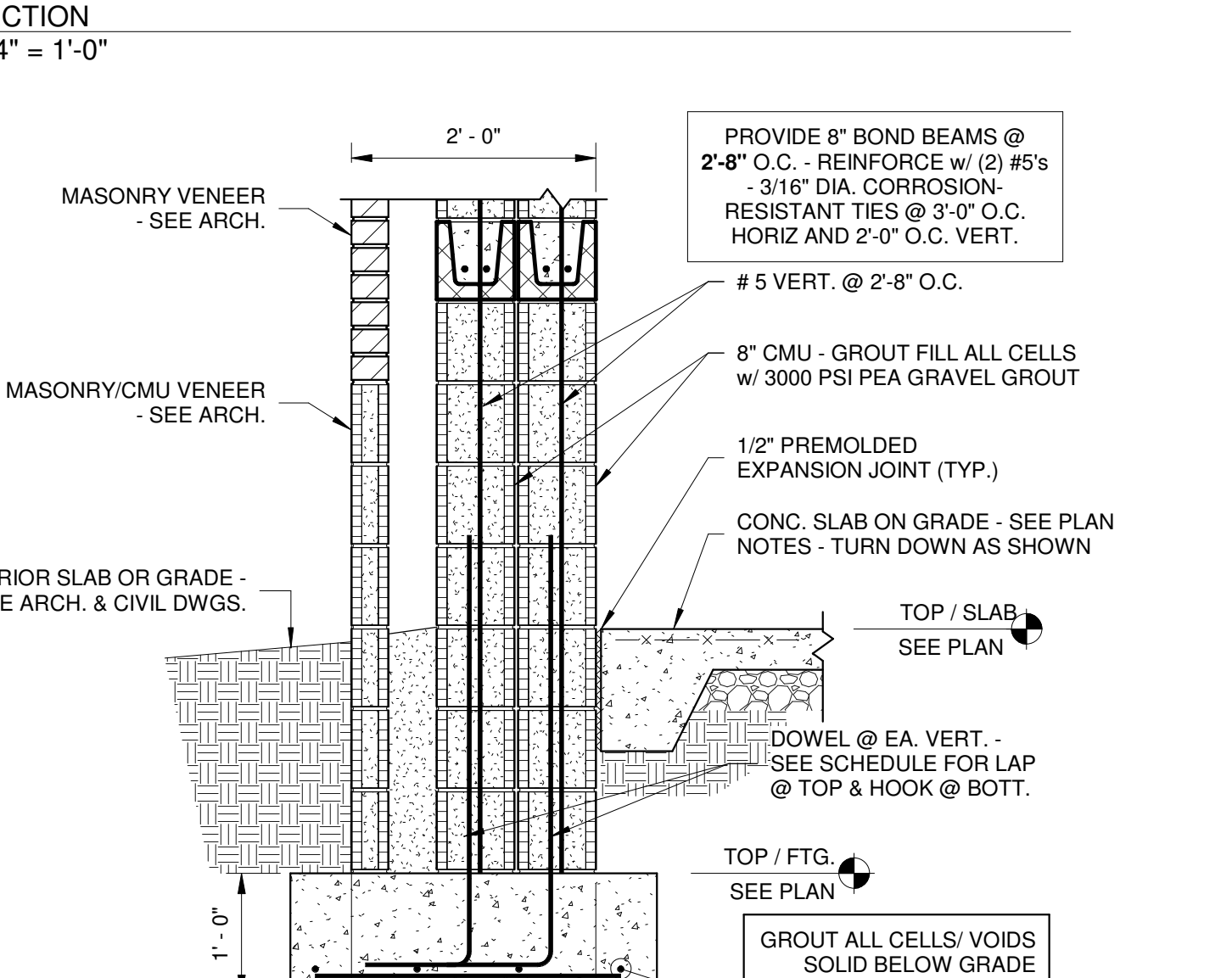
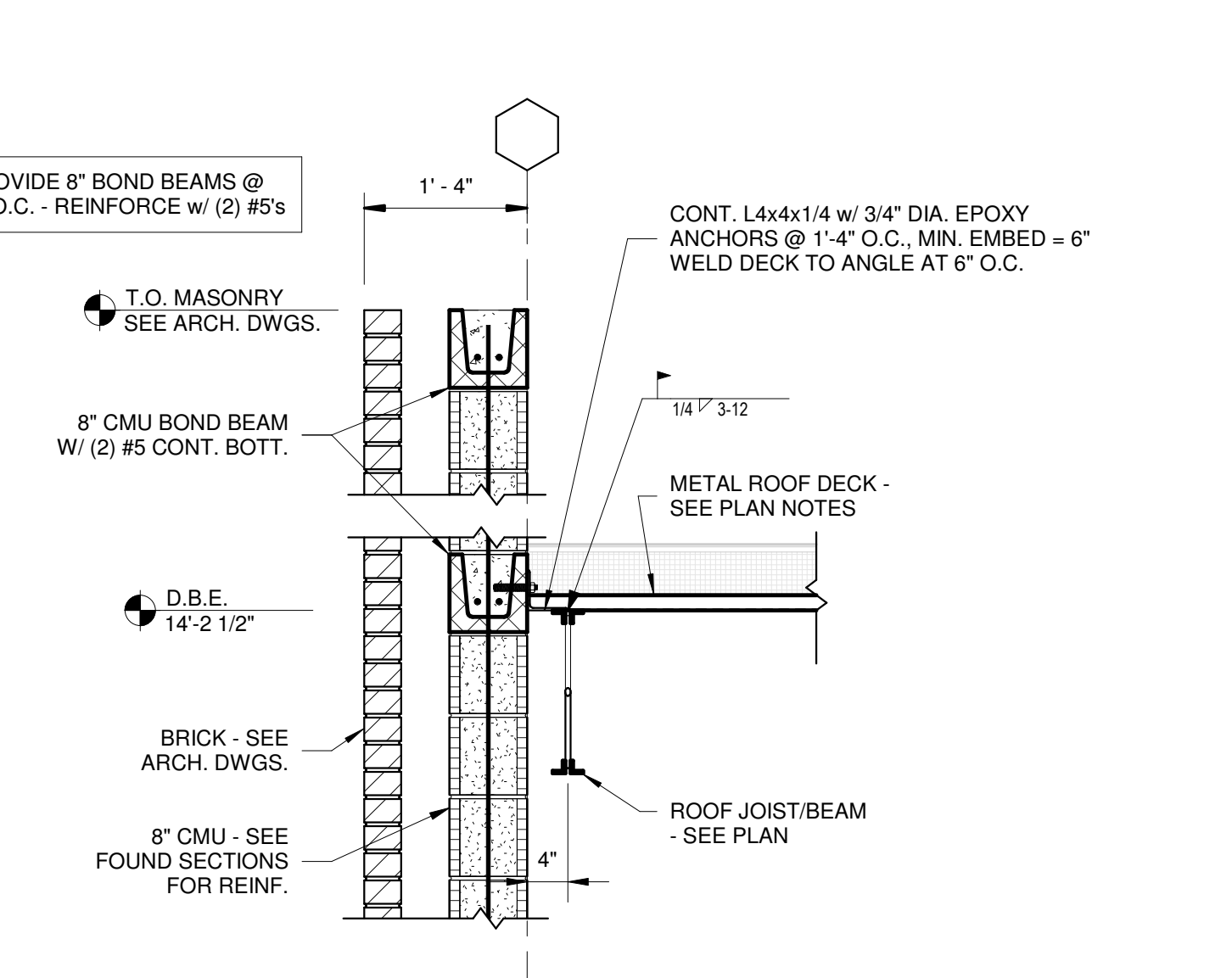
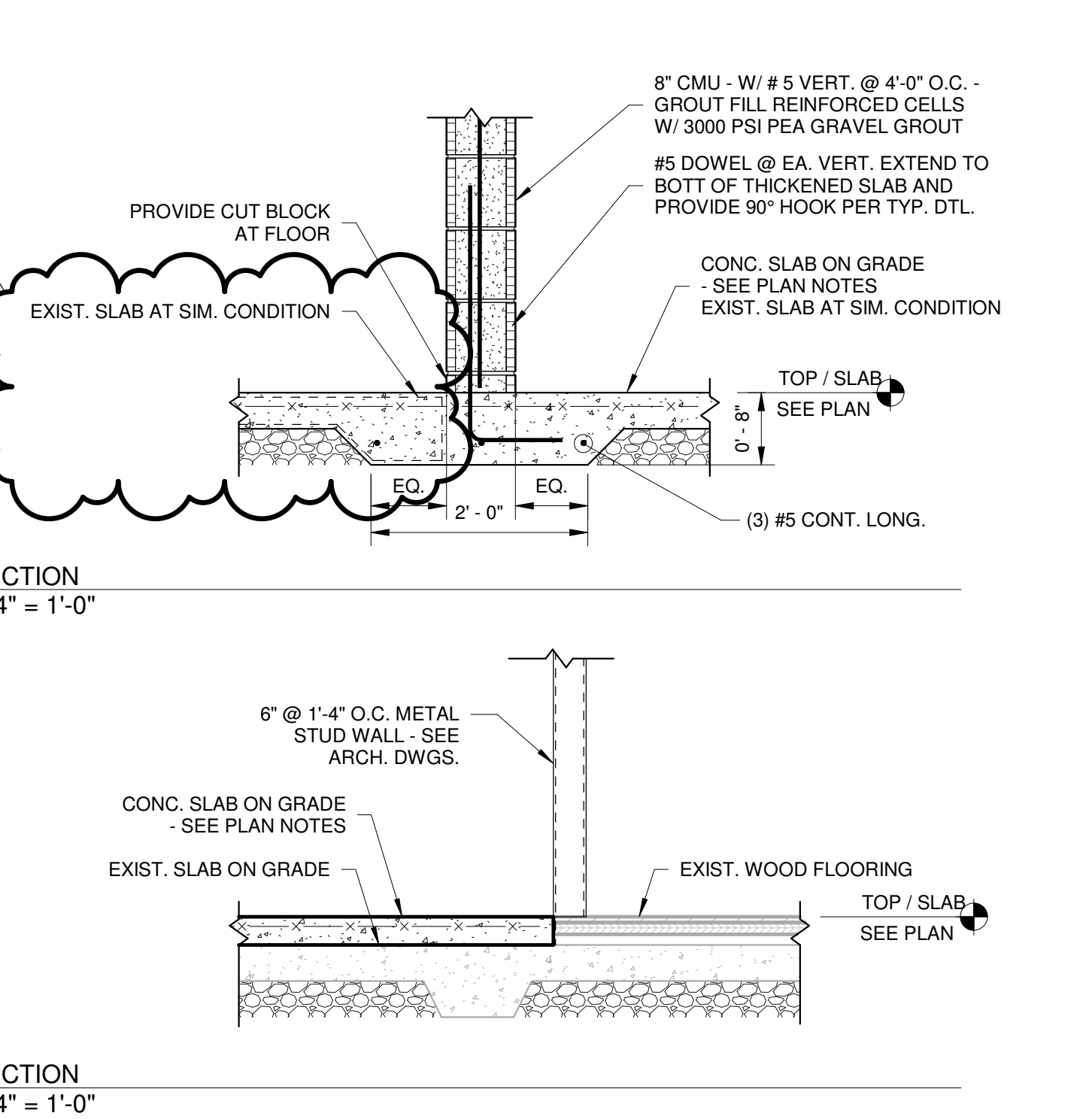
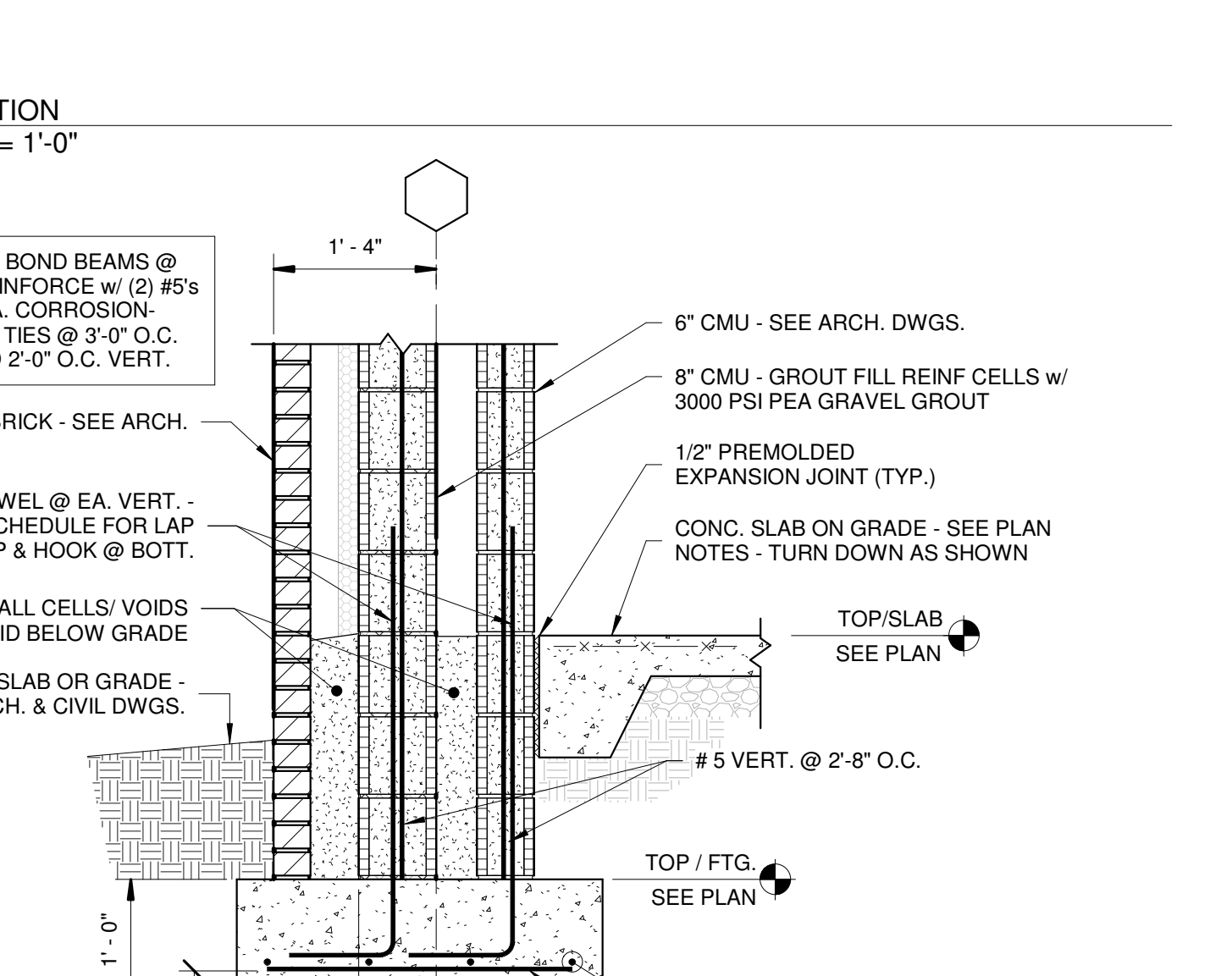
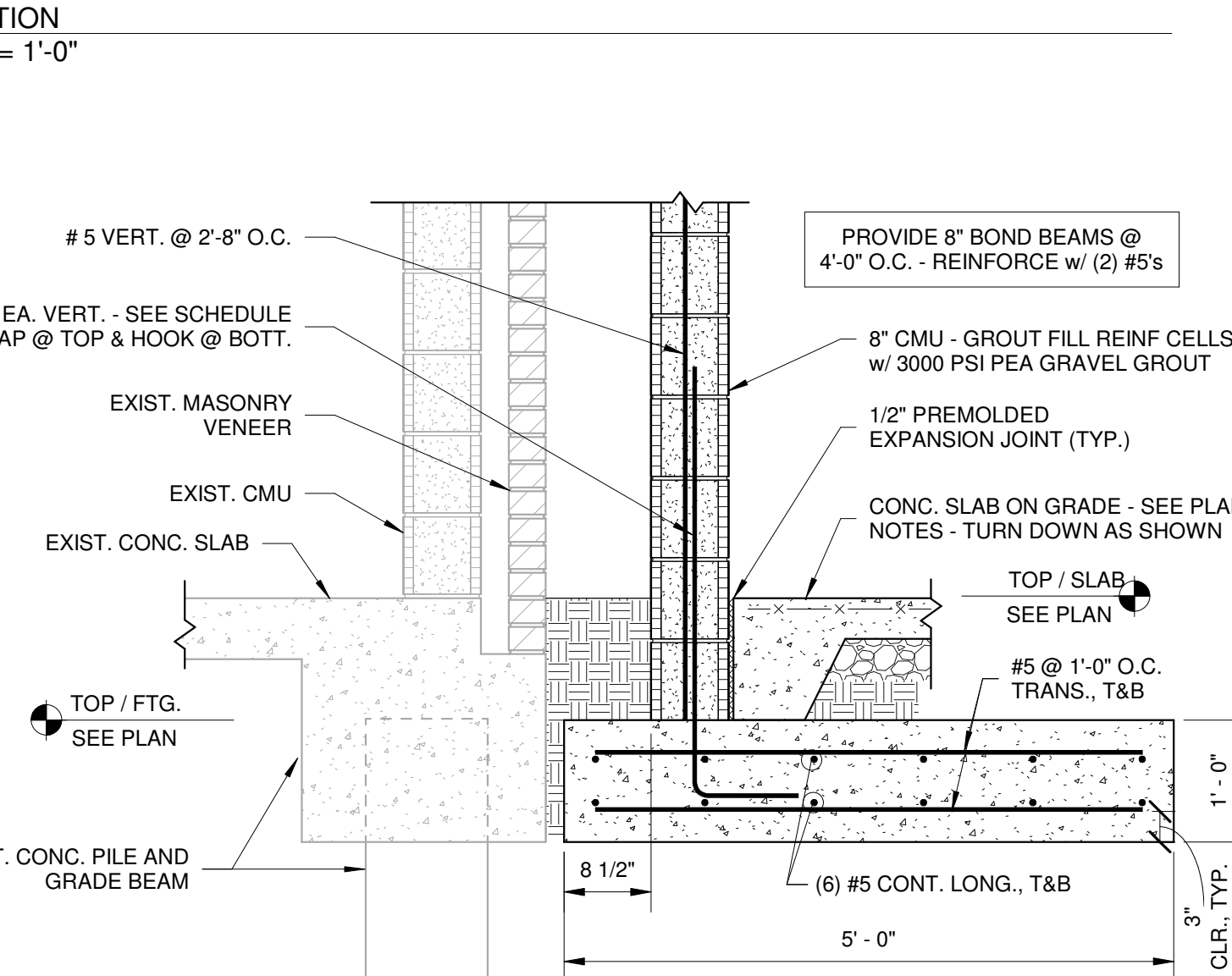
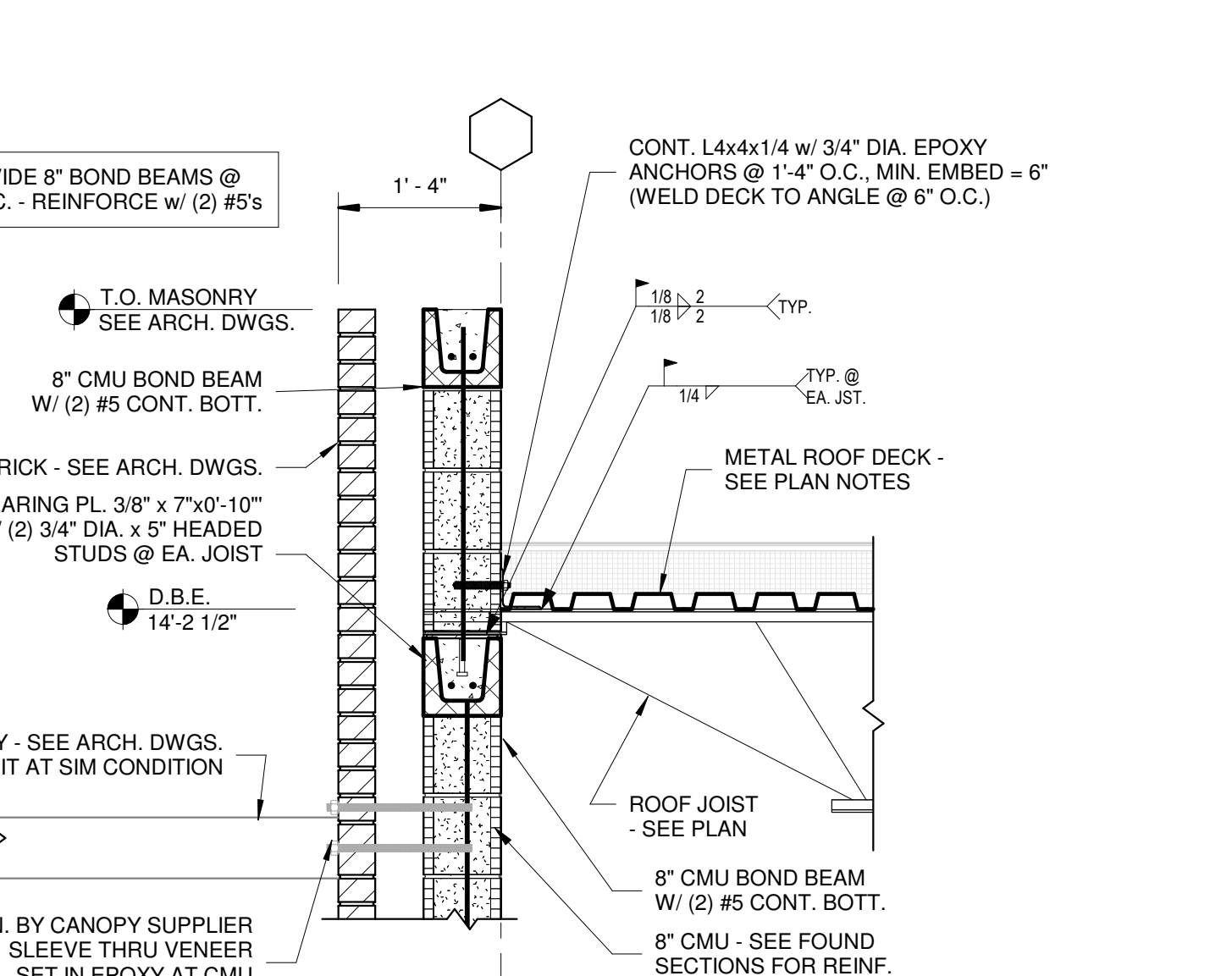
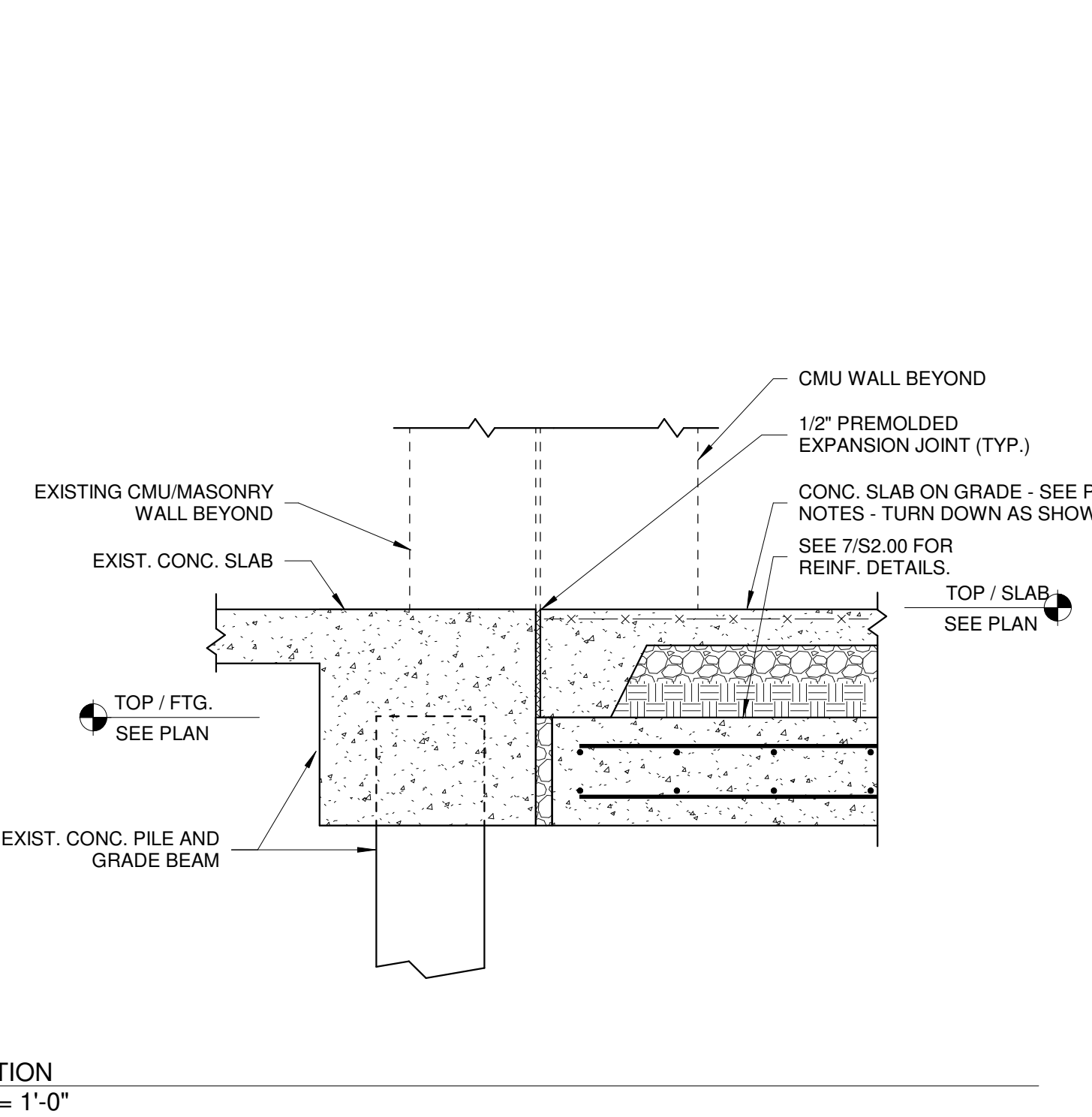
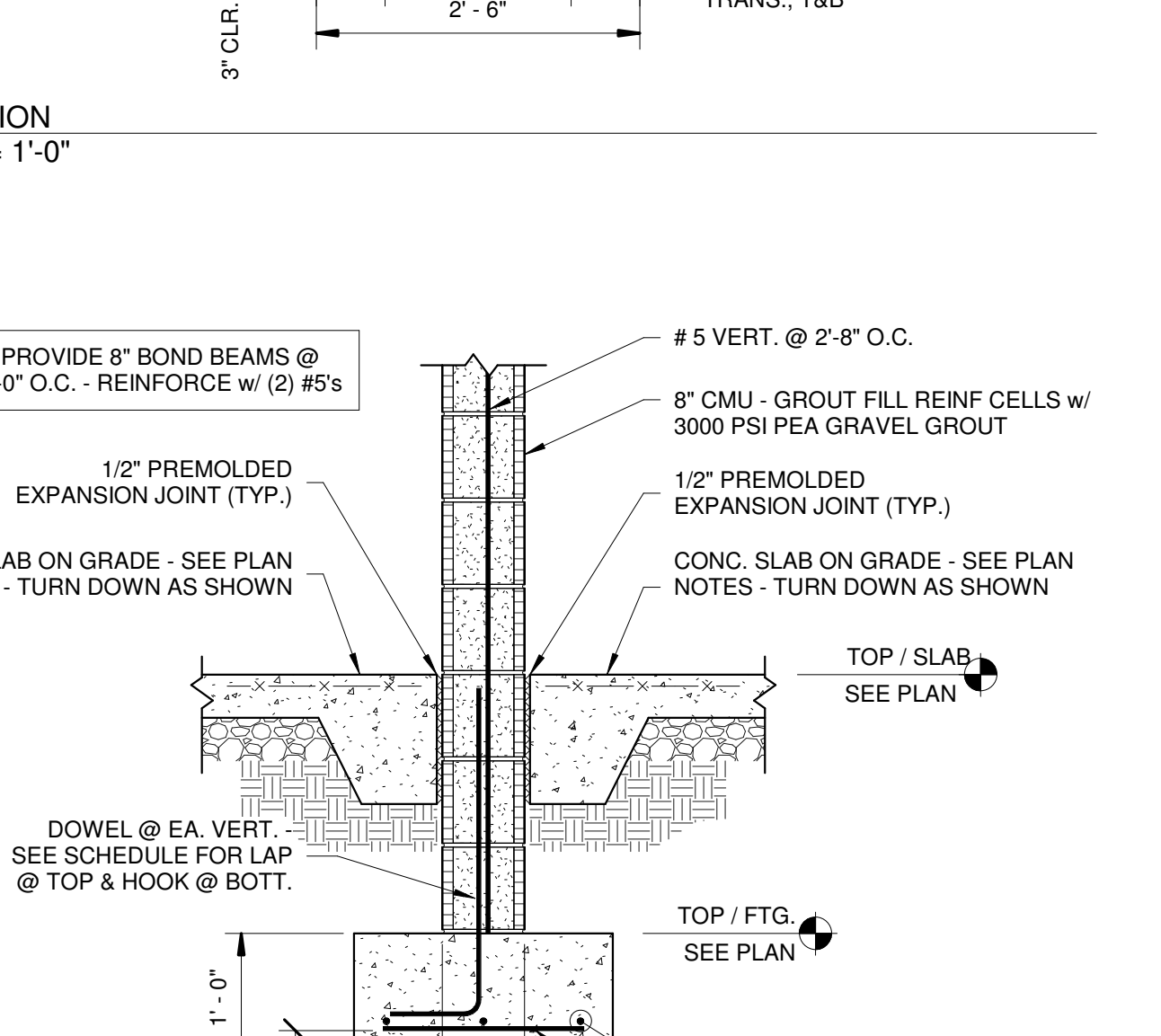
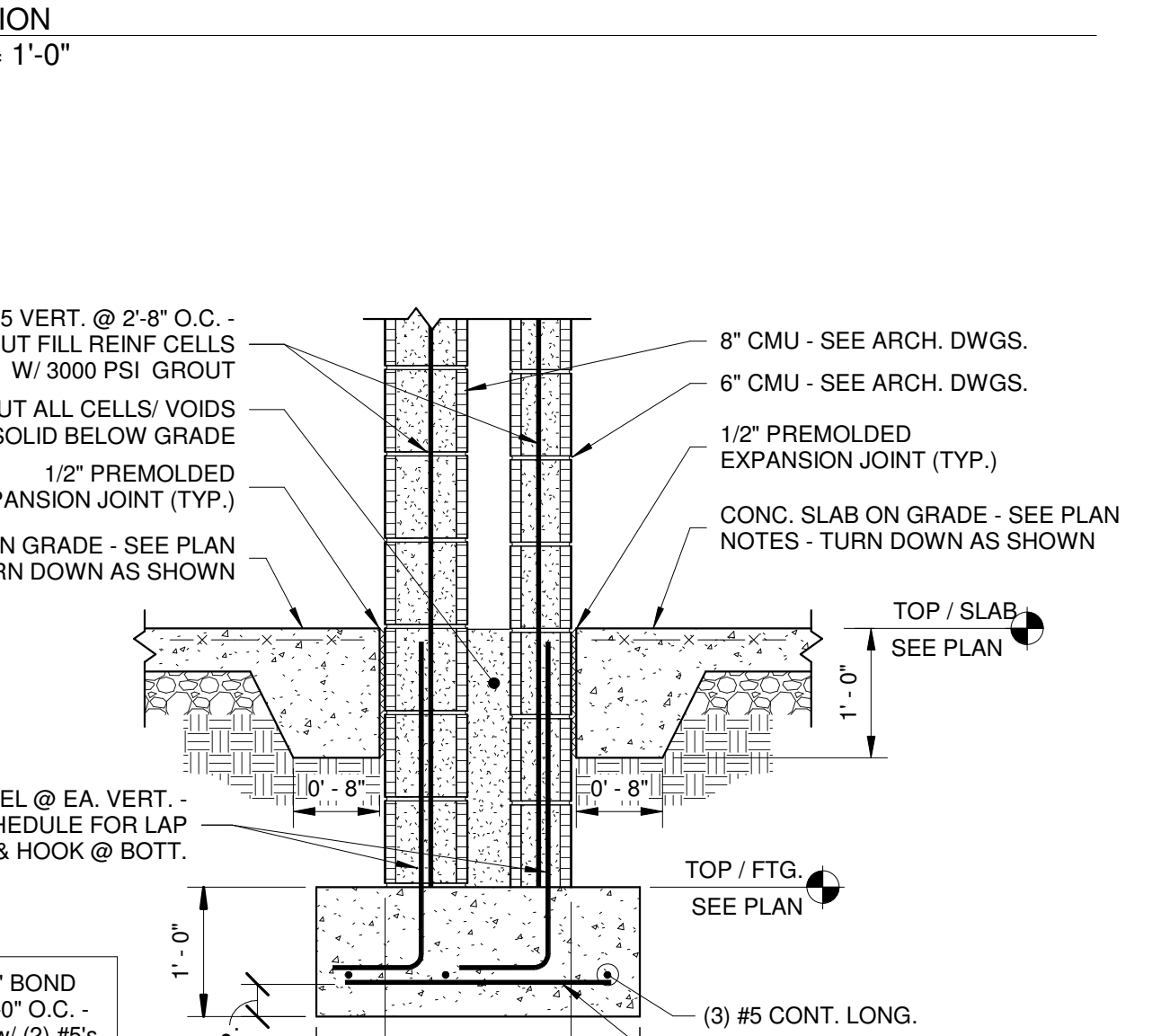
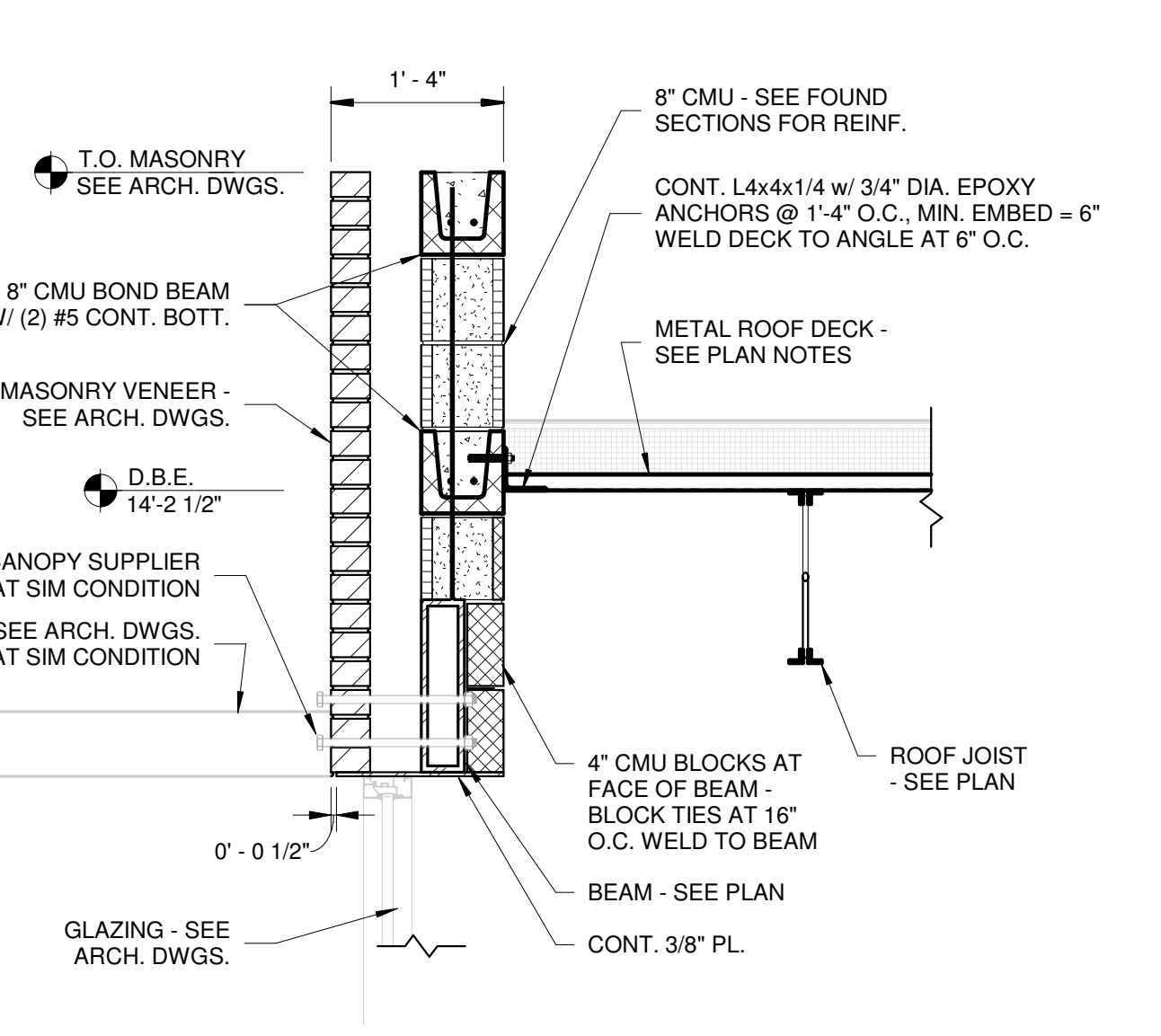
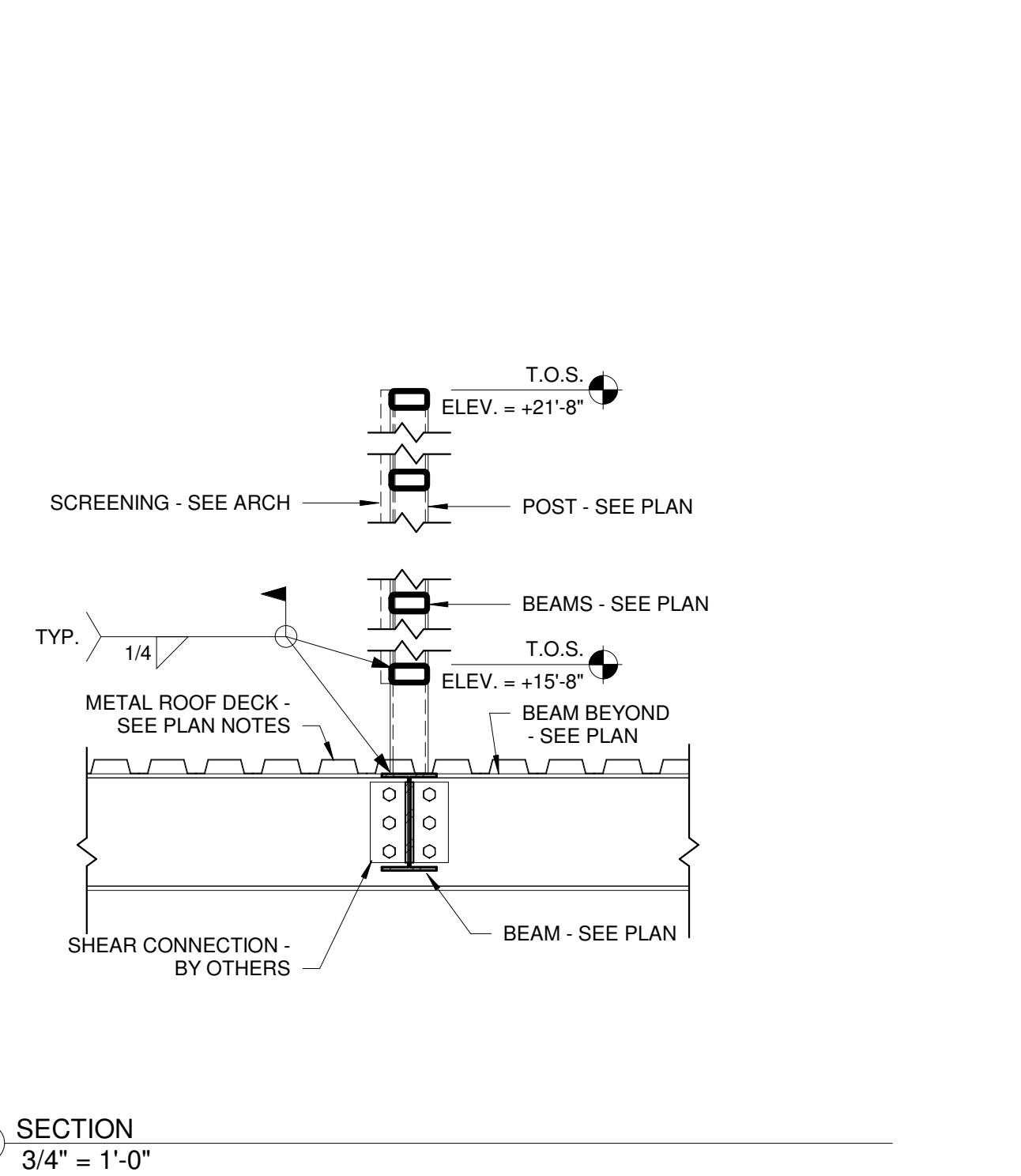
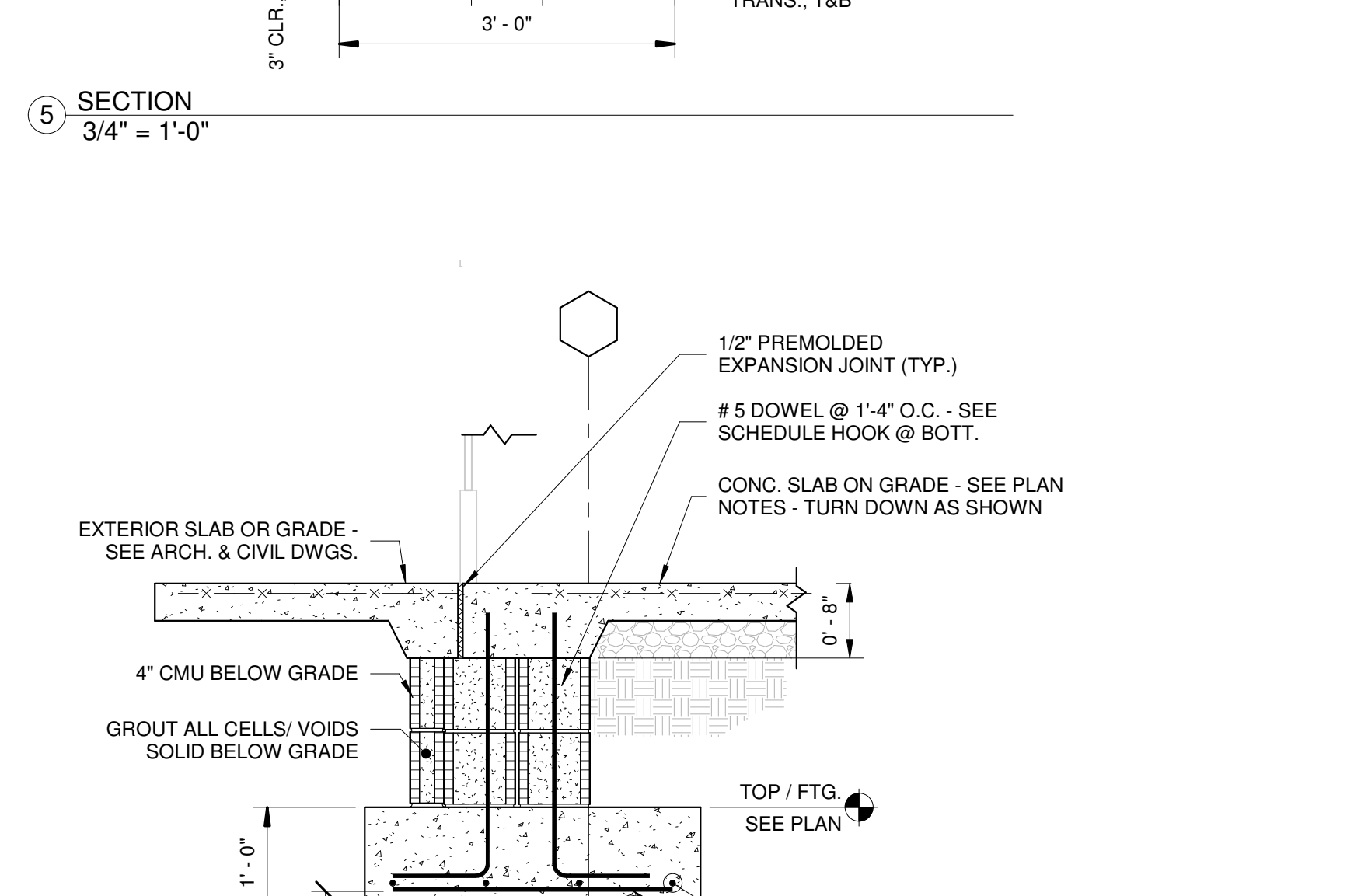
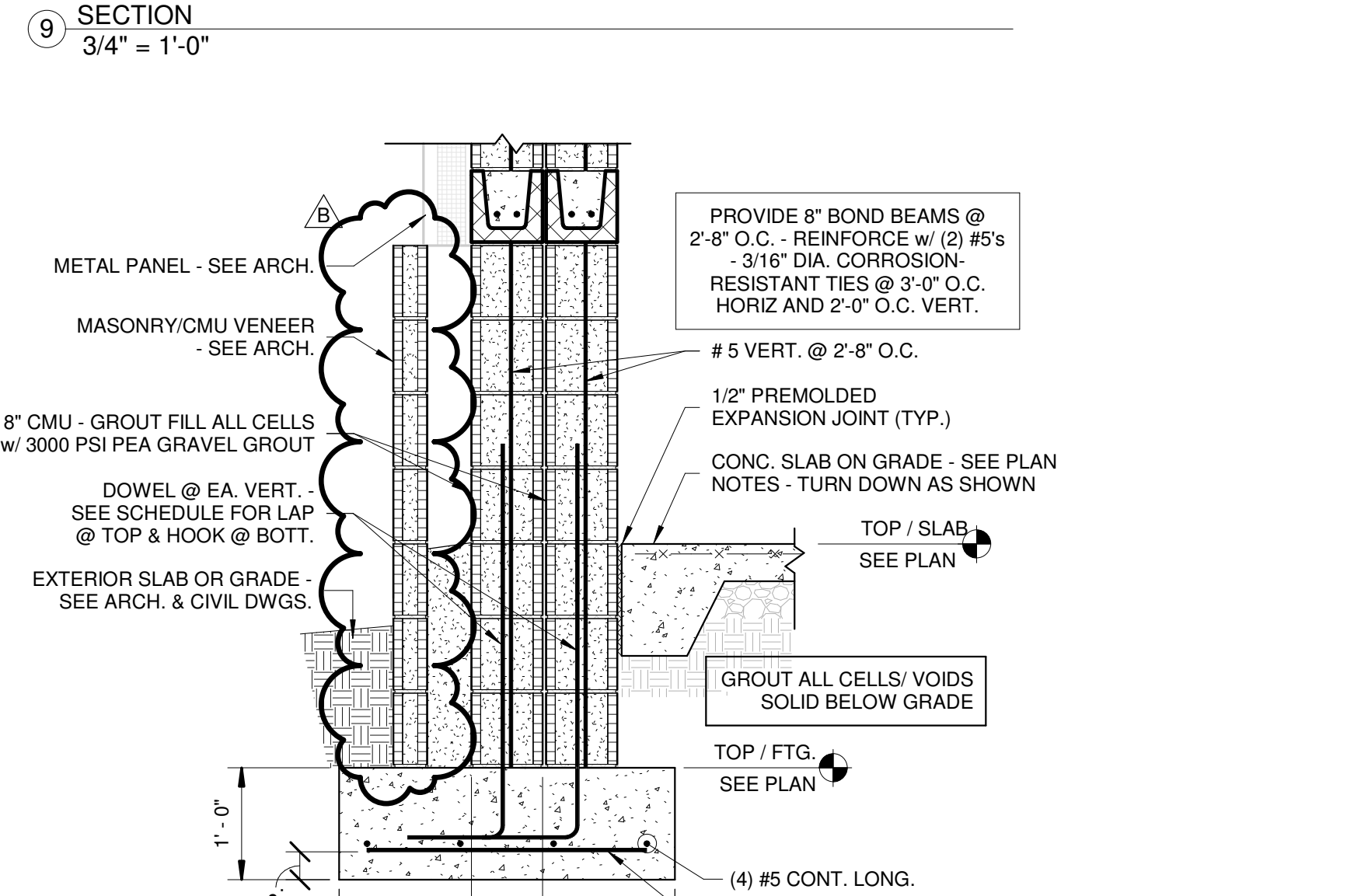
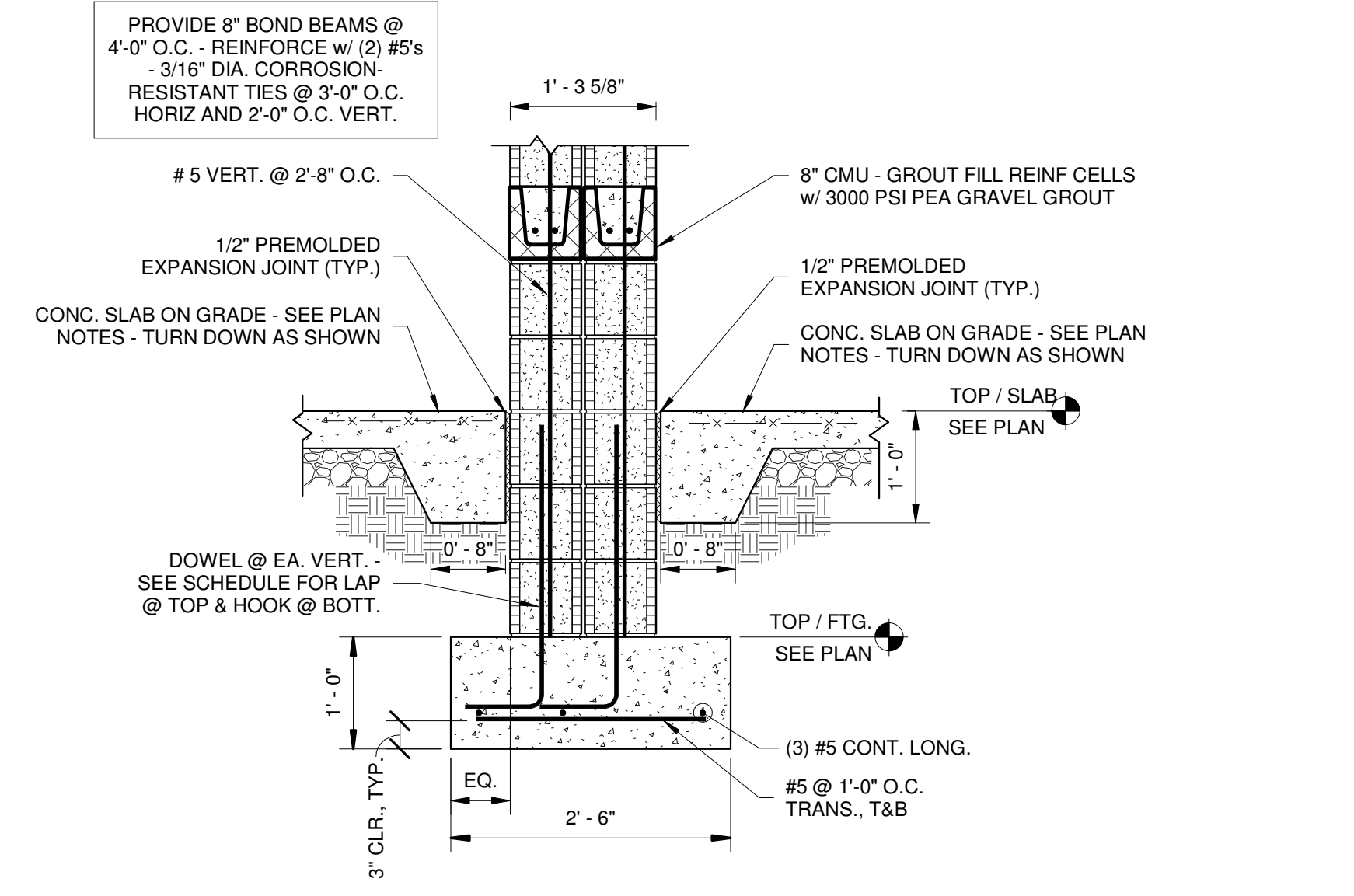
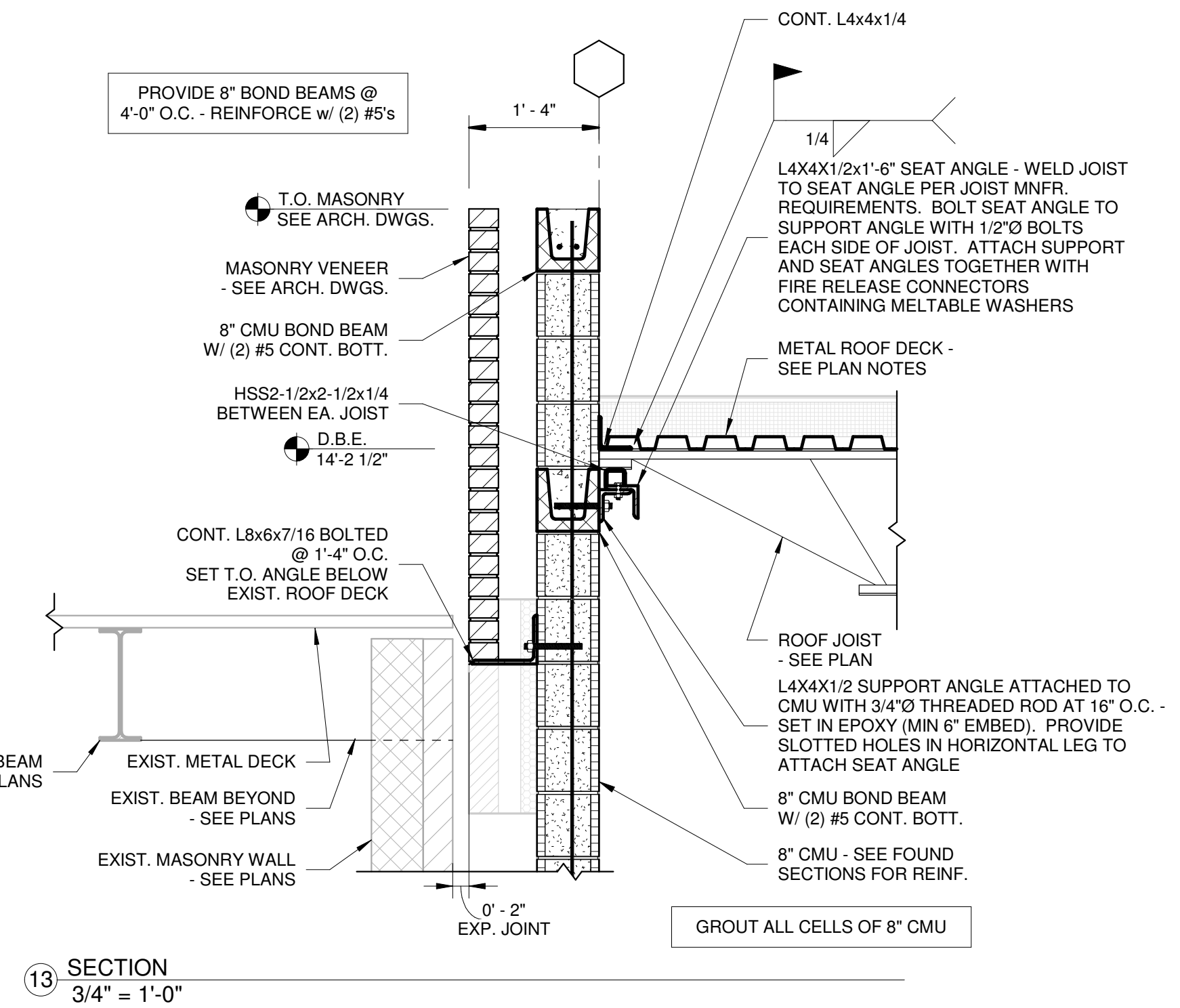
B 03/29/2024 ADDENDUM 2

ID	DATE	DESCRIPTION

DRAWN BY: HON  
 CHECKED BY: AKW  
**TYPICAL DETAILS**





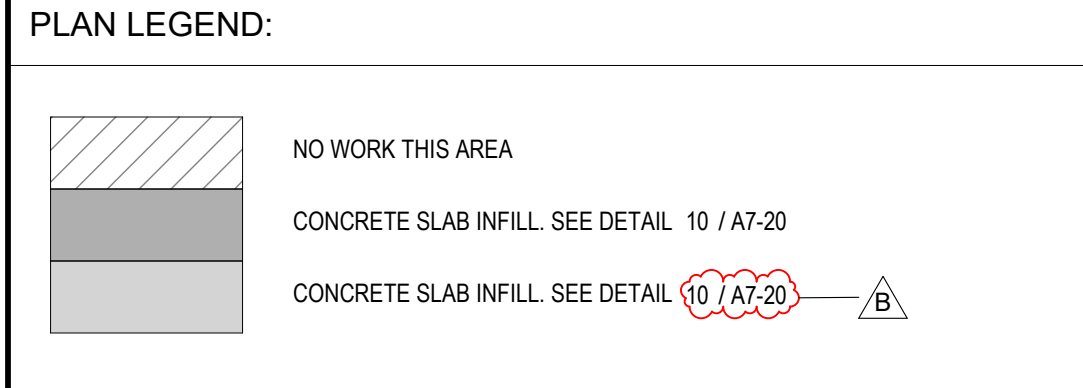








- NOTES:**
- ALL INTERIOR WALL TYPES TO BE 'A' UNLESS OTHERWISE NOTED.
  - ALL EXTERIOR WALL TYPES TO BE 'E' UNLESS OTHERWISE NOTED.
  - WALL DIMENSIONS ARE TO FACE OF METAL STUD, FACE OF CONCRETE MASONRY UNIT (CMU), OR CENTERLINE OF COLUMN.
  - ALL RATED WALL CONSTRUCTION TO COMPLY WITH UL REQUIREMENTS.
  - ALL CMU WALLS GOING TO BOTTOM OF DECK ARE TO PROVIDE A 1" GAP FOR DEFLECTION, FILL GAP WITH MINERAL WOOL INSULATION ALONG THE ENTIRE LENGTH OF WALL. AT FIRE RATED WALLS, ENSURE SPRAY APPLIED FIRE SEALANT BOTH SIDES.
  - ALL METAL STUD WALLS TERMINATING AT BOTTOM OF DECK ARE TO PROVIDE A DEFLECTION TRACK SECURED TO THE UNDERSIDE OF THE DECKING, NEXT TOP TRACK BUT DO NOT ATTACH TO DEFLECTION TRACK. FILL FLUTE IN METAL DECK WHERE REQUIRED.
  - ALL WALLS EXTEND TO DECK AND ARE BRACED TO DECK AT HEAD ON ALTERNATE STUDS OR 32" OC FOR CMU WALLS, UNLESS OTHERWISE NOTED.
  - CONTROL JOINTS SHALL BE AS SHOWN ON PLANS AND ELEVATIONS OR SPACED AT A MINIMUM OF 20'-0" OC AND A MAXIMUM OF 32'-0" OC WITH ONE CONTROL JOINT LOCATED WITHIN 3'-4" OF ANY CORNER. FOR INTERIOR GYPSUM WALL CONTROL JOINTS SEE DETAIL. SEE FINISH PLANS AND SCHEDULE FOR WALL, FLOOR, BASE, AND CEILING TYPES AND FINISHES.
  - REFER TO STRUCTURAL DRAWINGS FOR LOCATION OF REINFORCING, BOND BEAMS, BRACING, ETC.
  - ALL COLUMN CHASES TO HAVE GYP BOARD ON ROOM SIDE OF WALL, TYPICAL UNLESS OTHERWISE NOTED.
  - ALL EXTERIOR SIDEWALKS SHALL SLOPE AWAY FROM THE BUILDING AT 1/4" PER FOOT, MINIMUM.
  - ALL EXTERIOR WINDOWS TO HAVE ROLLER SHADE BLINDS UNLESS OTHERWISE NOTED. REFER TO SPECIFICATIONS.
  - FURNITURE AND EQUIPMENT SHOWN DASHED ON PLANS IS NOT IN CONTRACT (NIC), GC TO PROVIDE WOOD BLOCKING FOR ALL WALL/CEILING MOUNTED ACCESSORIES.
  - FIELD VERIFY FINAL ROOM DIMENSIONS PRIOR TO CASEWORK FABRICATION.
  - ALL CERAMIC TILE TO HAVE CONTROL JOINTS THAT ALIGN WITH CONTROL JOINTS IN CONCRETE SLAB.
  - THERE SHALL BE NO PENETRATIONS IN THROUGH WALL FLASHING.
  - DOOR JAMB FROM INTERSECTING WALLS: CMU - 8" UNLESS OTHERWISE NOTED STUD - 4" UNLESS OTHERWISE NOTED



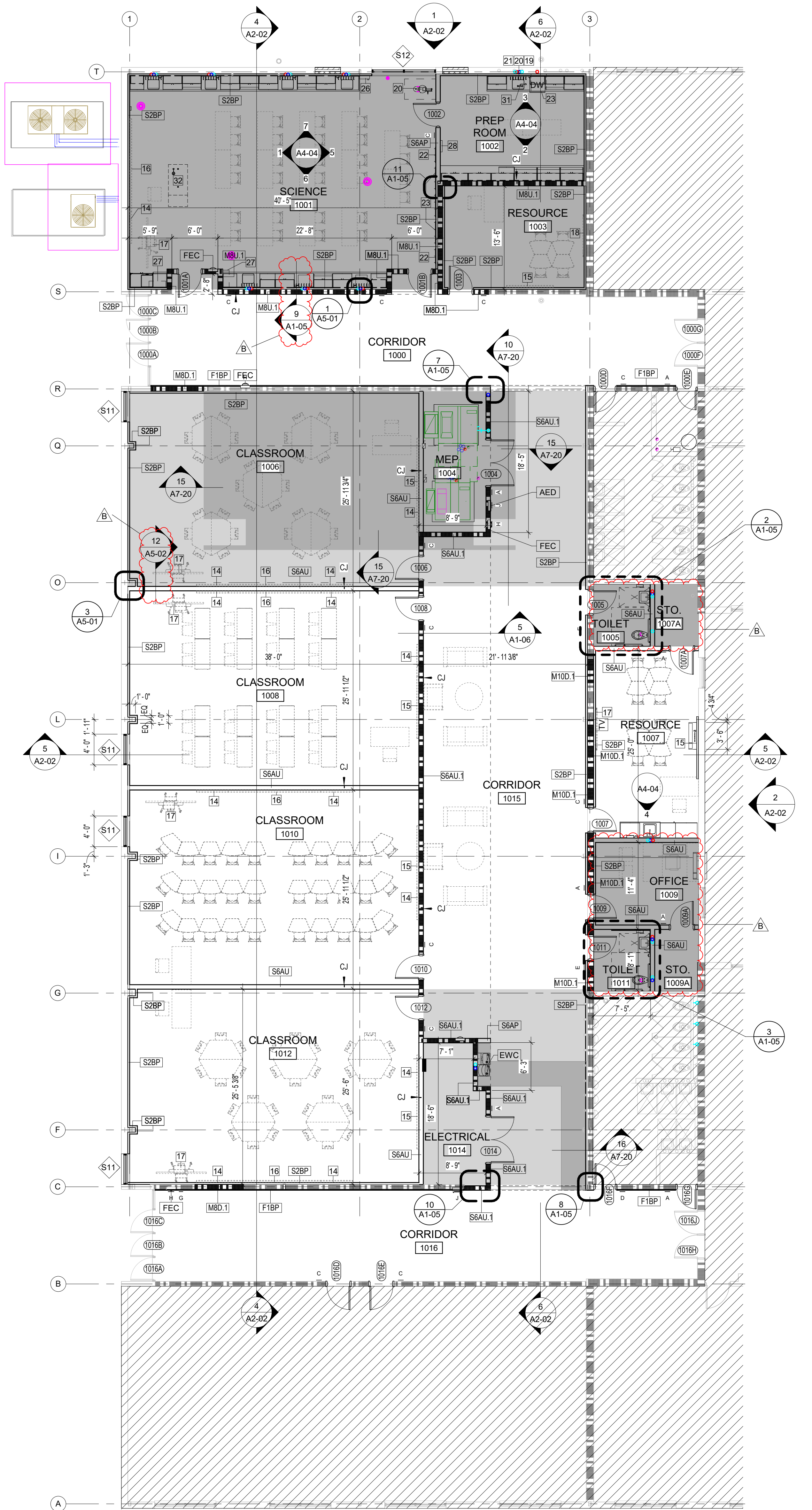
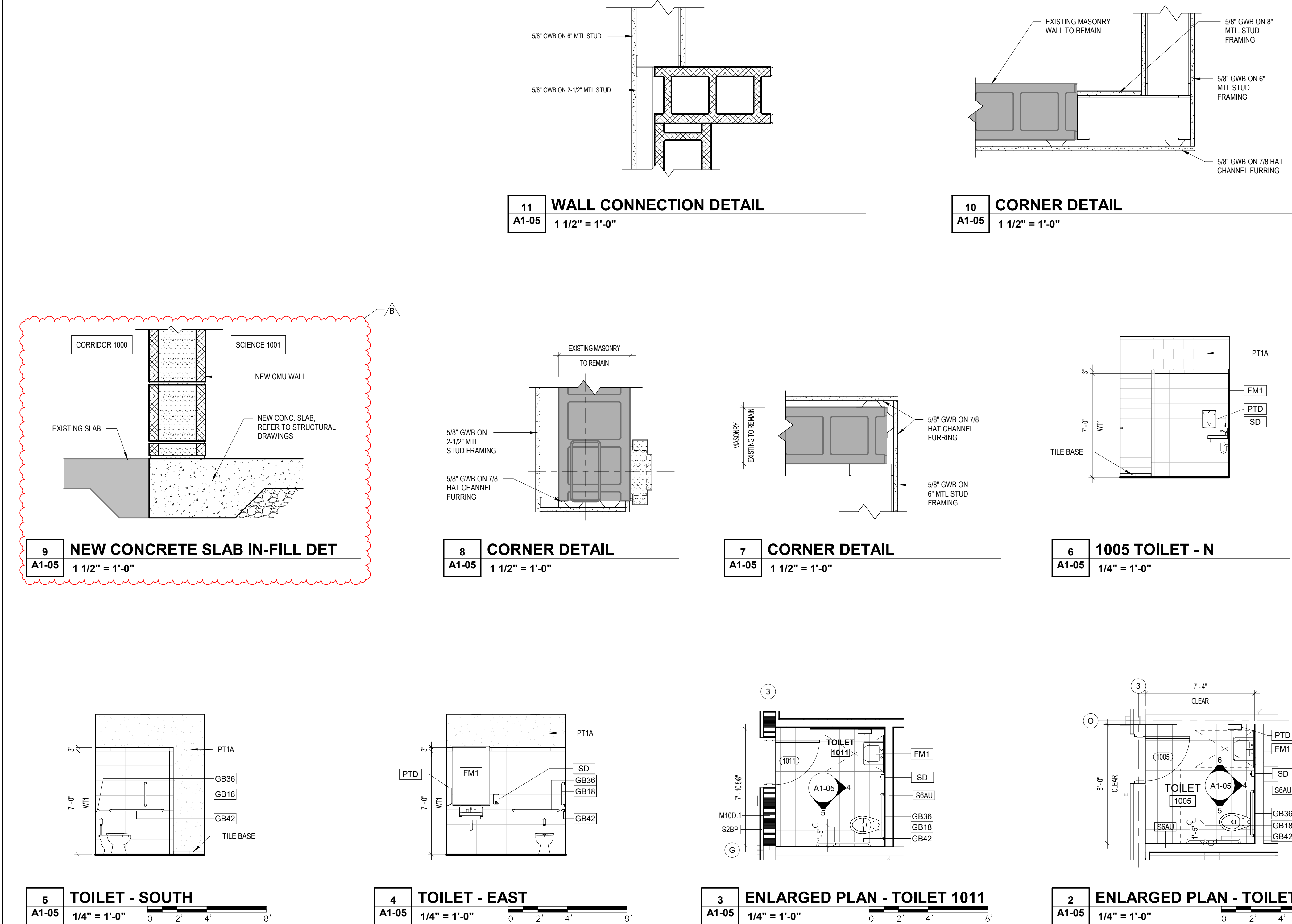
**EQUIPMENT SCHEDULE - N/MPMS**

MARK	SCHEDULE	ITEM	FURNISHED AND INSTALLED BY	REMARKS
1	LOCKER BENCH	CFCI	-	-
2	LOCKER	CFCI	DOUBLE TIER	-
3	BLEACHERS (TEAM SIDE)	CFCI	-	-
4	BLEACHERS (SPECTATOR SIDE)	CFCI	-	-
5	BASKETBALL HOOP, CEILING SUSPENDED, FORWARD FOLD	CFCI	ELECTRIC, REFER TO ELECTRICAL DRAWINGS	-
6	VOLLEYBALL/TENNIS FLOOR SLEEVES	CFCI	-	-
7	WALL PADS	CFCI	-	-
8	8x2 BASKETBALL/VOLLEYBALL/WRESTLING LED SCOREBOARD	CFCI	WIRELESS RECEIVER W/ CONTROLLERS	-
9	BEVERAGE COOLER	CFCI	REFER TO ALLOWANCES, APPLIANCES	-
10	ICE MAKER	CFCI	-	-
11	REFRIGERATOR	CFCI	-	-
12	WASHER	CFCI	-	-
13	DRYER	CFCI	-	-
14	4" X 4" X 4" TAC BOARD	CFCI	-	-
15	8" MARKER BOARD	CFCI	-	-
16	12" MARKER BOARD	CFCI	-	-
17	MOBILE TV CART	CFCI	REFER TO ALLOWANCES	-
18	PAPER TOWEL DISPENSER	CFCI	-	-
19	SOAP DISPENSER	CFCI	-	-
20	EMERGENCY SHOWER/EYEWASH	CFCI	<vbr>*	-
21	DISHWASHER	CFCI	REFER TO ALLOWANCES, APPLIANCES	-
22	24" HOOK STRIP	CFCI	MOUNT @ 46" AFF	-
23	36" HOOK STRIP	CFCI	MOUNT @ 46" AFF	-
24	FIRE BLANKET CABINET	CFCI	-	-
25	GOGGLE CABINET	CFCI	-	-
26	SAFETY DATA SHEET BINDER RACK	CFCI	-	-
27	SCORER'S TABLE	OFOI	-	-
28	MOTORIZED PROJECTION SCREEN - CEILING MOUNTED	CFCI	-	-
29	EMERGENCY EYEWASH WASH - COUNTERTOP MOUNTED	CFCI	-	-
30	MOBILE DEMONSTRATION BENCH	OFOI	-	-

**TOILET AND SHOWER ACCESSORY SCHEDULE**

MARK	DESCRIPTION	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL	FURNISHED BY/INSTALLED BY	REMARKS
BMB	Fire Blanket Cabinet	Nystrom	BC-6601	-	-
AED	48" X 36" Magnetic Marker Board	-	Refer to Specs.	CFCI	-
CS	HORIZONTAL WALL MOUNTED WITH S.S. VENEER CHANGING STATION	KOALA KARE OR EQUAL	KB300-SS	CFCI	-
FM1	30" W X 48" H TEMPERED GLASS CHANNEL FRAME MIRROR	BOBRICK, OR EQUAL	B-165 2436	CFCI	-
FM2	34" W X 48" H TEMPERED GLASS CHANNEL FRAME MIRROR	BOBRICK, OR EQUAL	B-165 2436	CFCI	-
FM3	36" W X 84" H TEMPERED GLASS CHANNEL FRAME MIRROR	BOBRICK, OR EQUAL	B-165 2436	CFCI	-
FSS	SOLID PHENOLIC FOLDING SHOWER/DRESSING AREA SEAT	BOBRICK, OR EQUAL	B-5192	CFCI	-
GB18	1 1/2" DIA. X 18" S.S. VERTICAL GRAB BAR - PEENED	BOBRICK, OR EQUAL	B-6806	CFCI	-
GB30	1 1/2" DIA. X 30" S.S. GRAB BAR - PEENED	BOBRICK, OR EQUAL	B-6806	CFCI	-
GB36	1 1/2" DIA. X 36" S.S. GRAB BAR - PEENED	BOBRICK, OR EQUAL	B-6806	CFCI	-
GB42	1 1/2" DIA. X 42" S.S. GRAB BAR - PEENED	BOBRICK, OR EQUAL	B-6806	CFCI	-
MH	SURFACE MOUNTED MOP AND BROOM HOLDER	BOBRICK, OR EQUAL	B-223 x 24	CFCI	60" TO CENTER
PTD	SURFACE MOUNTED PAPER TOWEL DISPENSER	BOBRICK, OR EQUAL	B-2620	CFCI	-
SC	42" HEAVY DUTY S.S. SHOWER CURTAIN ROD, VINYL CURTAIN, AND S.S. HOOKS	ASI, OR EQUAL	1204	CFCI	-
SD	SURFACE MOUNTED SOAP DISPENSER	BOBRICK, OR EQUAL	B-2111	CFCI	-
SND	SURFACE MOUNTED SANITARY NAPKIN DISPOSAL	BOBRICK, OR EQUAL	B-254	CFCI	-
TP	SURFACE MOUNTED TOILET TISSUE SUSPENSER WITH UTILITY SHELF	BOBRICK, OR EQUAL	B-2840	CFCI	-

**NOTE:**  
REFER TO PLUMBING FIXTURE LEGEND ON SHEET A4-01 FOR MOUNTING HEIGHTS



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**ONSLOW COUNTY SCHOOLS**  
**NORTHWOODS PARK MIDDLE SCHOOL**  
**GYMNASIUM & RENOVATION**  
904 SIOUX DR, JACKSONVILLE, NC 28540

B 03/29/2024 ADDENDUM 2

ID	DATE	DESCRIPTION

ID	DATE	DESCRIPTION

**KEY PLAN: NO SCALE**

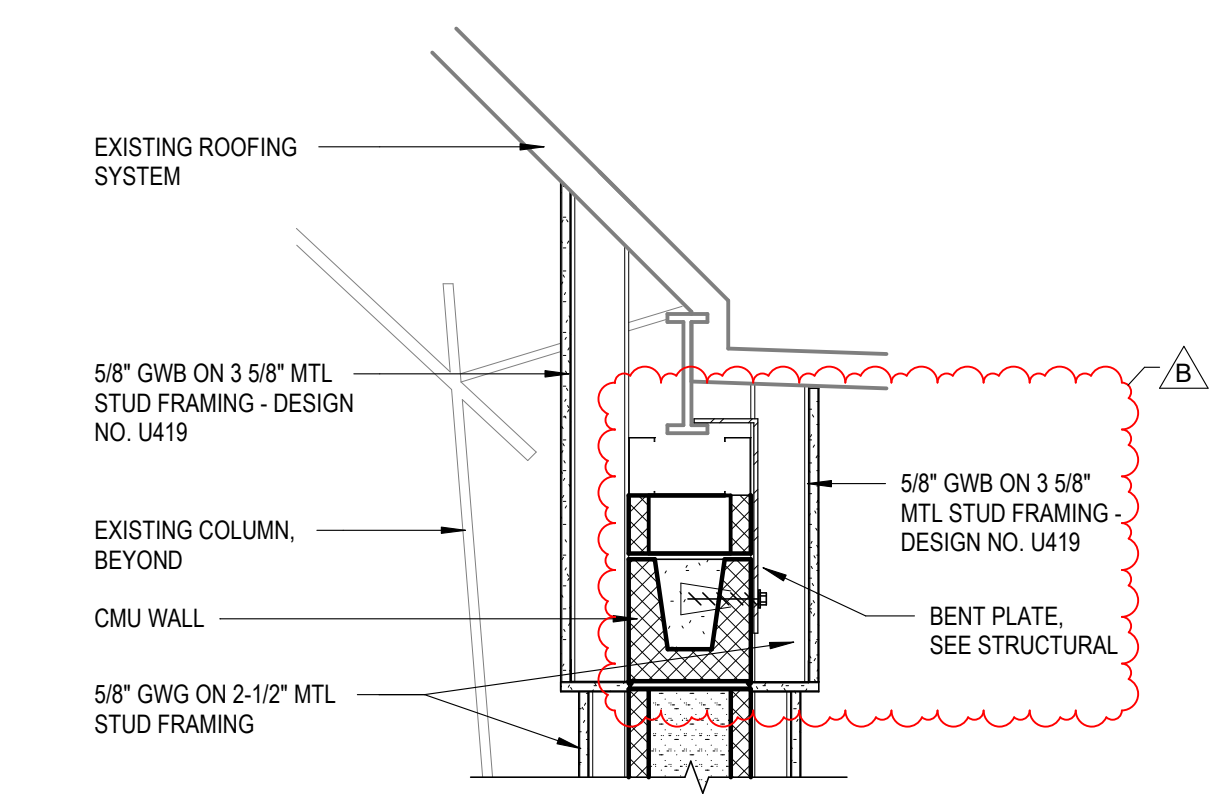
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CHECKED BY: FJ, LP

**FLOOR PLAN - RENOVATION**

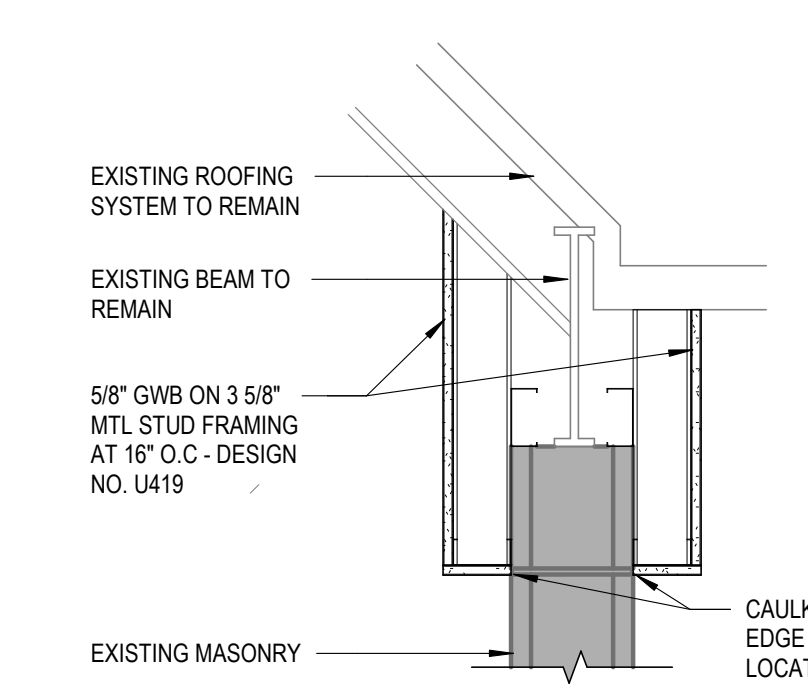
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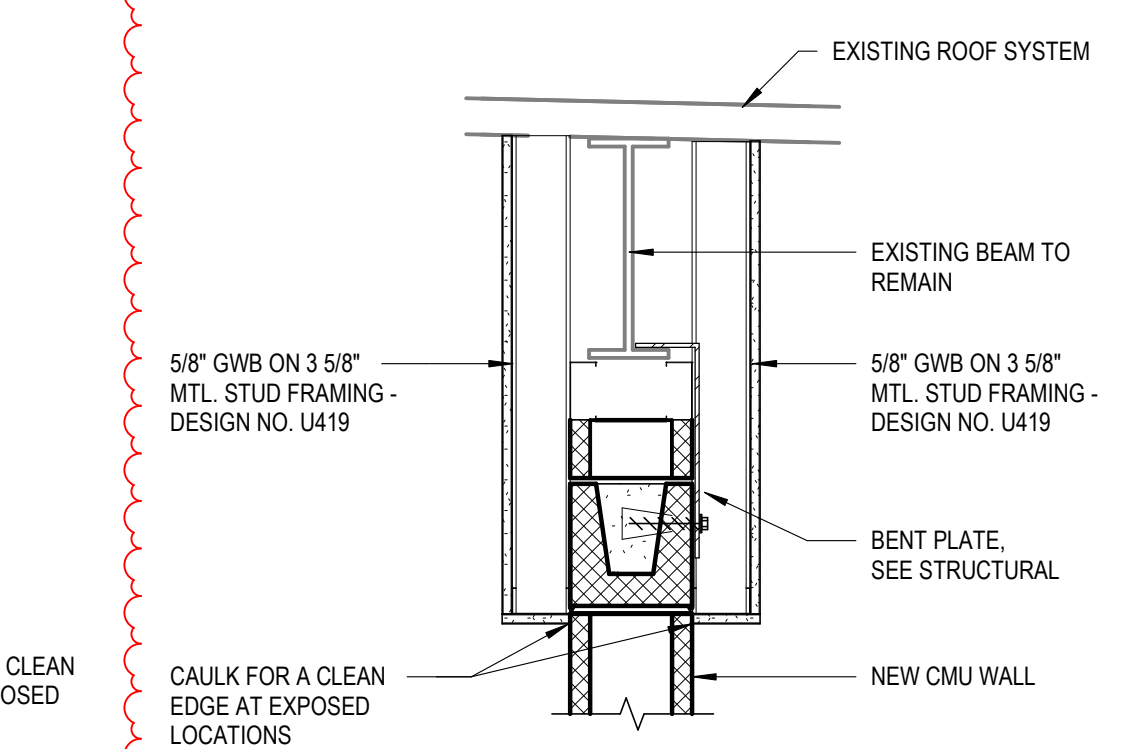
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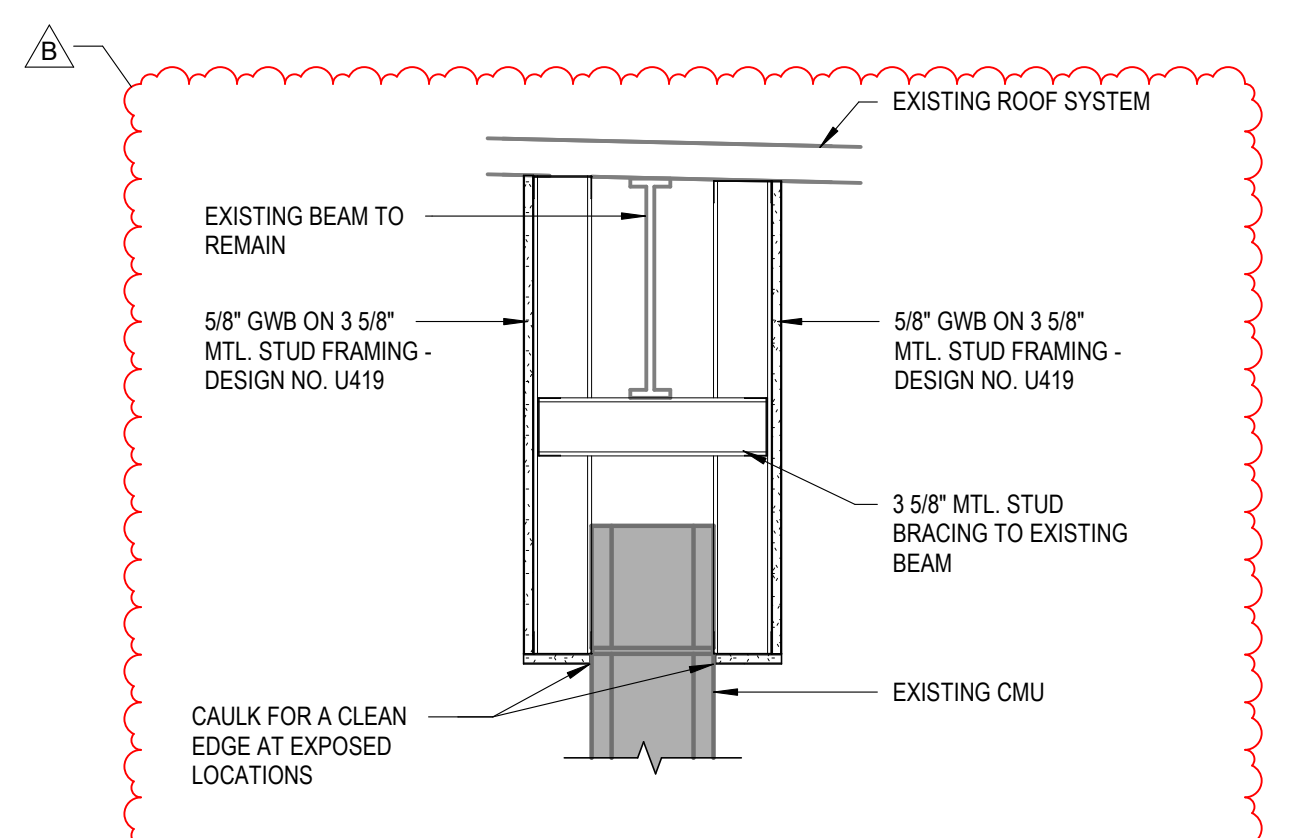
**8**  
A1-06  
**WALL SECTION - BEAM**  
1" = 1'-0"



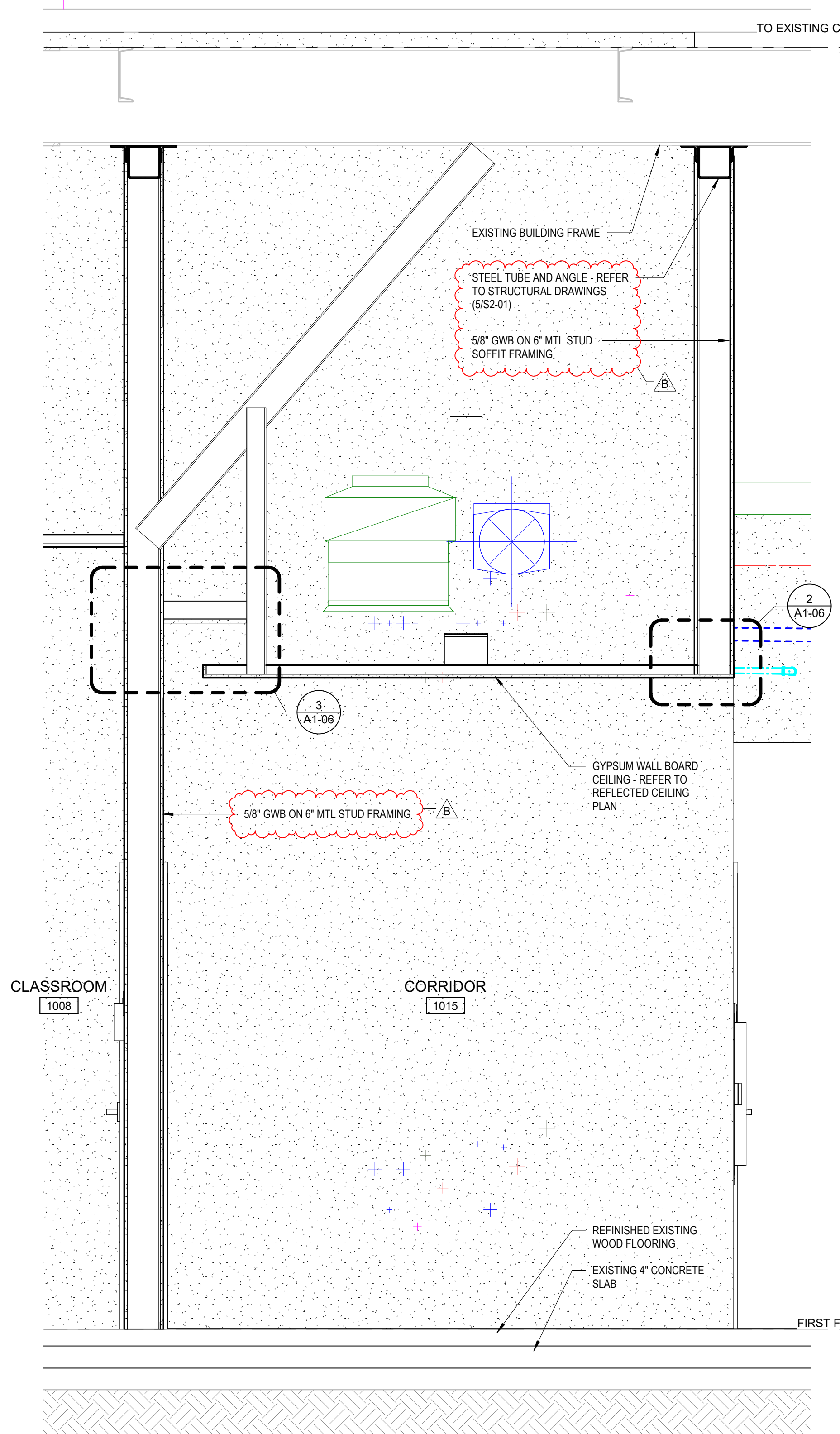
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A1-06  
**WALL SECTION @ BEAM**  
1" = 1'-0"



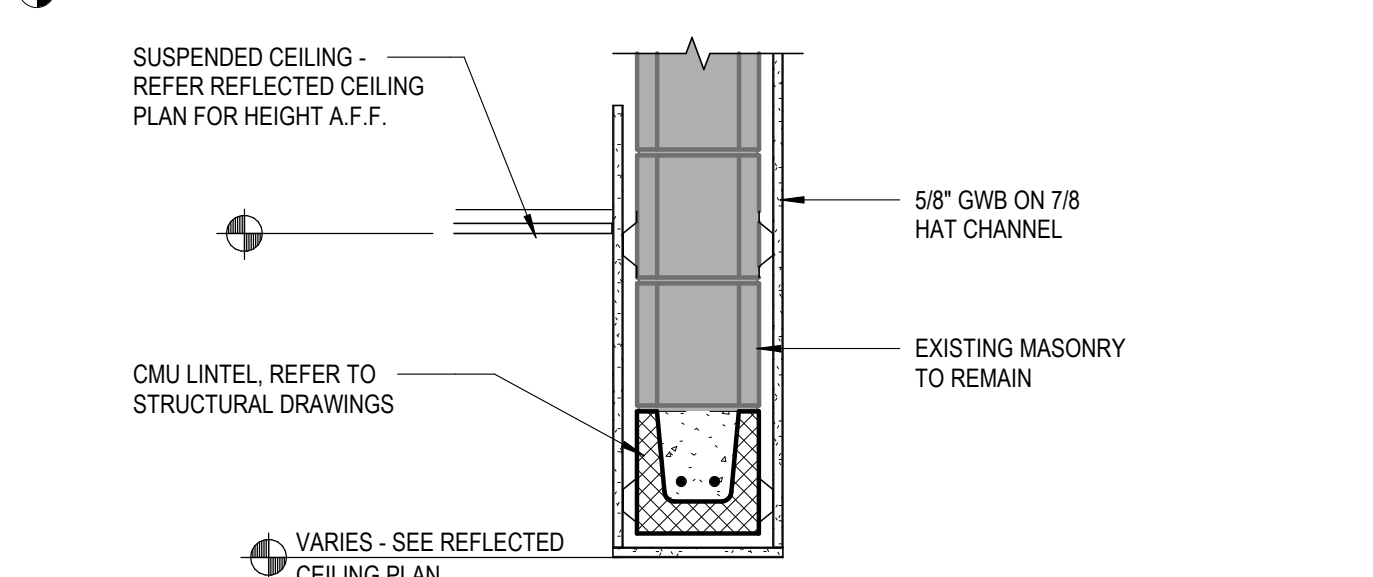
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A1-06  
**WALL SECTION - BEAM**  
1" = 1'-0"



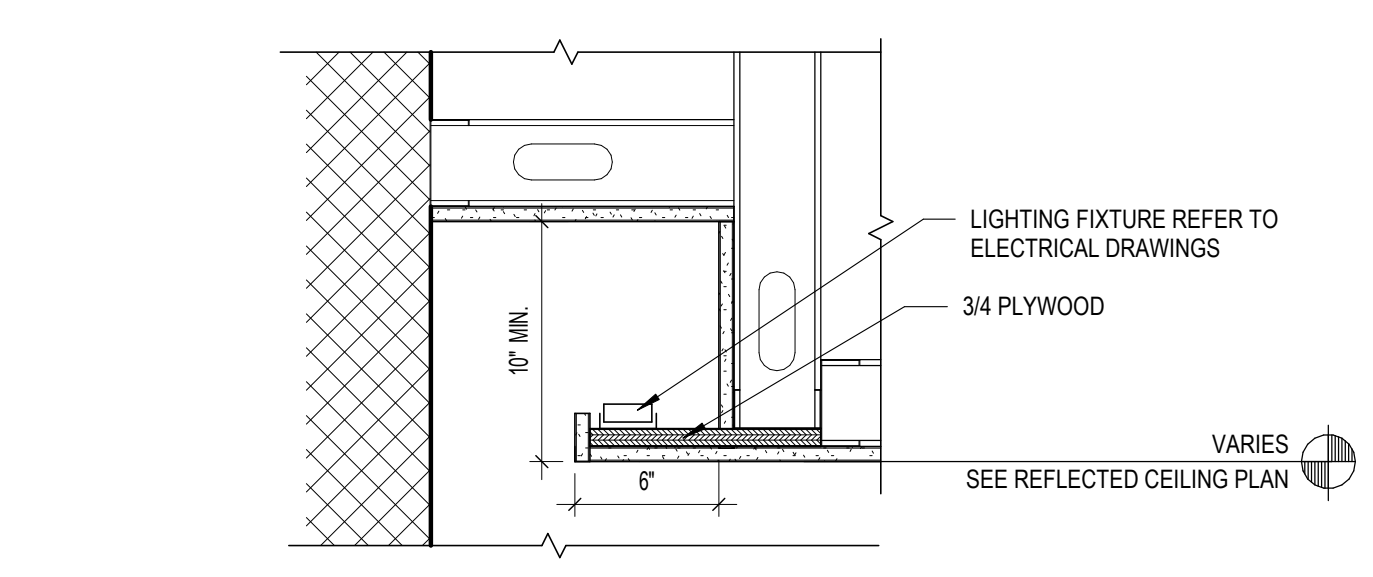
**9**  
A1-06  
**WALL SECTION - EXISTING CMU WALL**  
1" = 1'-0"



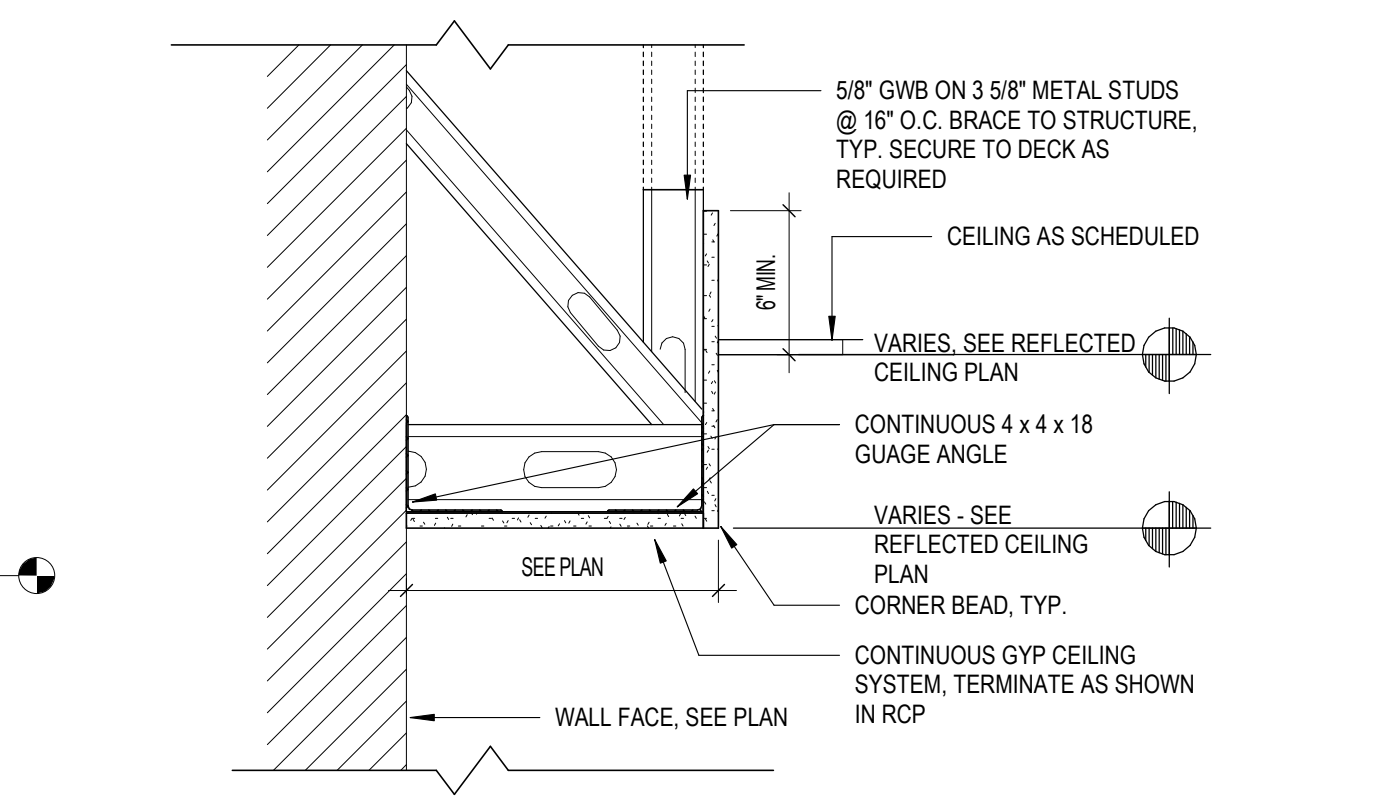
**5**  
A1-06  
**NEW CORRIDOR WALL**  
3/4" = 1'-0"



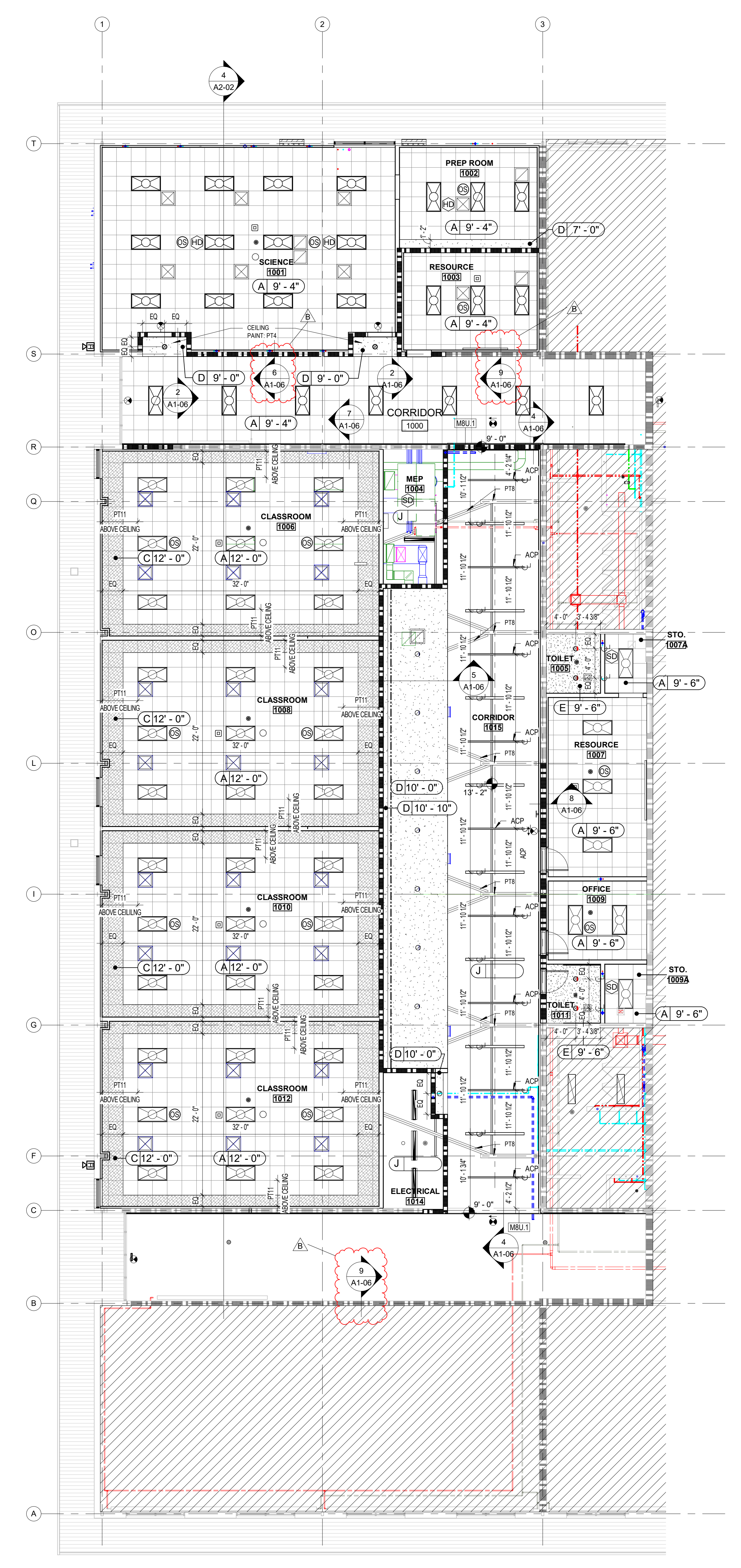
**4**  
A1-06  
**CASED OPENING - HEAD DETAIL**  
1" = 1'-0"



**3**  
A1-06  
**TYP COVE LIGHTING DETAIL**  
1 1/2" = 1'-0"



**2**  
A1-06  
**TYP GYP CONTINUOUS BULKHEAD**  
1 1/2" = 1'-0"



**1**  
A1-06  
**REFLECTED CEILING PLAN - RENOVATION**  
1/8" = 1'-0"

**REFLECTED CEILING LEGEND AND NOTES**

CEILING TYPE		
A 10'-0"		
SYMBOL	TYPE	DESCRIPTION
	A	ACT-1, 2x2 CEILING TILE, WHITE FINISH
	B	ACT-2, 2x2 VINYL CEILING TILE, WHITE FINISH
	C	ACT-3, 2x2 PLASTIC EGGRATE TILE, PREFINISHED BLACK
	D	GYPSUM WALLBOARD CEILING SYSTEM
	E	MOISTURE RESISTANT GYP WALLBOARD
	G	METAL SOFFIT PANEL - PERFORATED
	J	EXPOSED
SYMBOL	DESCRIPTION	
	2 X 4 LED FIXTURE	
	2 X 4 EMERGENCY LIGHTING FIXTURE	
	2 X 2 LED FIXTURE	
	RETURN AIR GRILLE	
	SUPPLY AIR DIFFUSER	
	EXHAUST	
	CAN STYLE FIXTURE	
	SURFACE WALL MOUNTED LED FIXTURE	
	HANGING LED FIXTURE	
	CEILING MOUNTED LED LINEAR FIXTURE	
	SUSPENDED LED LIGHT FIXTURE	
	ACOUSTIC PANEL CEILING (ACP)	
	LIGHTED EXIT SIGN WITH DIRECTIONAL ARROWS AS INDICATED.	
	CEILING OR WALL MOUNTED	
	OCCUPANCY SENSOR	
	SPEAKER - CEILING MOUNTED	
	FIRE ALARM	
	WIFI	
	SMOKE DETECTOR	
	HEAT DETECTOR	
	CARBON MONOXIDE DETECTOR	

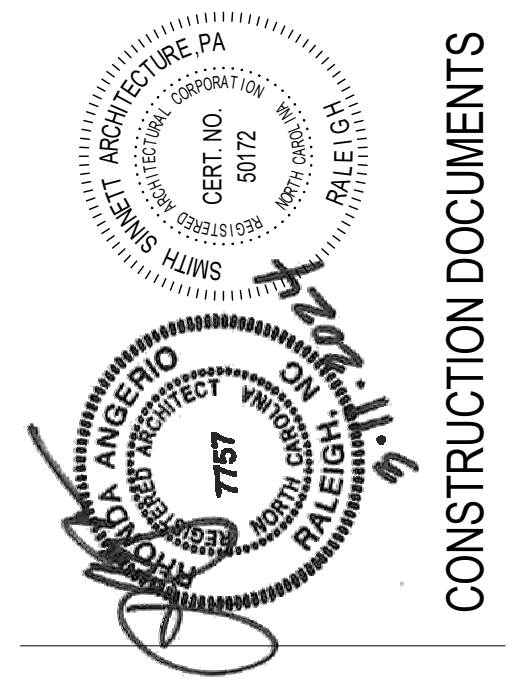
- REFER TO PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS FOR COMPLETE SCOPE OF CEILING PENETRATIONS AND FIXTURES.
- REFER TO PROJECT SPECIFICATIONS FOR COMPLETE DESCRIPTION OF CEILING MATERIAL.

**PLAN LEGEND:**

	NO WORK THIS AREA
	CONCRETE SLAB INFILL, SEE DETAIL 10 / A7-20
	CONCRETE SLAB INFILL, SEE DETAIL 10 / A7-20



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ID	DATE	DESCRIPTION
B	03/29/2024	ADDENDUM 2

KEY PLAN: NO SCALE

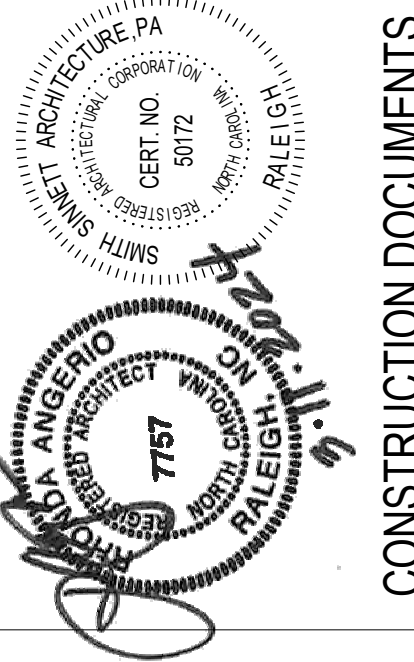
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CHECKED BY: FJ, LP

REFLECTED CEILING PLAN & SECTIONS - RENOVATION

2022035 11 MAR 2024

**A1-06**





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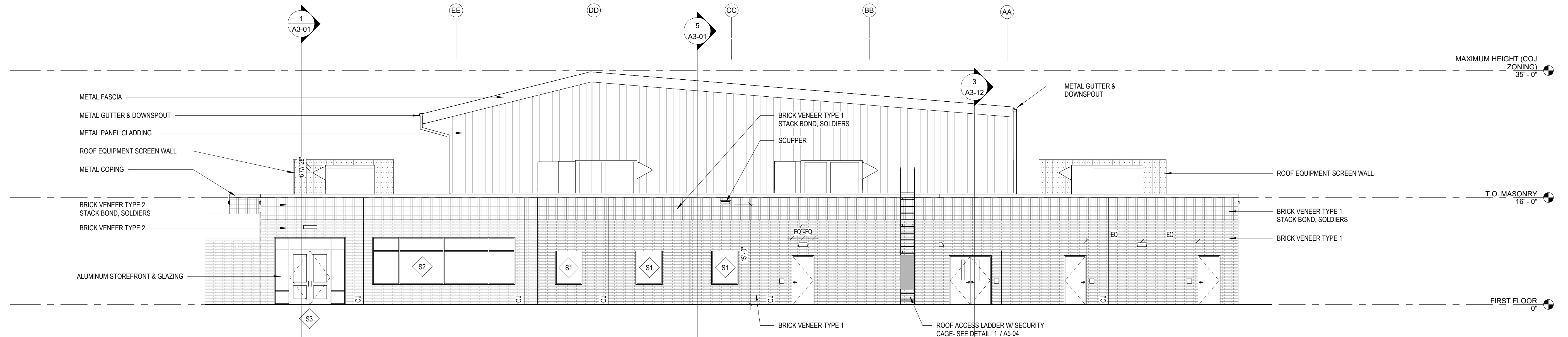
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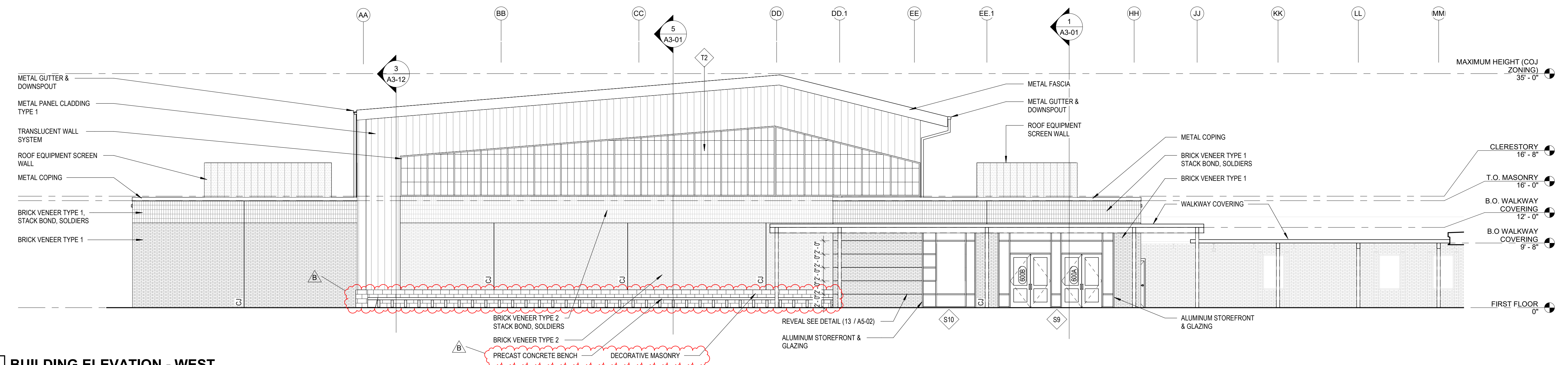
**BUILDING  
ELEVATIONS - GYM  
ADDITION**

2022035 11 MAR 2024

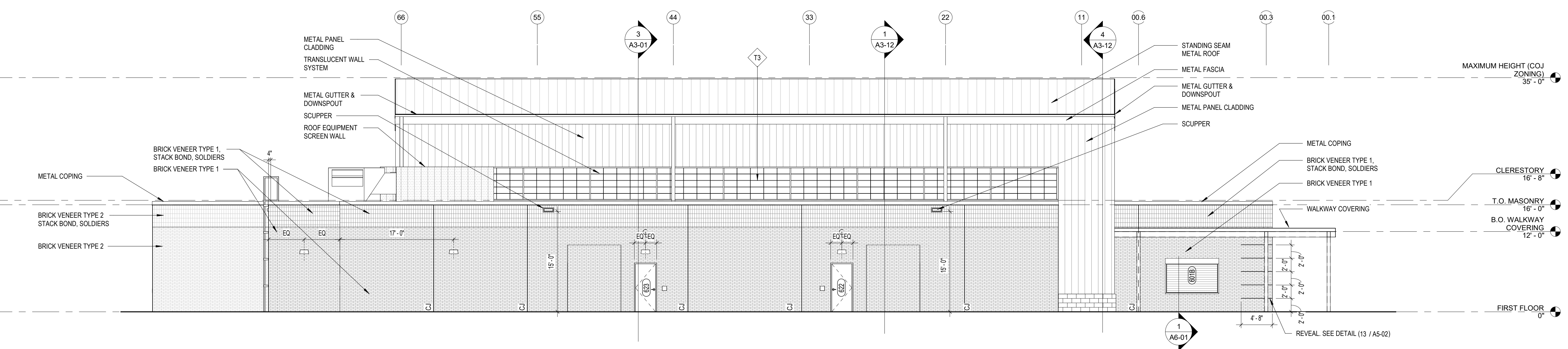
**A2-01**



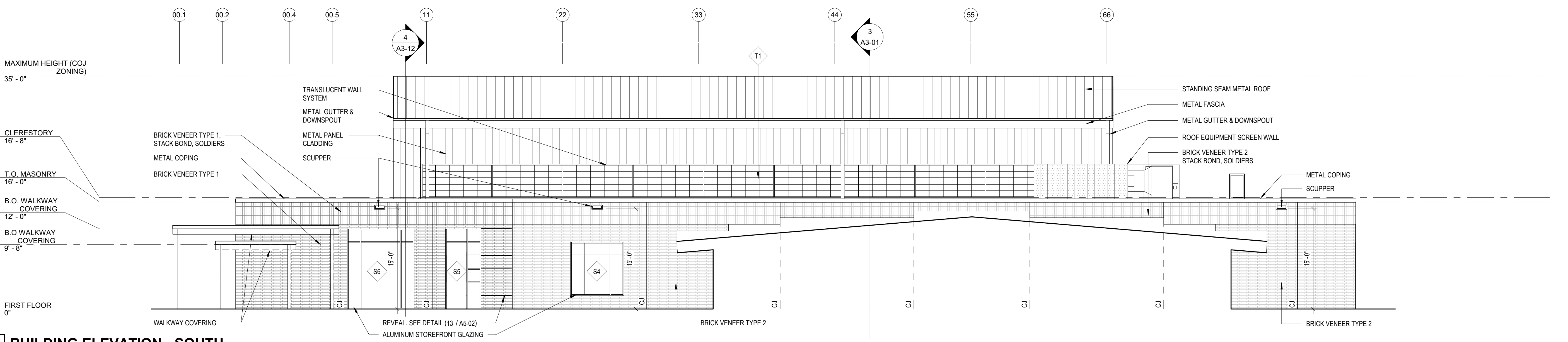
**4 BUILDING ELEVATION - EAST**  
A2-01 1/8" = 1'-0"



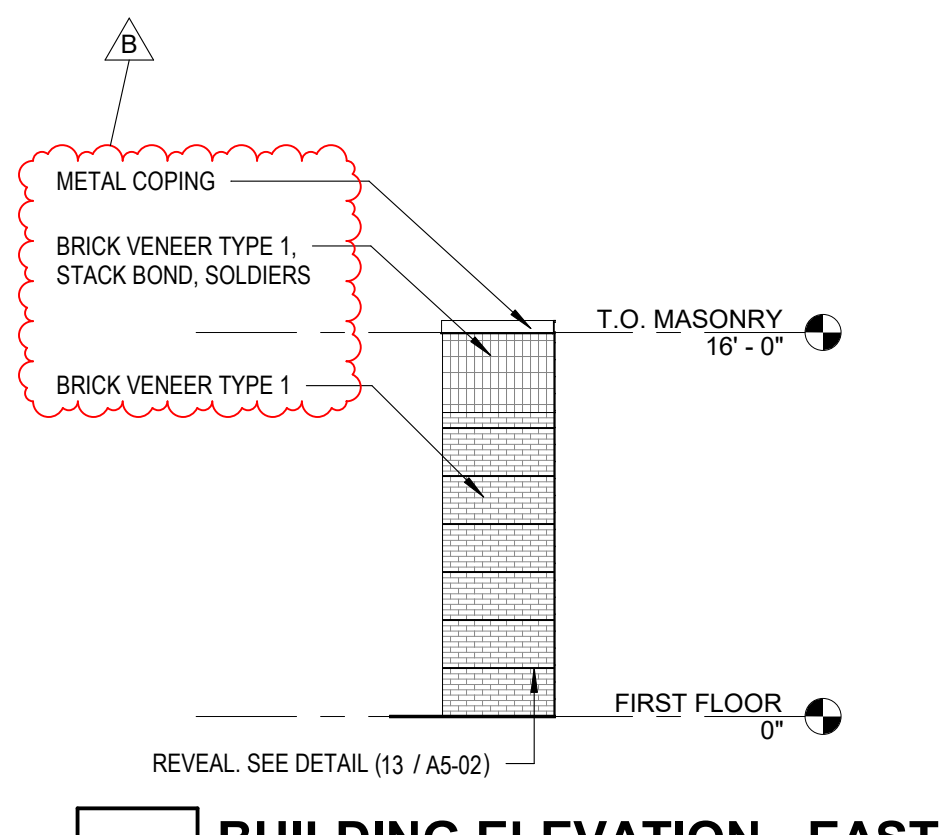
**3 BUILDING ELEVATION - WEST**  
A2-01 1/8" = 1'-0"



**2 BUILDING ELEVATION - NORTH**  
A2-01 1/8" = 1'-0"



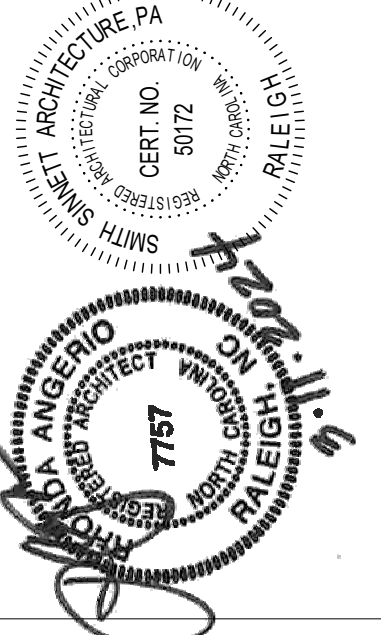
**1 BUILDING ELEVATION - SOUTH**  
A2-01 1/8" = 1'-0"



**5 BUILDING ELEVATION - EAST**  
A2-01 1/8" = 1'-0"

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GYMNASIUM & RENOVATION  
904 SIOUX DR, JACKSONVILLE, NC 28540**

B 03/29/2024 ADDENDUM 2

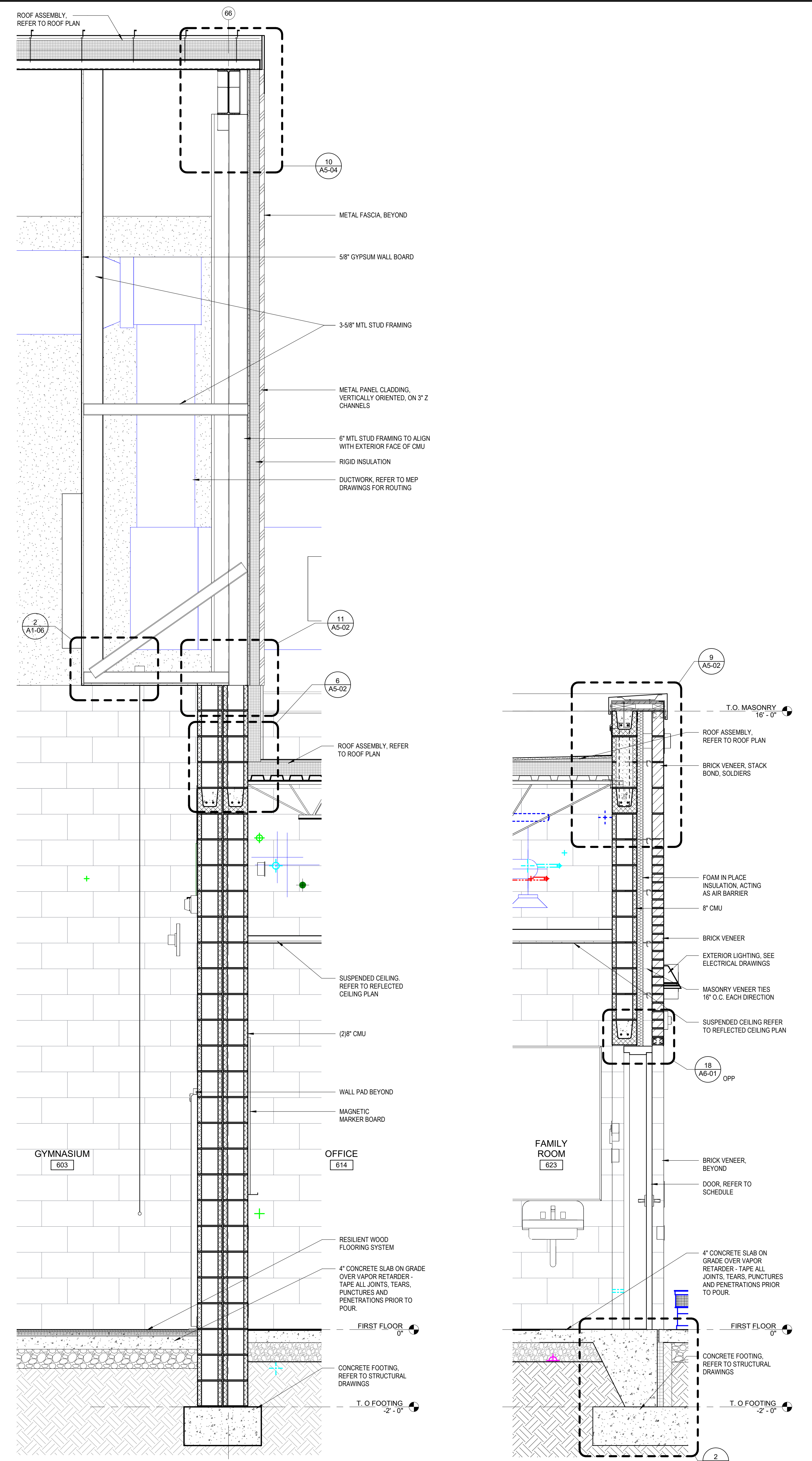
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CHECKED BY: FJ, LP

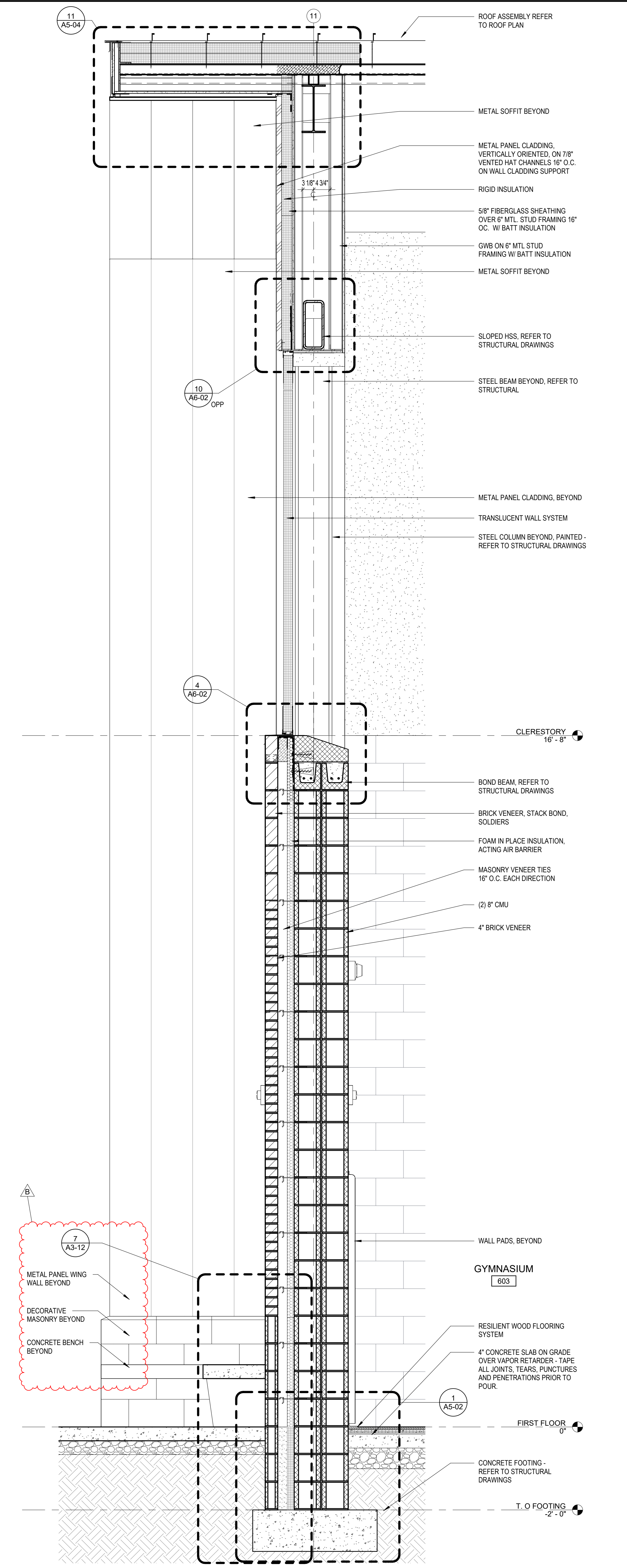
**WALL SECTIONS -  
GYM ADDITION**

2022035 11 MAR 2024

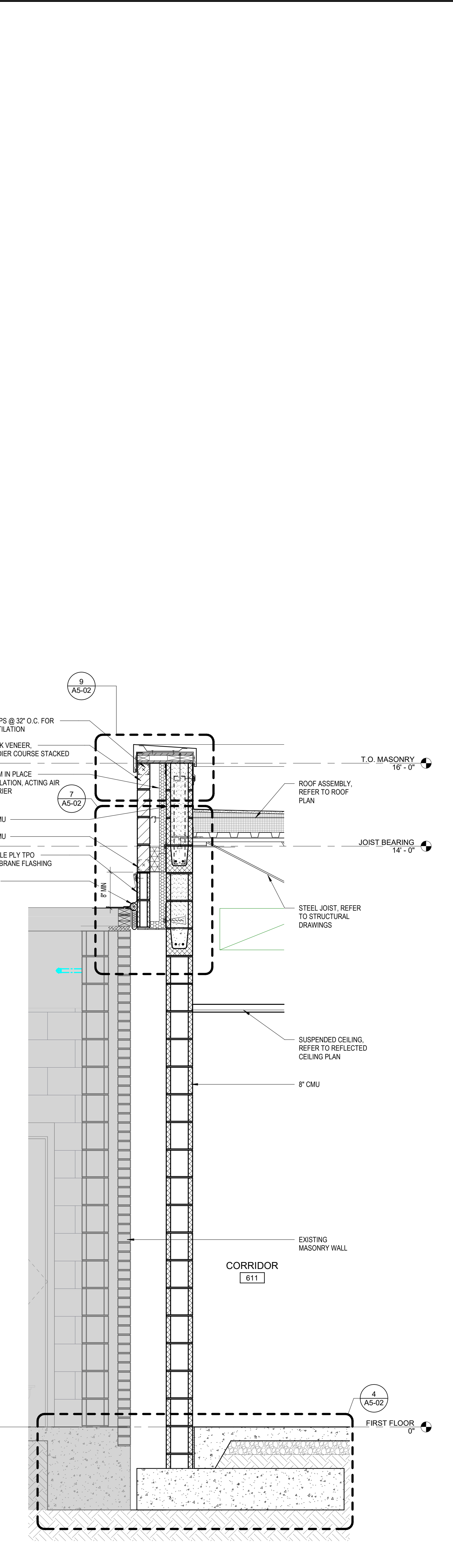
**A3-11**



**1 WALL SECTION**  
A3-11 3/4" = 1'-0"



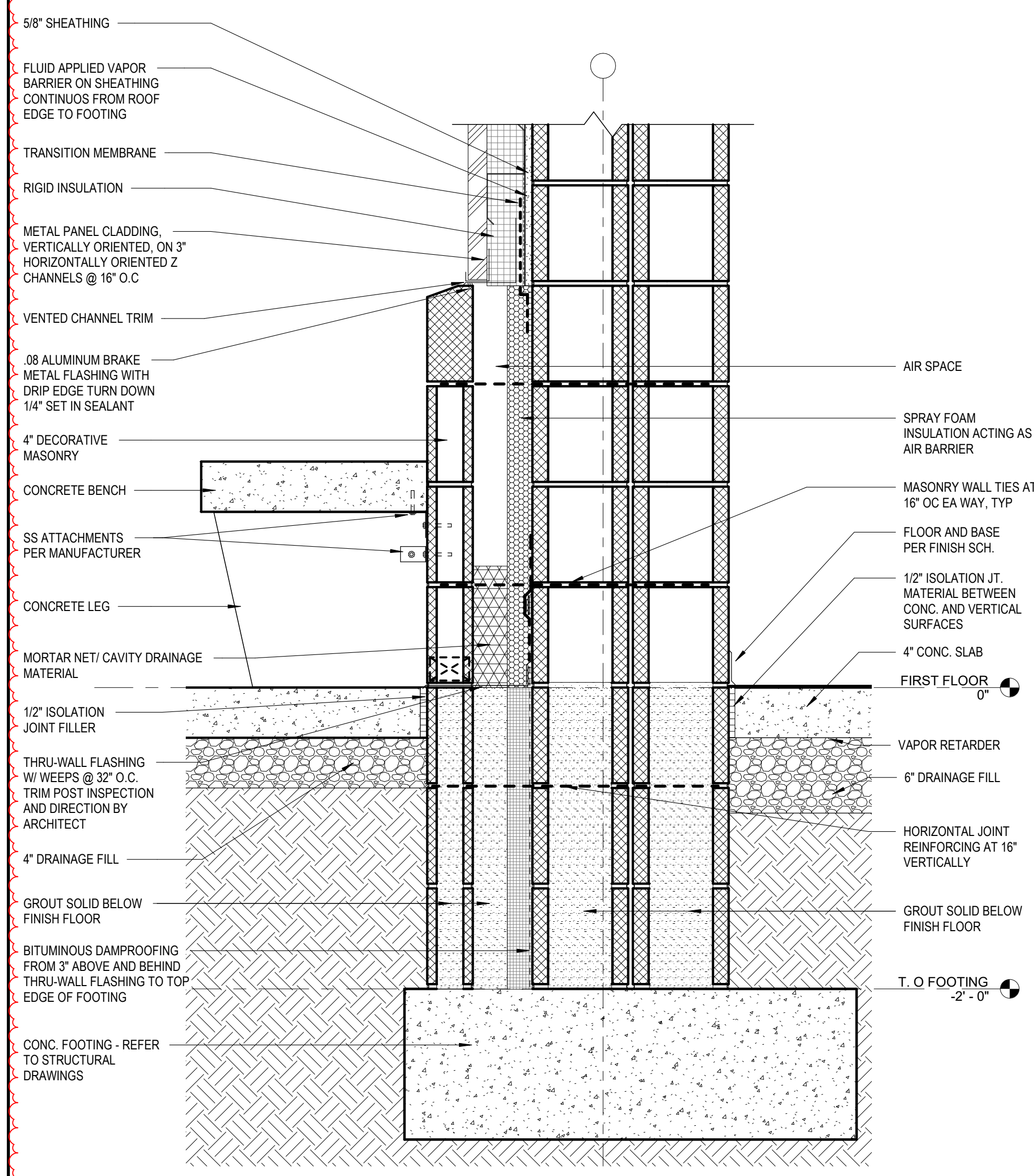
**2 WALL SECTION**  
A3-11 3/4" = 1'-0"



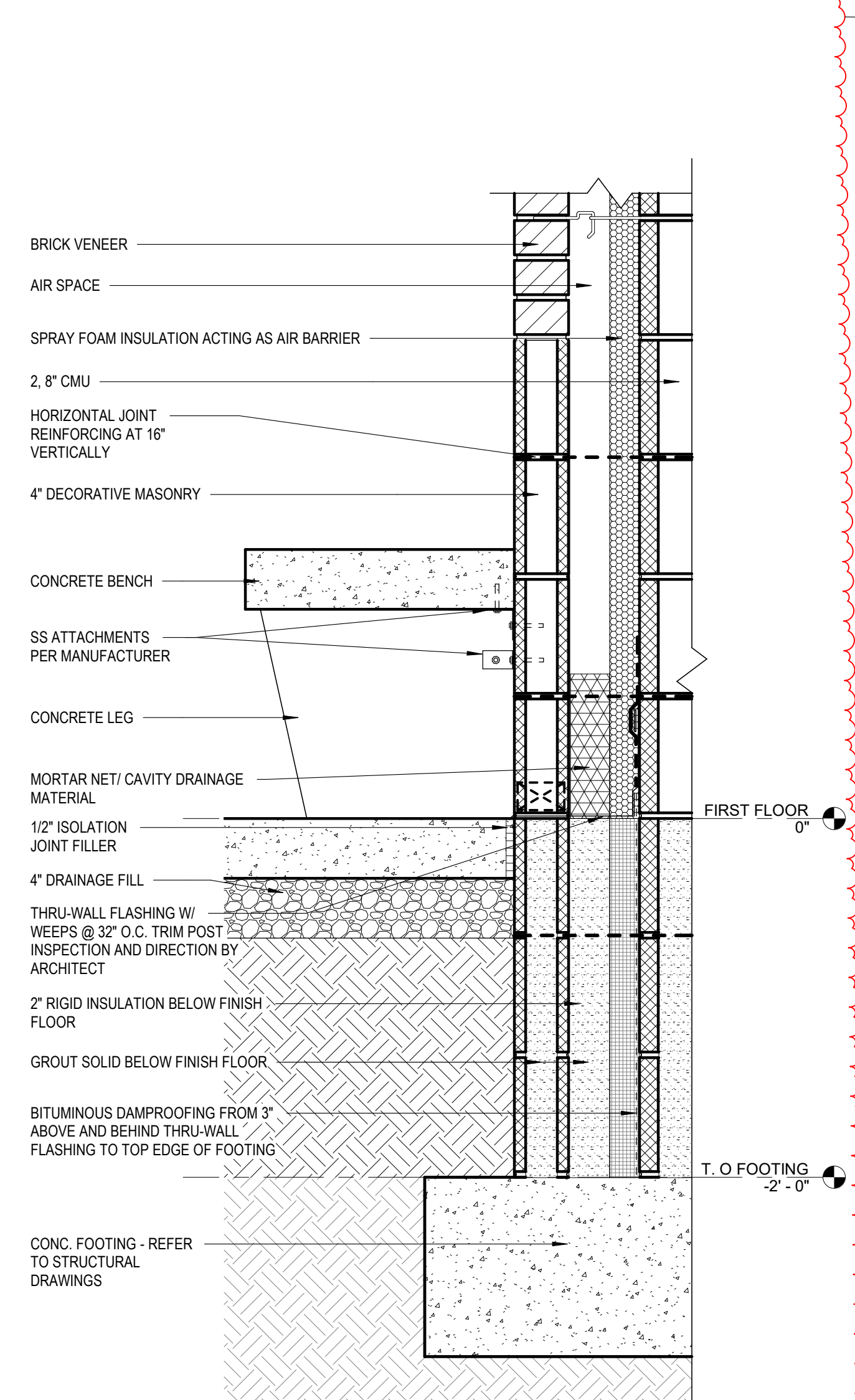
**3 WALL SECTION - SOUTH**  
A3-11 3/4" = 1'-0"

A:\projects\2022\2035 - Northwoods Park Middle Add-Ren\2022035 - Northwoods Park Middle Add-Ren - R22.rvt 2/28/24 11:59 AM

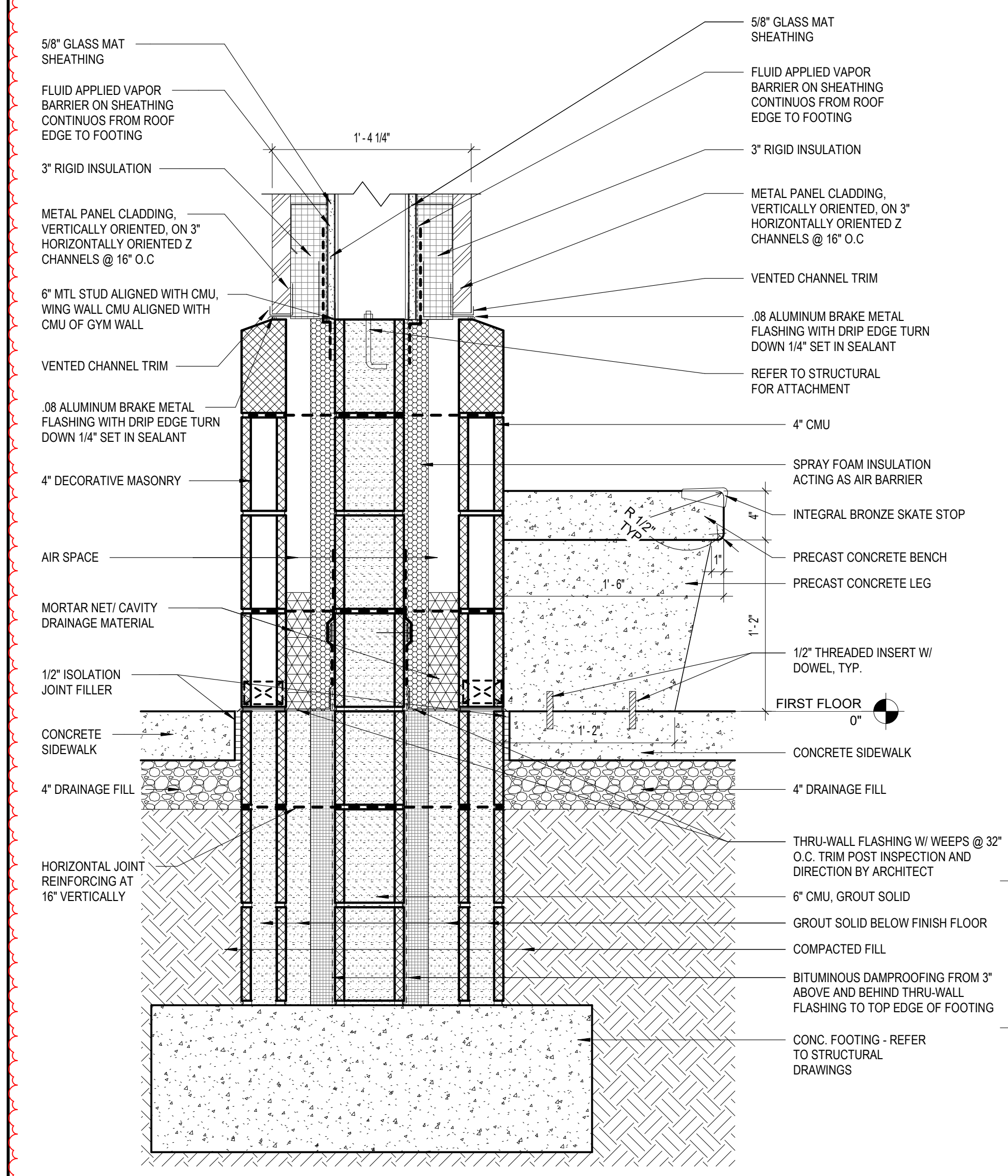




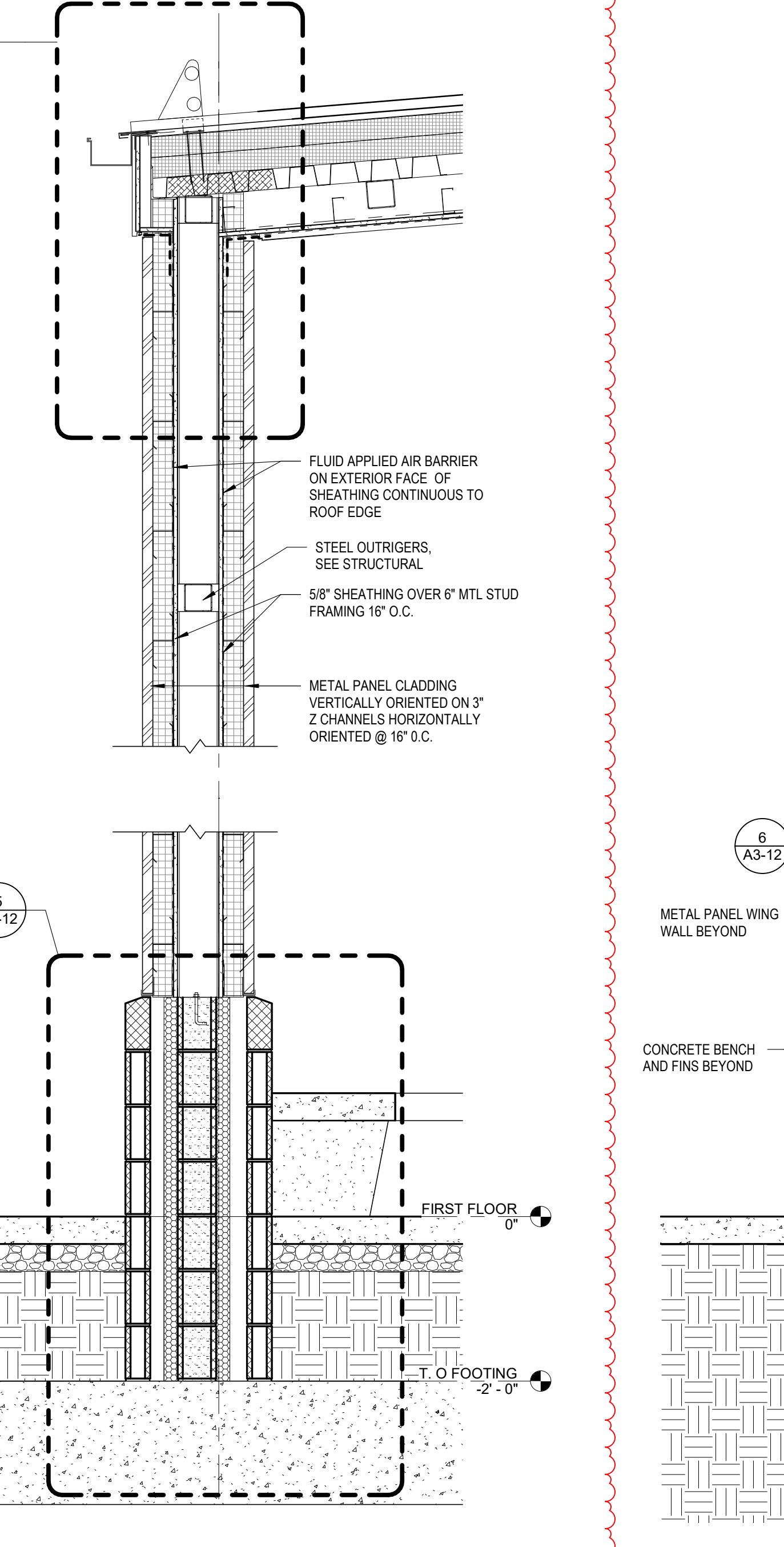
**6 BENCH DETAIL @ METAL PANEL - WEST GYM WALL**  
 A3-12 1 1/2" = 1'-0"



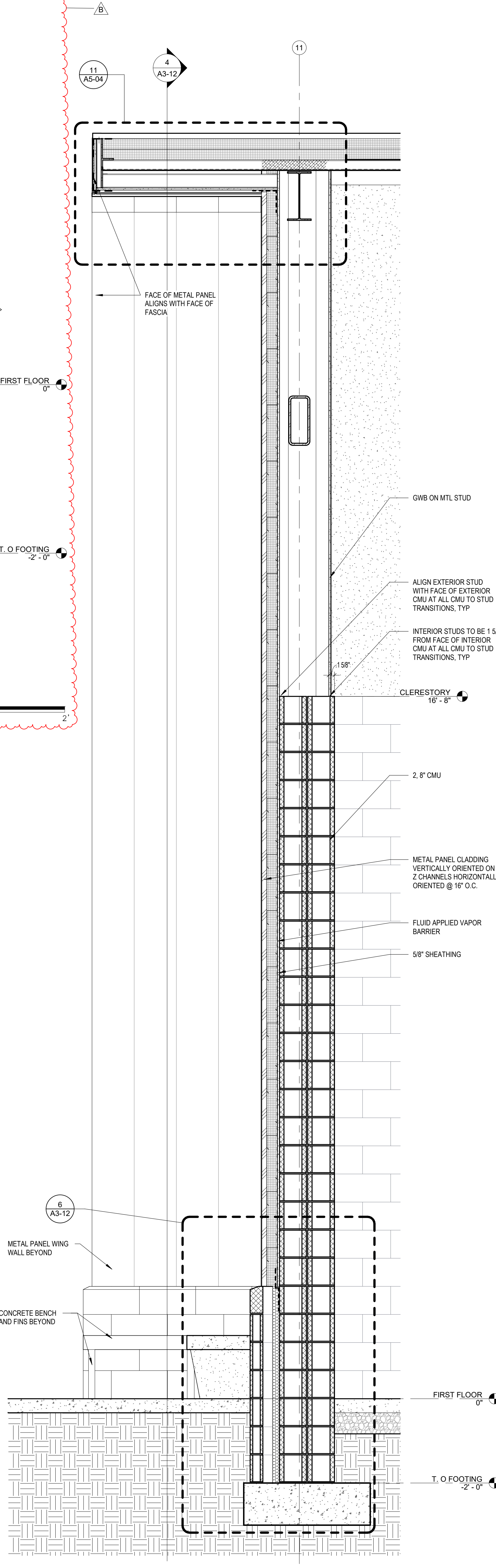
**7 BENCH DETAIL @ BRICK WALL**  
 A3-12 1 1/2" = 1'-0"



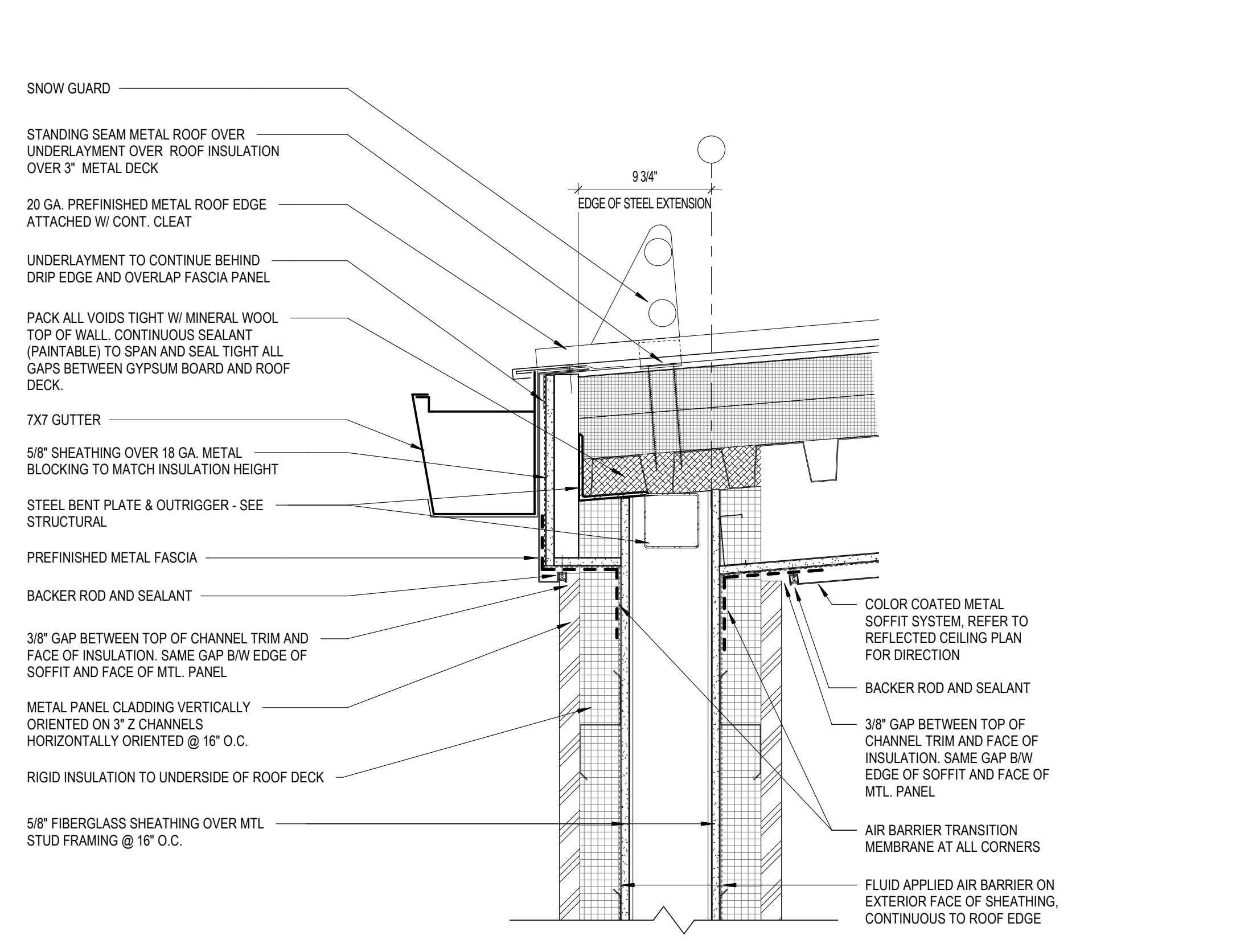
**5 BASE DETAIL - WING WALL**  
 A3-12 1 1/2" = 1'-0"



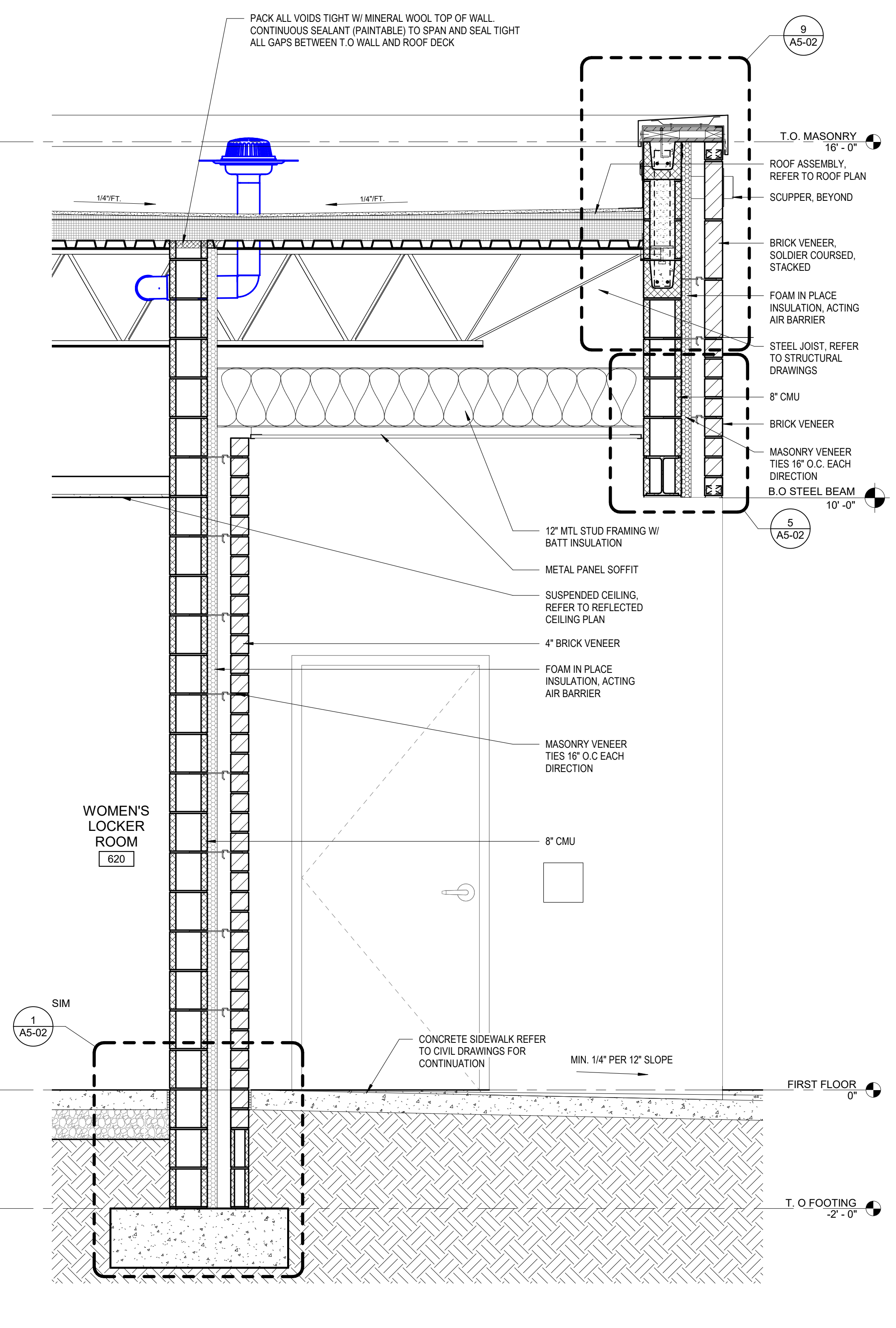
**4 WING WALL SECTION**  
 A3-12 3/4" = 1'-0"



**3 METAL PANEL SECTION AT GYM WALL**  
 A3-12 3/4" = 1'-0"



**2 WING WALL ROOF DETAIL**  
 A3-12 1 1/2" = 1'-0"

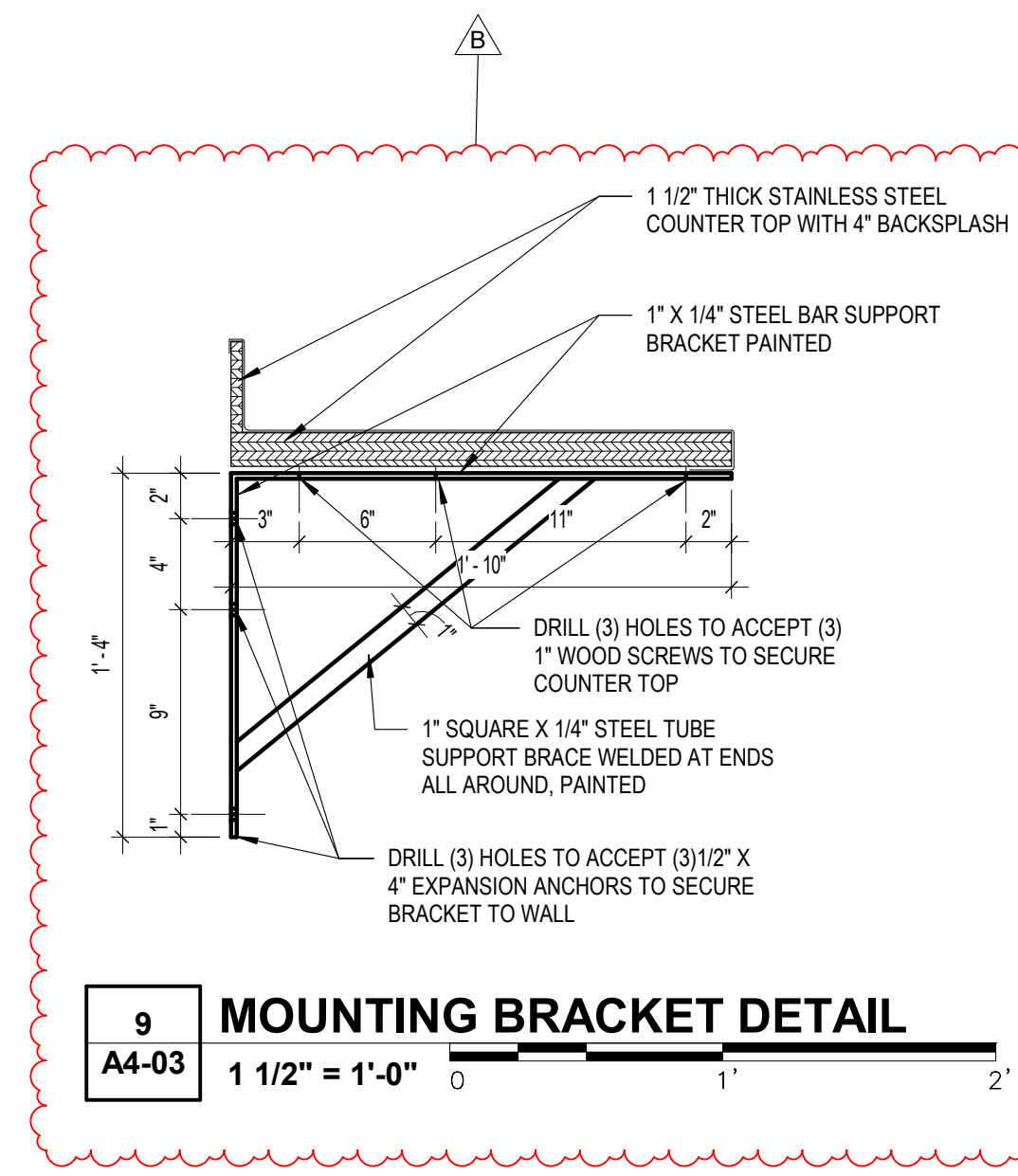


**1 EXTERIOR SOFFIT SECTION AT MASONRY WALLS - TYP.**  
 A3-12 3/4" = 1'-0"

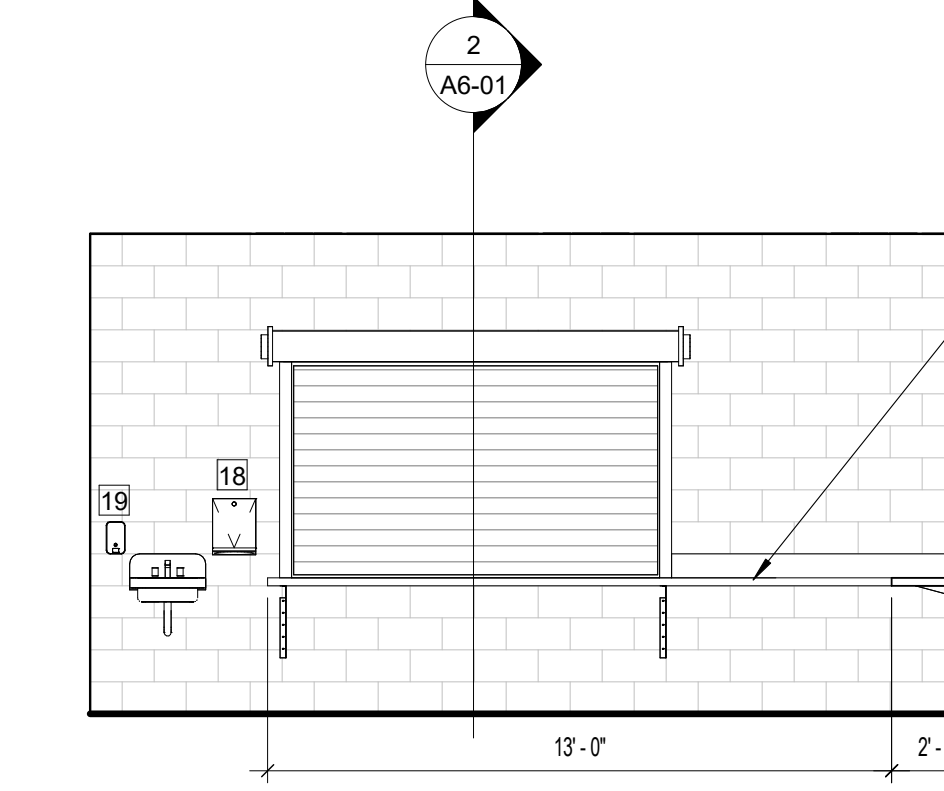
ID	DATE	DESCRIPTION
B	03/29/2024	ADDENDUM 2



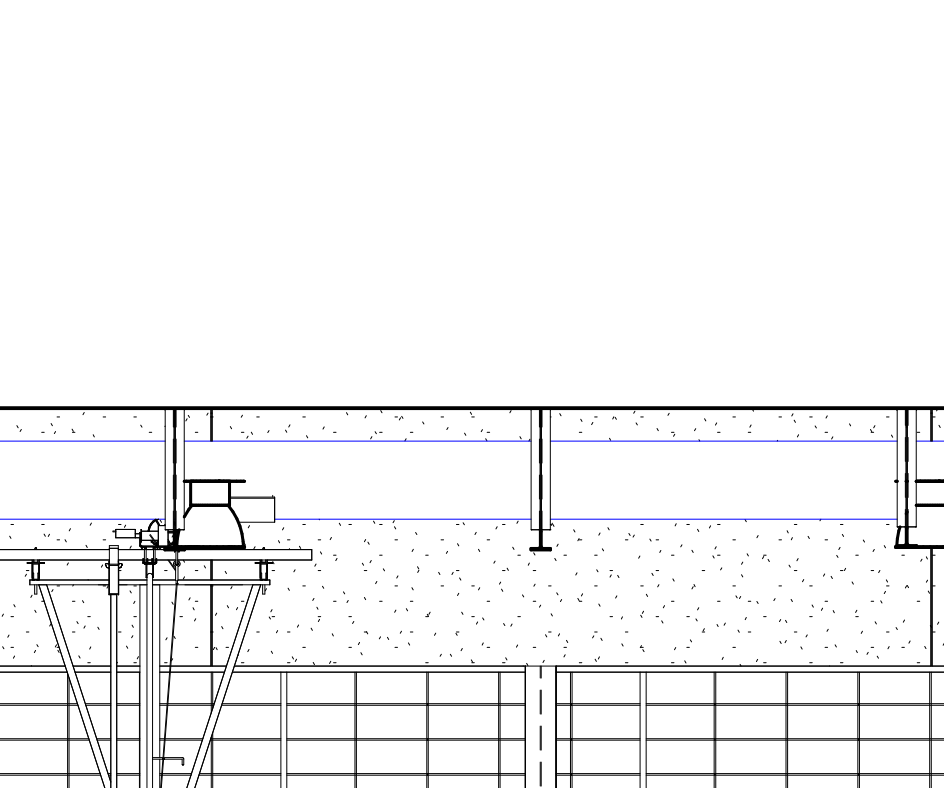
MARK	ITEM	FURNISHED AND INSTALLED BY	REMARKS
1	LOCKER BENCH	CFCI	
2	LOCKER	CFCI	DOUBLE TIER
3	BLEACHERS (TEAM SIDE)	CFCI	
4	BLEACHERS (SPECTATOR SIDE)	CFCI	
5	BASKETBALL HOOP, CEILING SUSPENDED, FORWARD FOLD	CFCI	ELECTRIC, REFER TO ELECTRICAL DRAWINGS
6	VOLLEYBALL/TENNIS FLOOR SLEEVES	CFCI	
7	WALL PADS	CFCI	
8	8x3 BASKETBALL/VOLLEYBALL/WRESTLING LED SCOREBOARD	CFCI	WIRELESS RECEIVER W/ CONTROLLERS
9	BEVERAGE COOLER	CFCI	REFER TO ALLOWANCES, APPLIANCES
10	ICE MAKER	CFCI	
11	REFRIGERATOR	CFCI	
12	WASHER	CFCI	
13	DRYER	CFCI	
14	4'0" W X 4'0" H TAC BOARD	CFCI	
15	8' MARKER BOARD	CFCI	
16	12' MARKER BOARD	CFCI	
17	MOBILE TV CART	CFCI	REFER TO ALLOWANCES
18	PAPER TOWEL DISPENSER	CFCI	
19	SOAP DISPENSER	CFCI	
20	EMERGENCY SHOWER/EYEWASH	CFCI	 
21	DISHWASHER	CFCI	REFER TO ALLOWANCES, APPLIANCES
22	24" HOOK STRIP	CFCI	MOUNT @ 46" AFF
23	36" HOOK STRIP	CFCI	MOUNT @ 46" AFF
24	FIRE BLANKET CABINET	CFCI	
25	GOOGLE CABINET	CFCI	
26	SAFETY DATA SHEET BINDER RACK	CFCI	
27	SCORER'S TABLE	CFCI	
28	MOTORIZED PROJECTION SCREEN - CEILING MOUNTED	CFCI	
29	EMERGENCY EYEWASH WASH - COUNTERTOP MOUNTED	CFCI	
30	MOBILE DEMONSTRATION BENCH	CFCI	



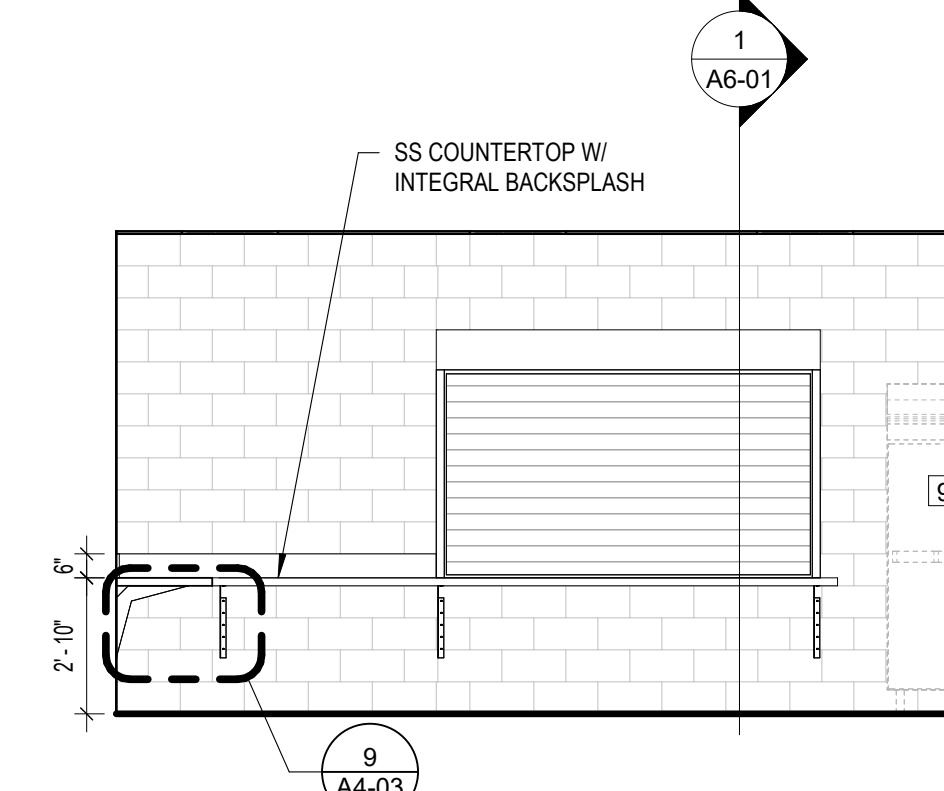
**7 601 CONCESSIONS - WEST**  
A4-03 1/4" = 1'-0"



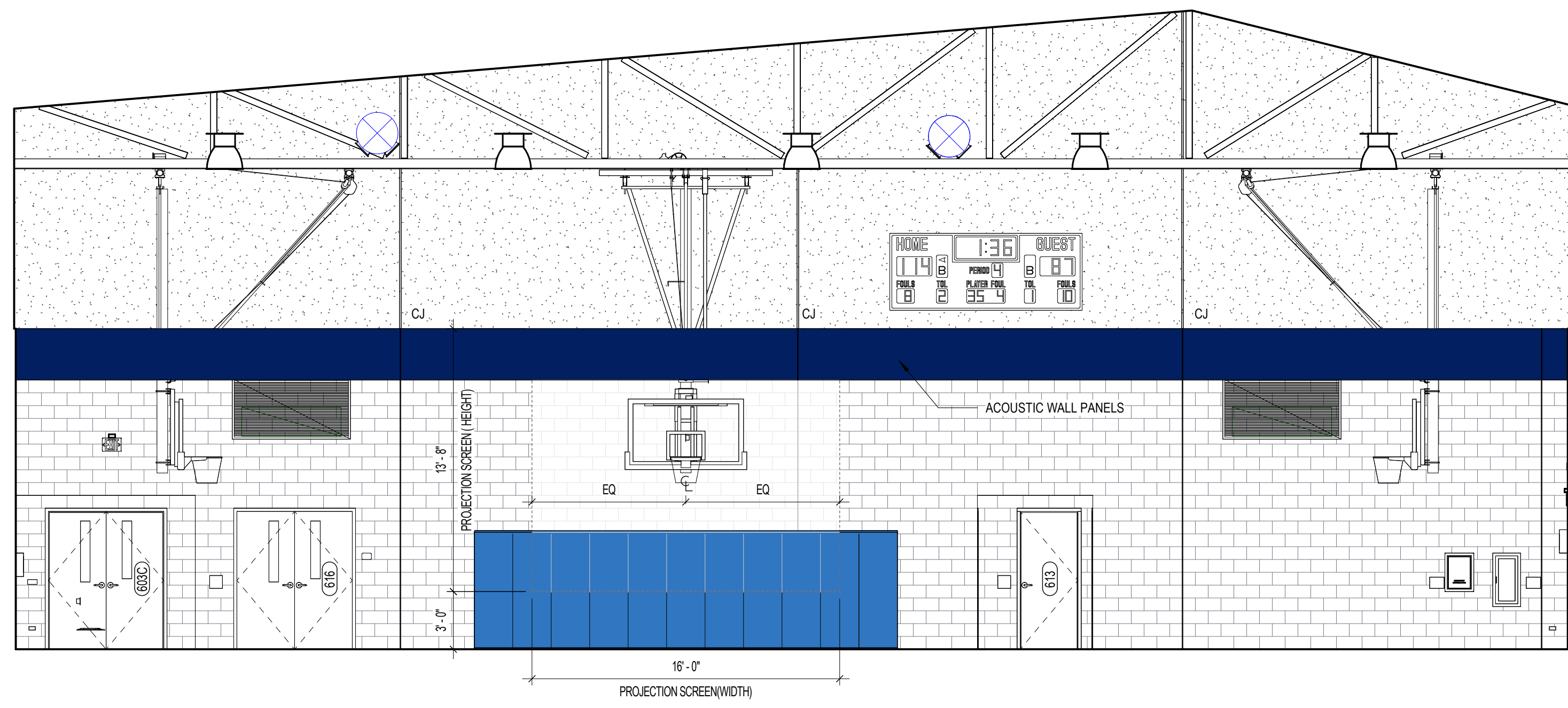
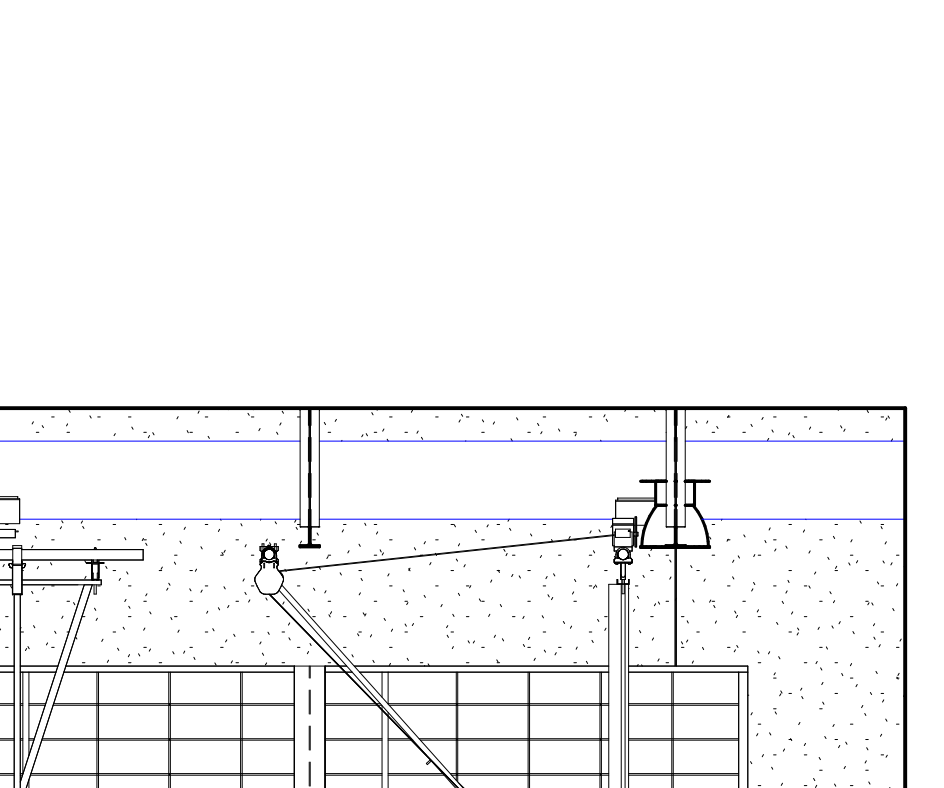
**6 601 CONCESSIONS - SOUTH**  
A4-03 1/4" = 1'-0"



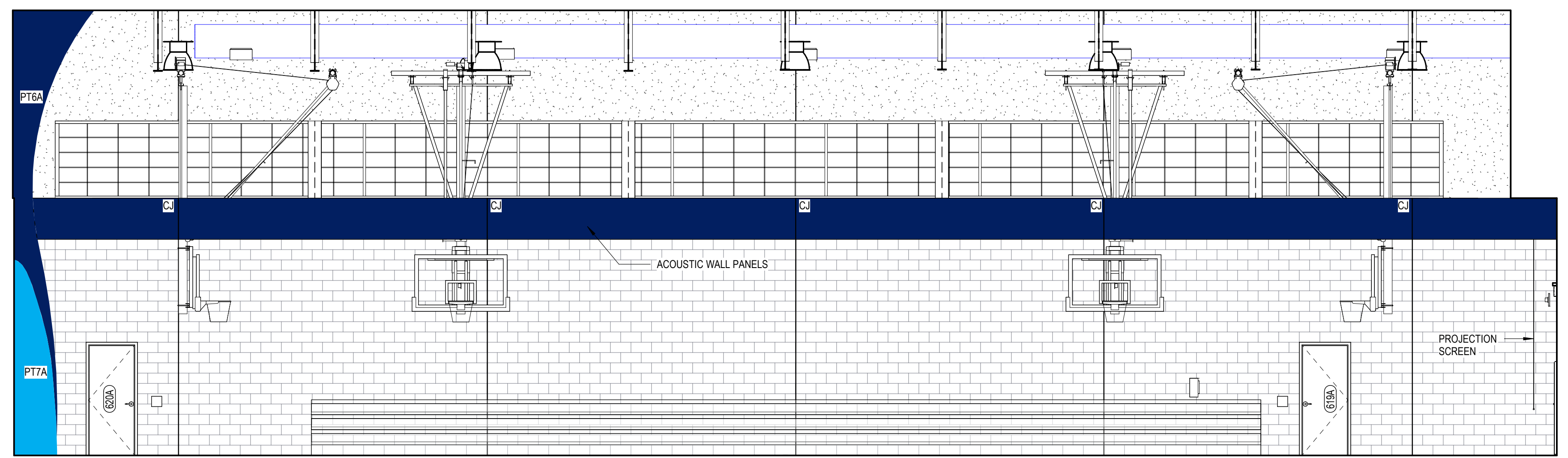
**8 613 LAUNDRY - SOUTH**  
A4-03 1/4" = 1'-0"



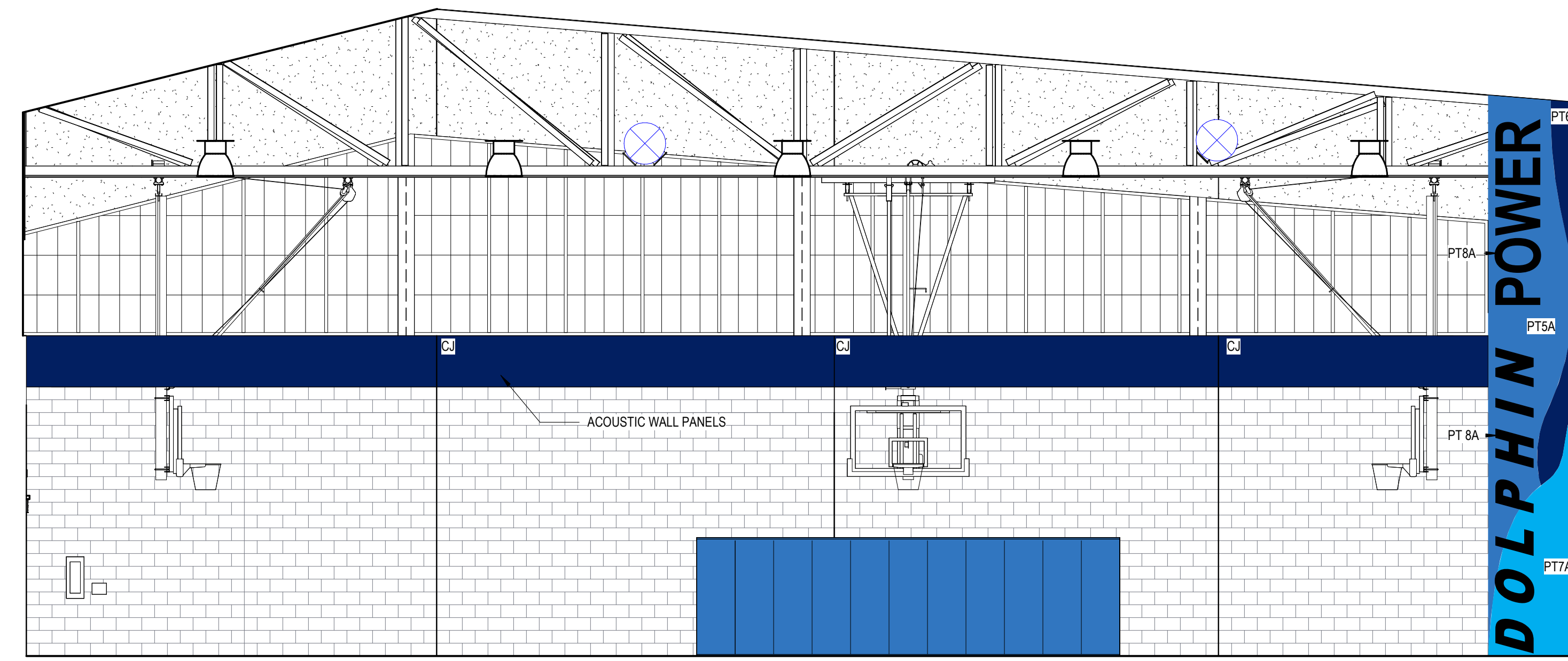
**5 601 CONCESSIONS - NORTH**  
A4-03 1/4" = 1'-0"



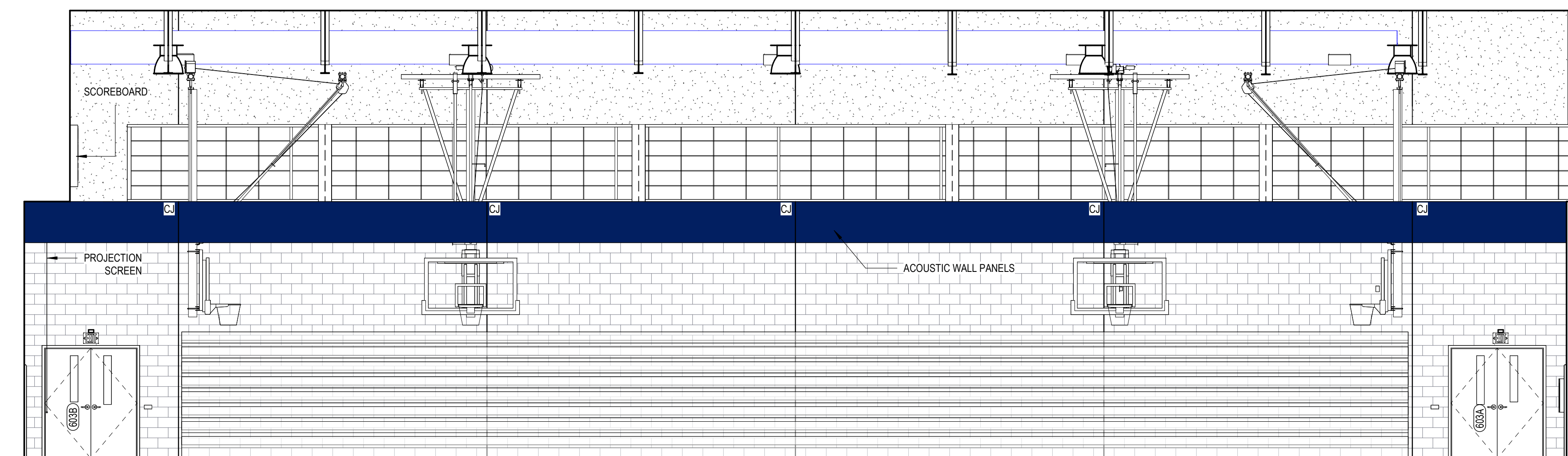
**4 GYM - EAST**  
A4-03 3/16" = 1'-0"



**3 GYM - NORTH**  
A4-03 3/16" = 1'-0"



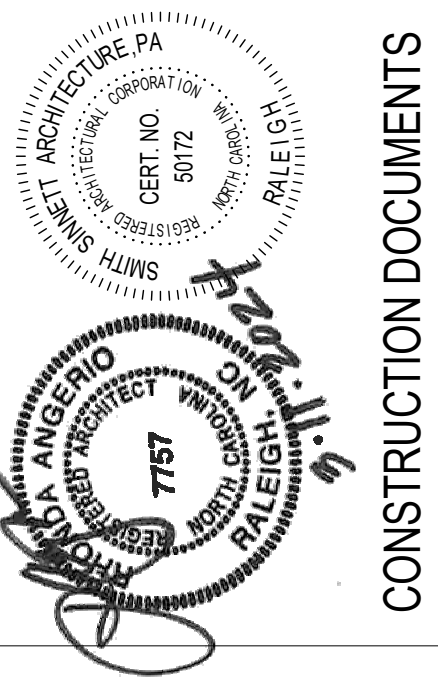
**2 GYM - WEST**  
A4-03 3/16" = 1'-0"



**1 GYM - SOUTH**  
A4-03 3/16" = 1'-0"



T 919 781 8582  
F 919 781 3879  
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Suite 205  
Raleigh, NC 27607  
info@smithsinnett.com



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904 SIOUX DR, JACKSONVILLE, NC 28540

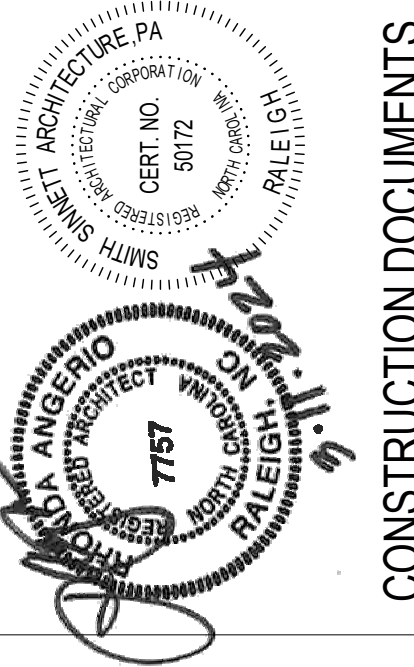
ID	DATE	DESCRIPTION
B	03/29/2024	ADDENDUM 2

DRAWN BY: AC, MA  
CHECKED BY: FJ, LP  
INTERIOR ELEVATIONS - GYM ADDITION

2022035 11 MAR 2024  
**A4-03**

A:\Drawings\2022\2025 - Northwoods Park Middle Add-Ren\2022035 - Northwoods Park Middle Add-Ren - R22.rvt 2/26/2024 1:53:56 PM





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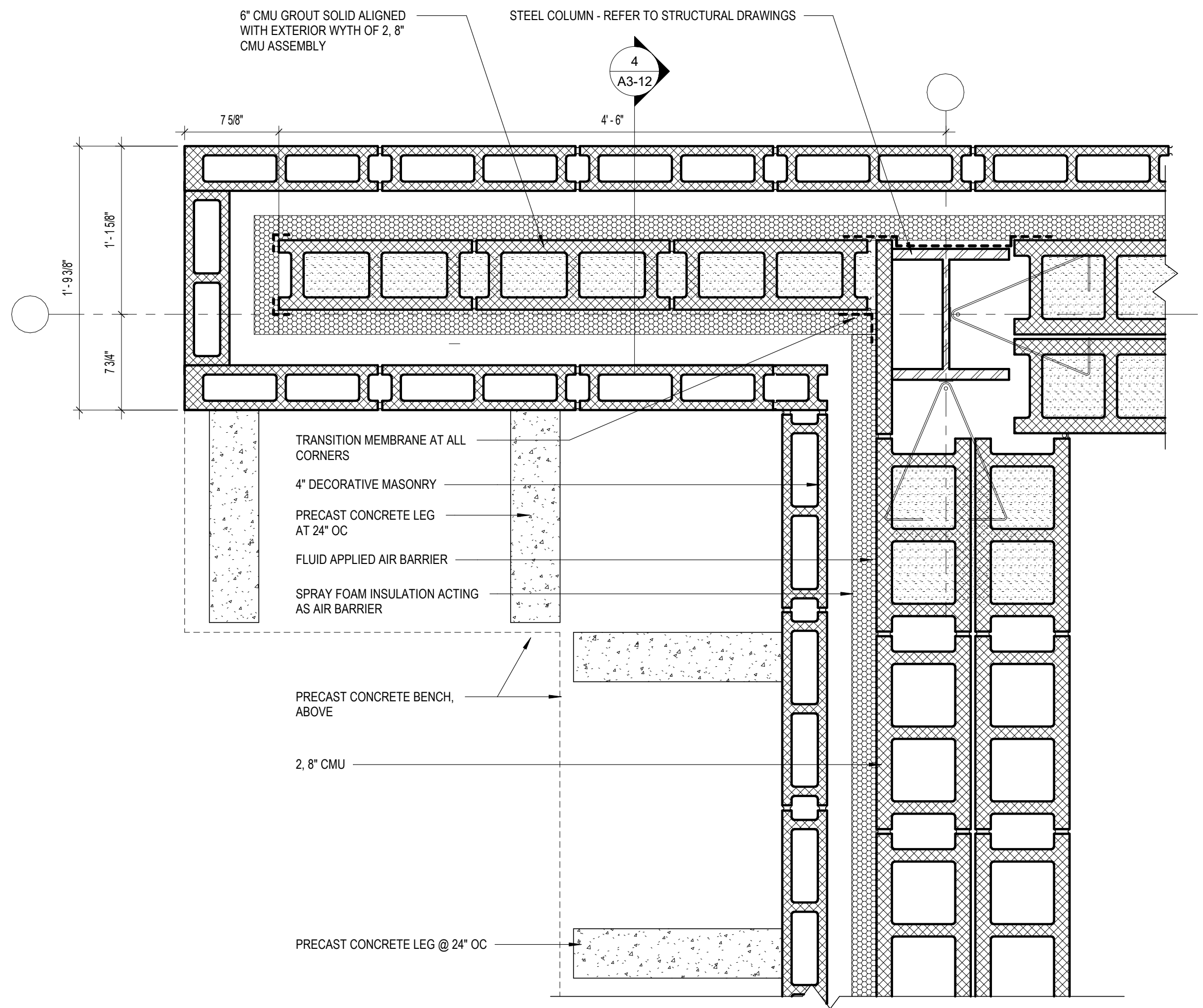
Smith Sinnett Architecture, P.A. 2024

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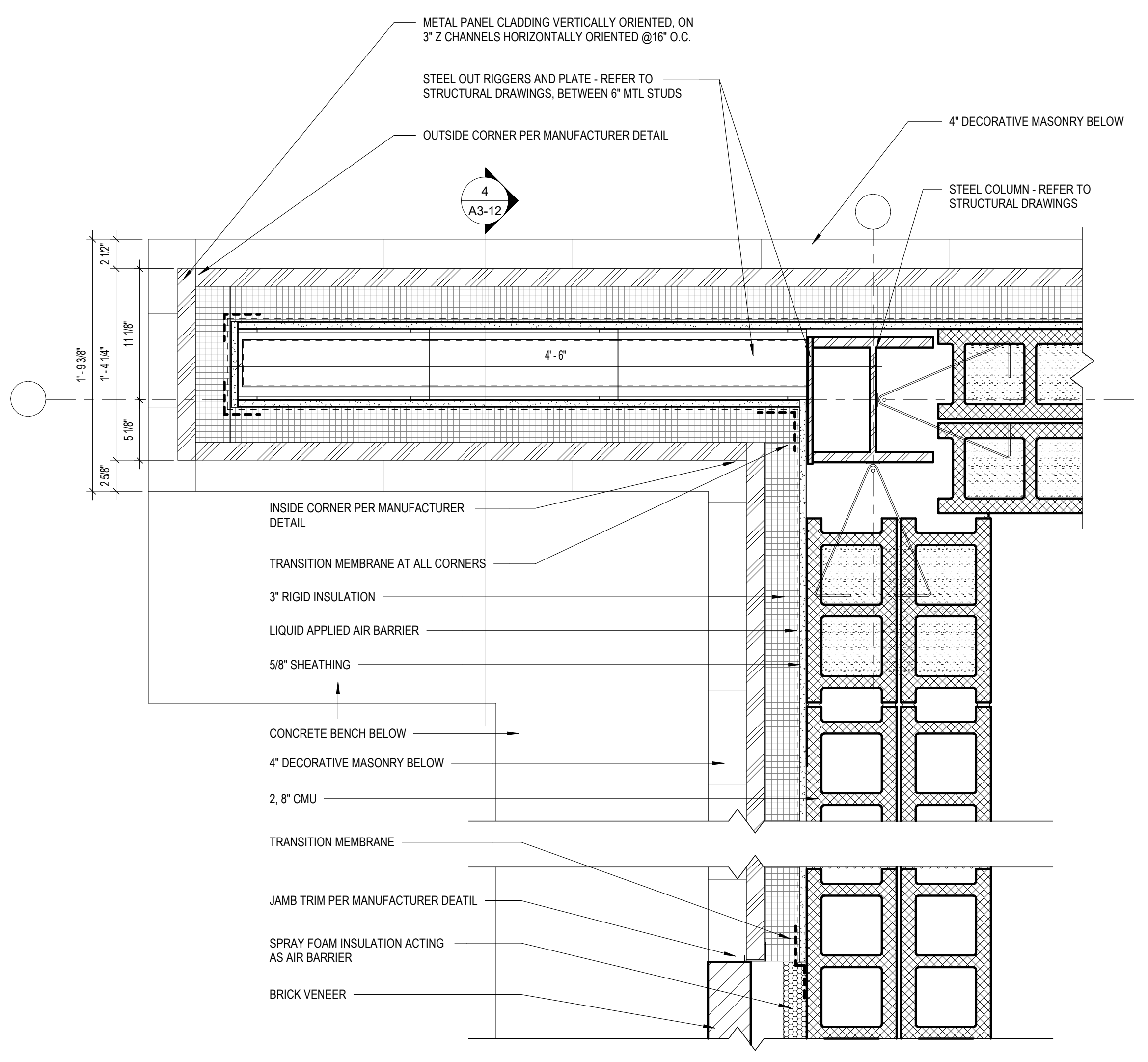
ONSLOW COUNTY SCHOOLS  
NORTHWOODS PARK MIDDLE SCHOOL  
GYMNASIUM & RENOVATION  
904 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
B	03/29/2024	ADDENDUM 2

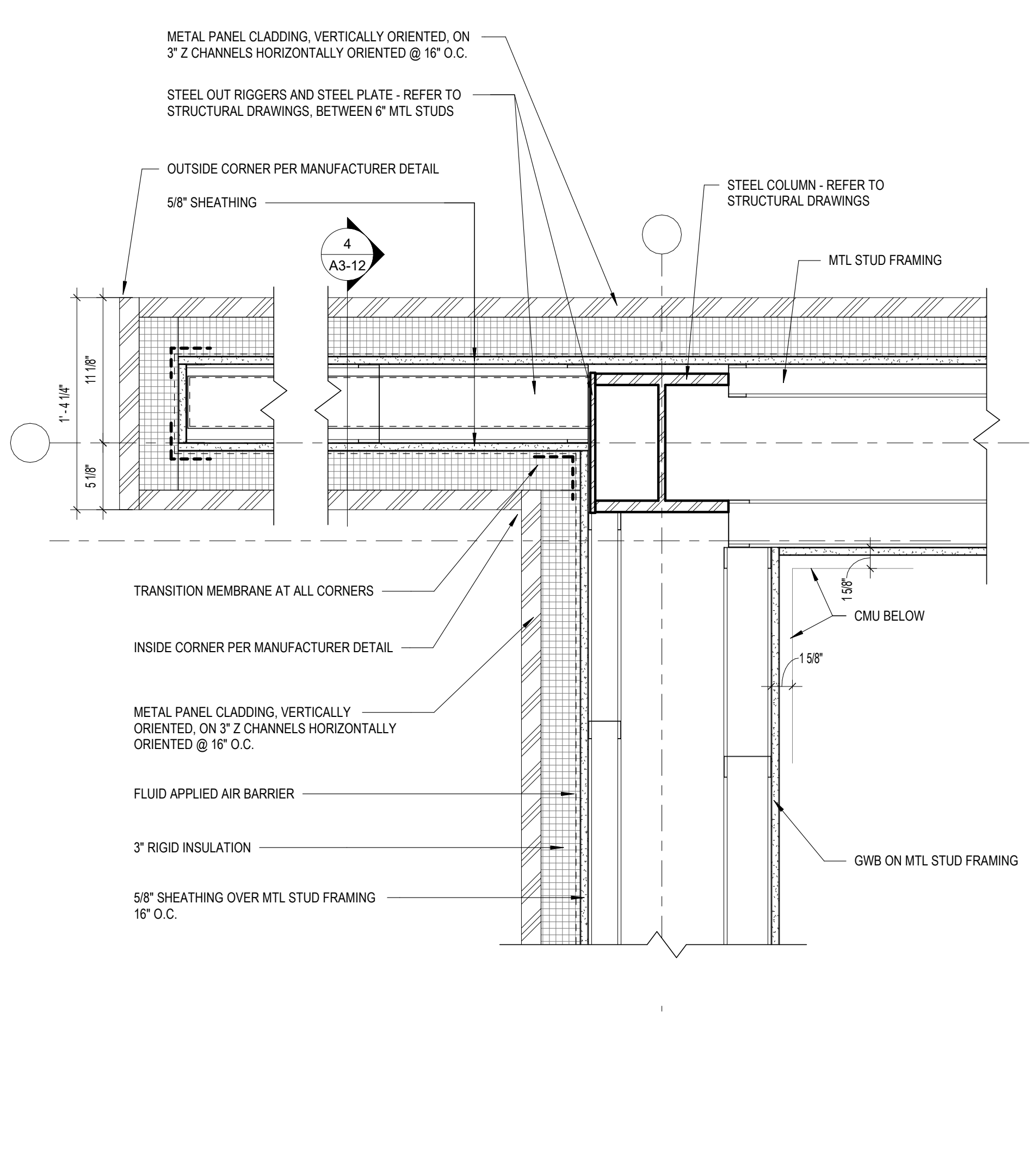
DRAWN BY: AC, MA  
CHECKED BY: FJ, LP  
PLAN DETAILS



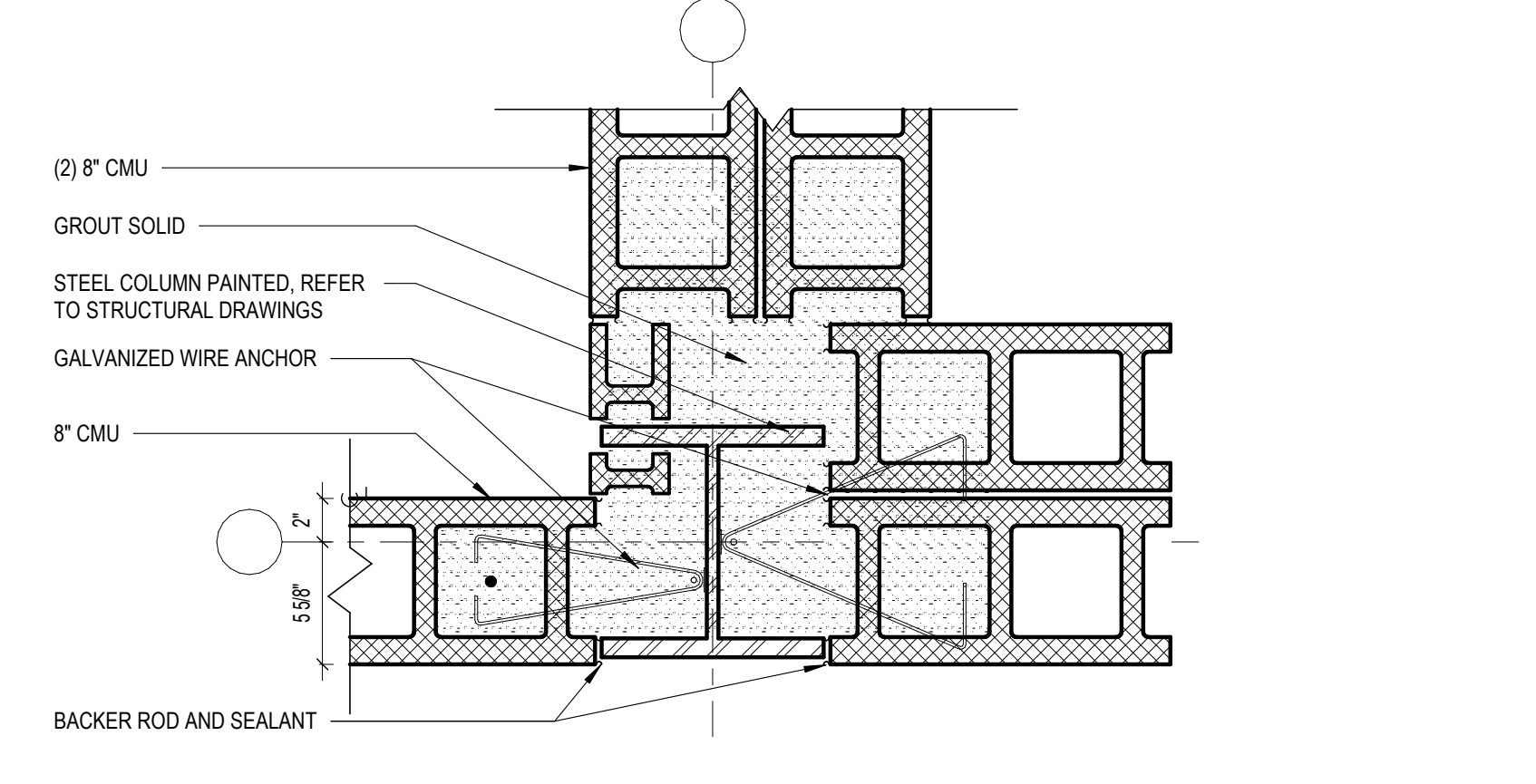
9 WING WALL CONNECTION @ BASE  
A5-01 1 1/2" = 1'-0"



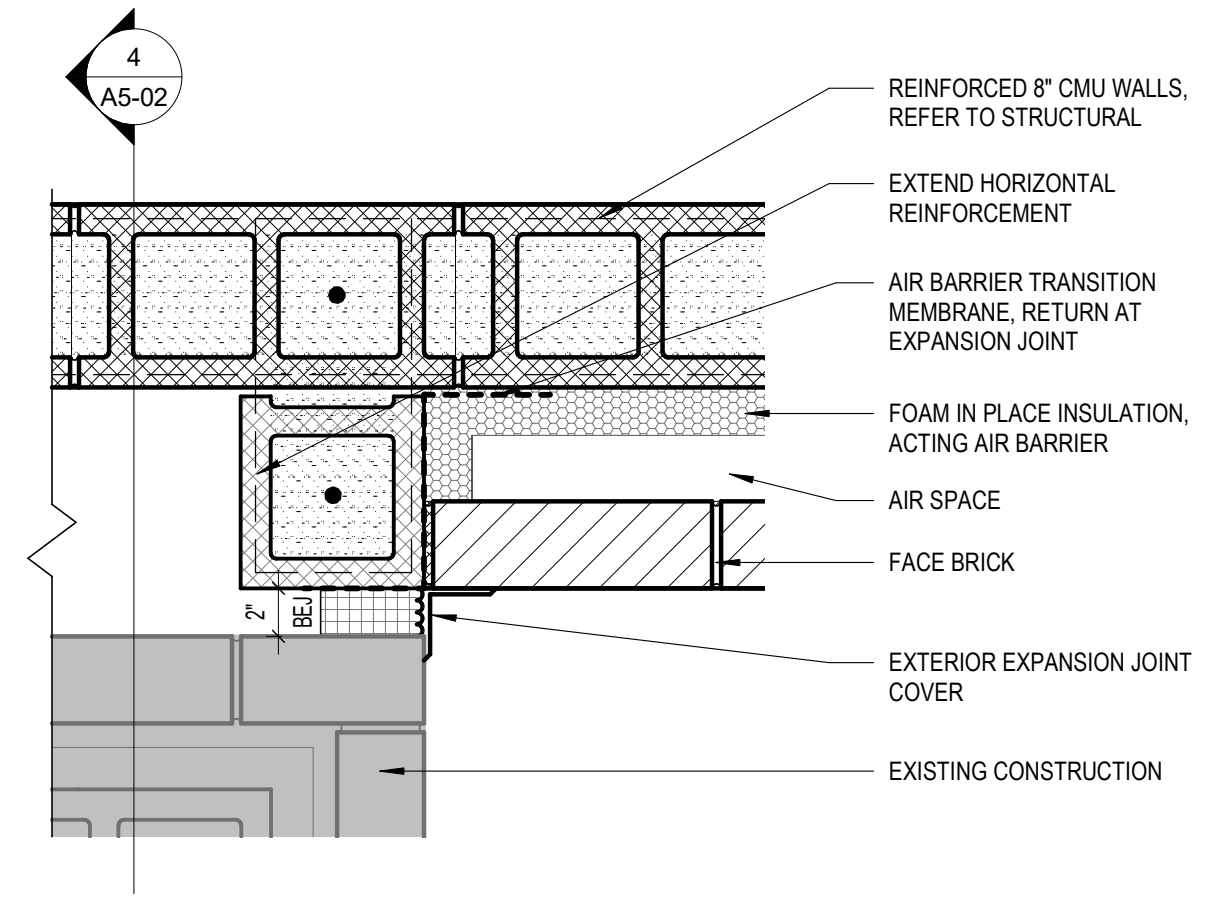
10 WING WALL CONNECTION  
A5-01 1 1/2" = 1'-0"



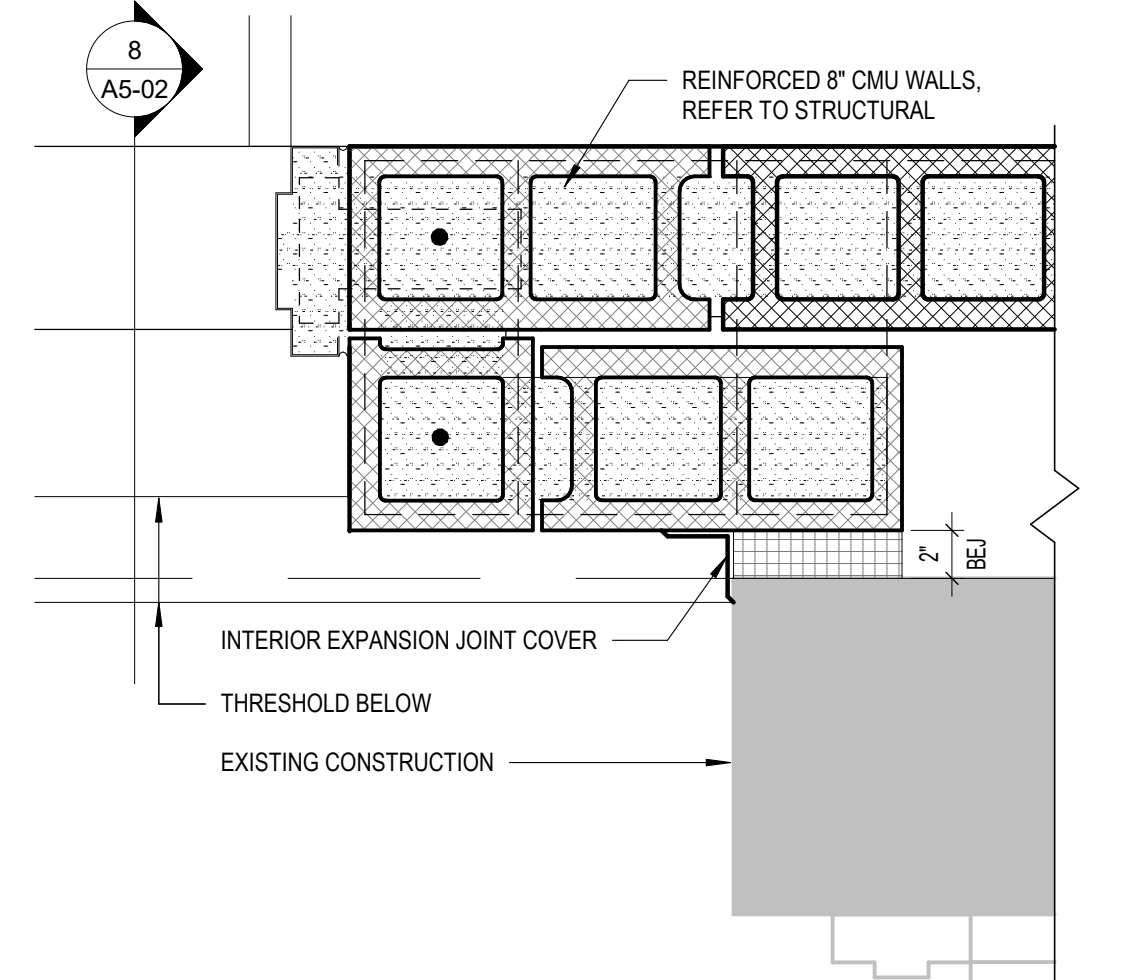
11 WING WALL CONNECTION @ CLERESTORY  
A5-01 1 1/2" = 1'-0"



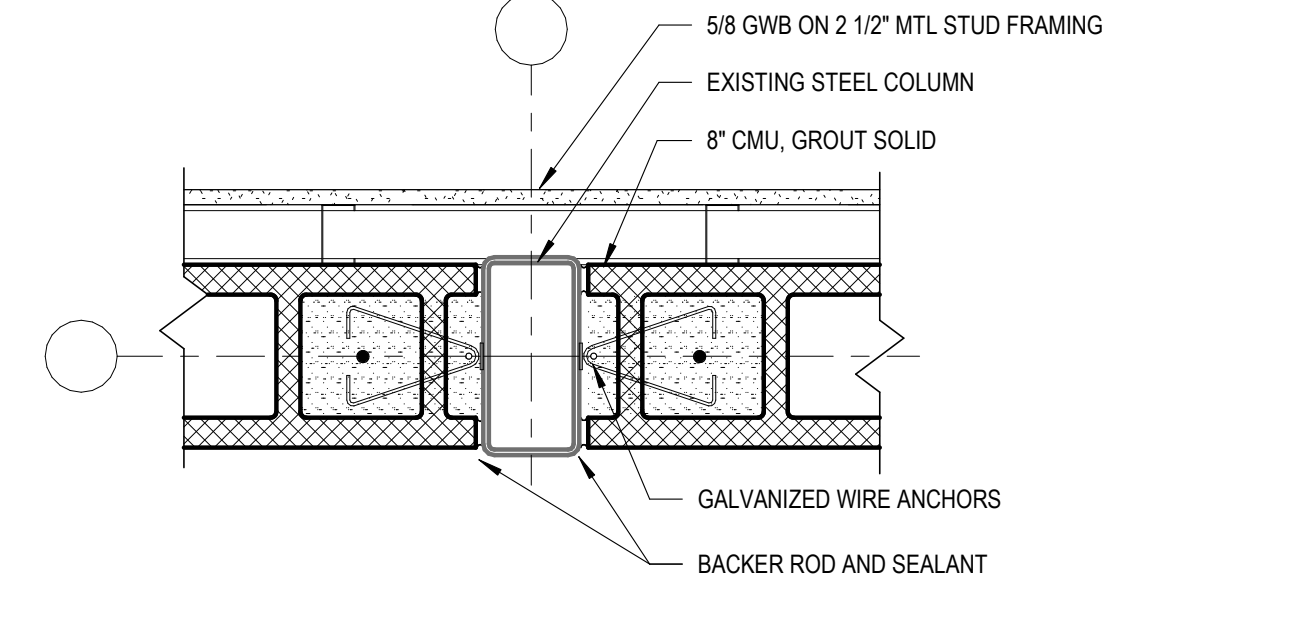
6 COLUMN CONNECTION DETAIL  
A5-01 1 1/2" = 1'-0"



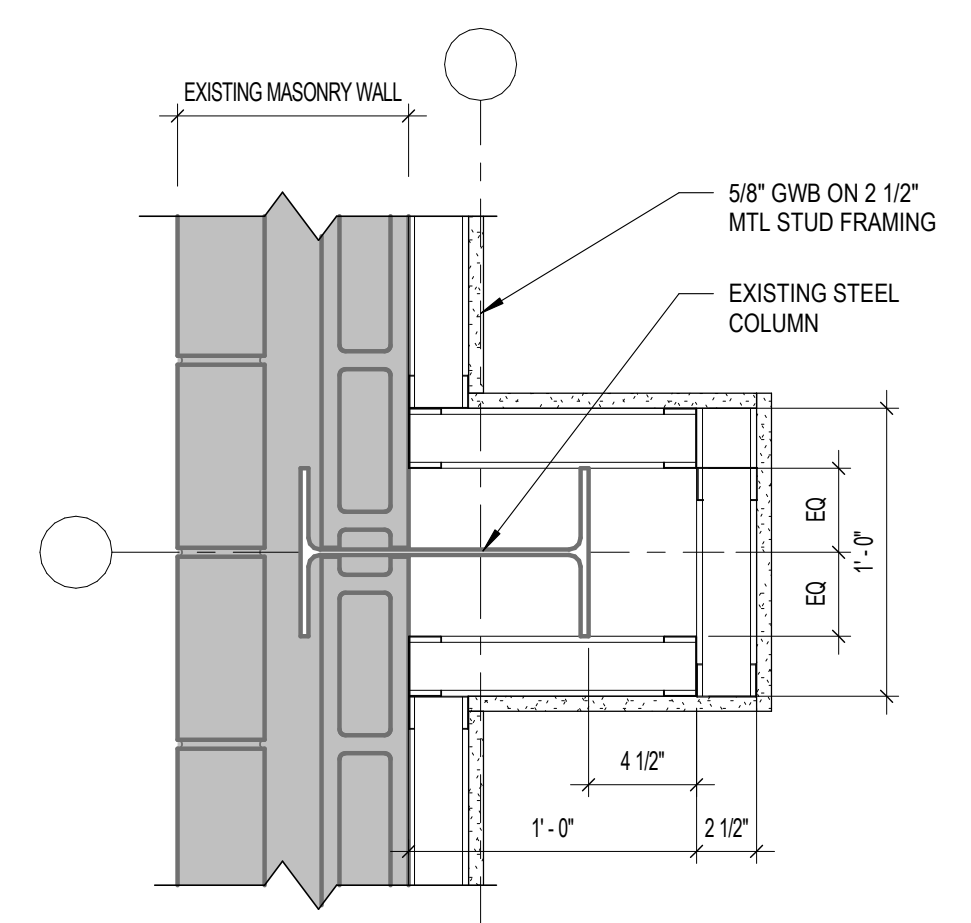
7 PLAN DETAIL - FIRE WALL - EXTERIOR  
A5-01 1 1/2" = 1'-0"



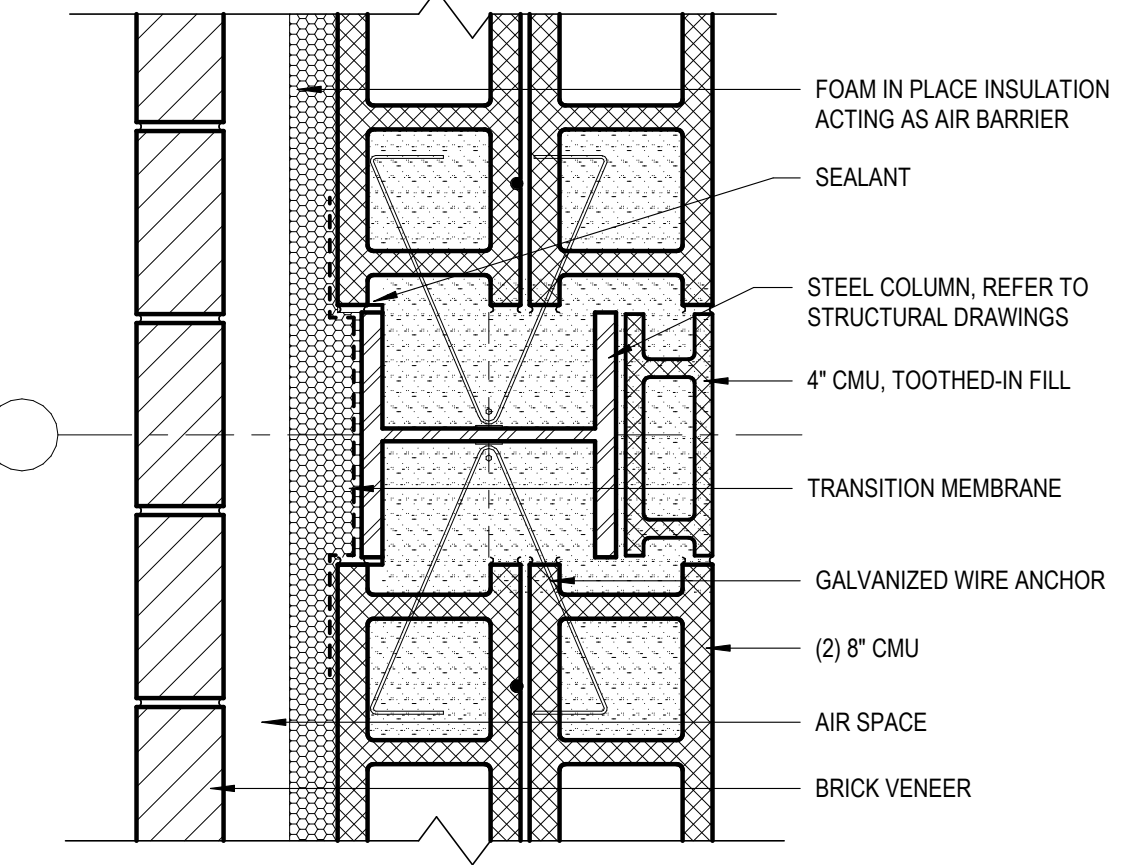
8 PLAN DETAIL - FIRE WALL - INTERIOR JAMB  
A5-01 1 1/2" = 1'-0"



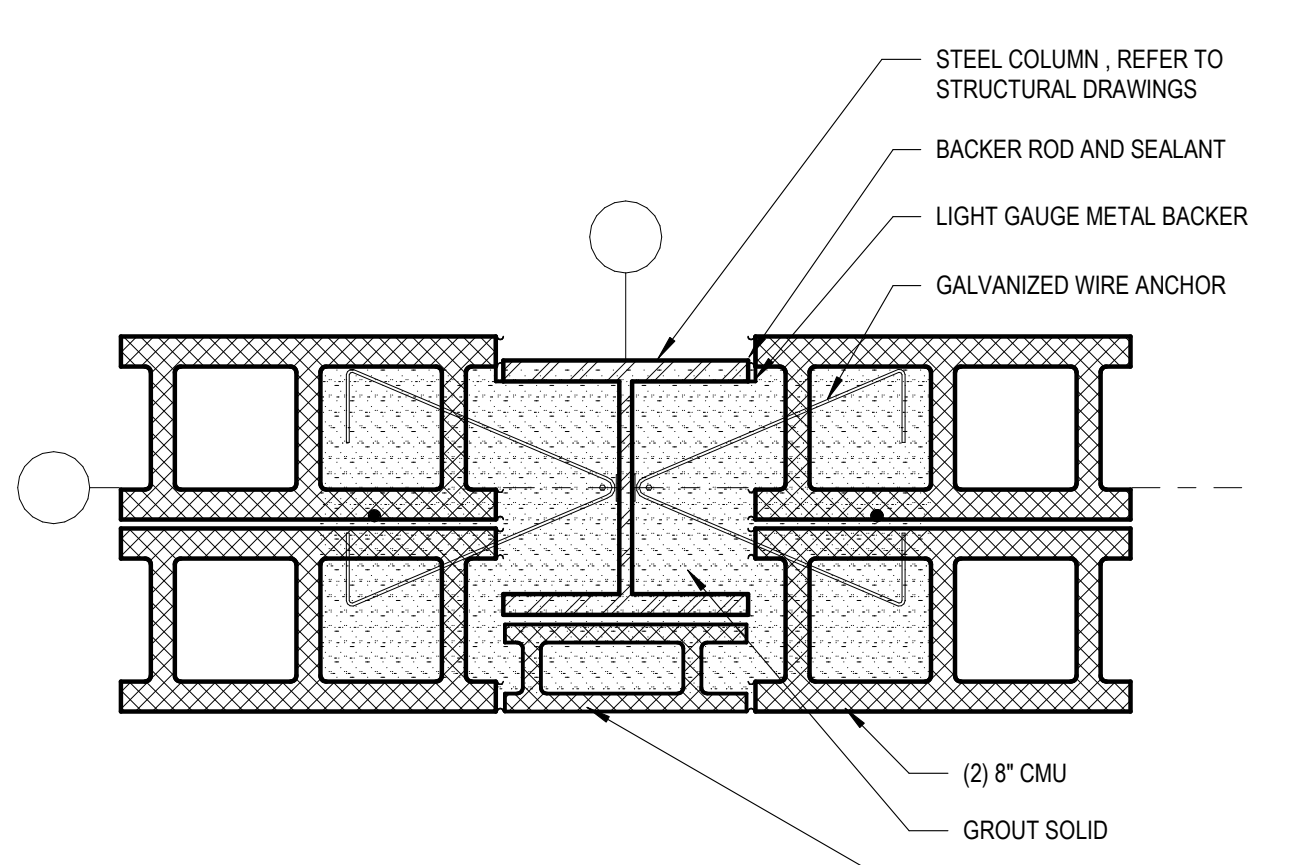
1 PLAN DETAIL - COLUMN CONNECTION  
A5-01 1 1/2" = 1'-0"



3 PLAN DETAIL - TYP. COLUMN WRAP  
A5-01 1 1/2" = 1'-0"



4 COLUMN CONNECTION DETAIL  
A5-01 1 1/2" = 1'-0"

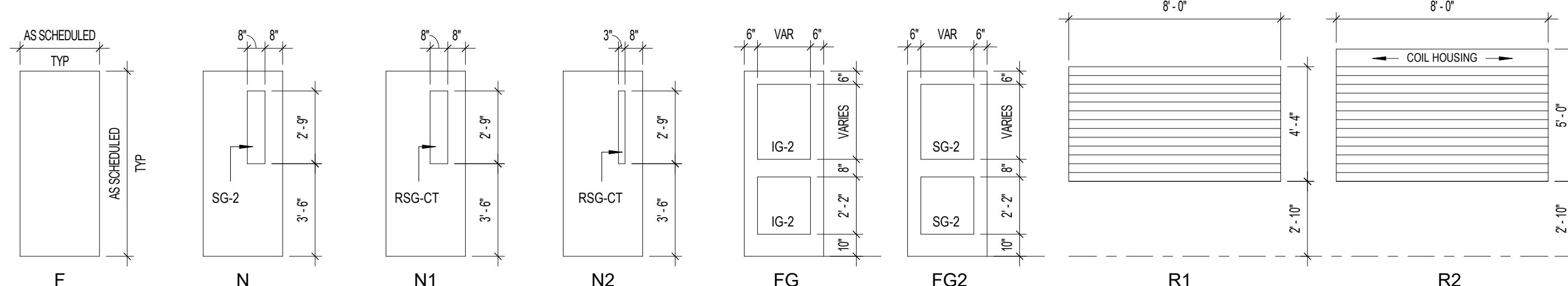


5 COLUMN CONNECTION DETAIL  
A5-01 1 1/2" = 1'-0"









**LEGEND:**  
 W.L. - HM FRAME DESIGNATION  
 S. - ALUMINUM STOREFRONT  
 C. - ALUMINUM CURTAIN WALL  
 N. - INTERIOR WINDOW FRAME

**GLAZING:**  
 IG: INSULATED GLAZING  
 SG: SINGLE-GLAZED  
 R: RATED GLASS  
 ITP: INSULATED TRANSLUCENT PANEL

IG-1: TINTED  
 IG-2: TINTED, TEMPERED  
 IG-3: TRANSLUCENT

SG-1: CLEAR  
 SG-2: CLEAR, TEMPERED  
 SG-3: TRANSLUCENT

RSG-CT: RATED SINGLE-GLAZED, CLEAR, TEMPERED

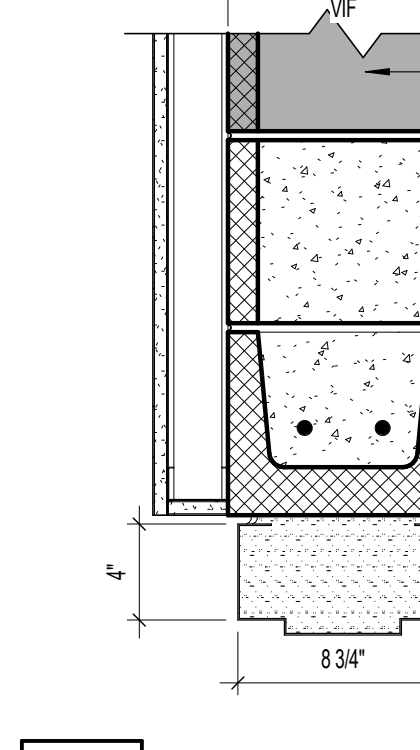
**NOTES:**  
 1. VERIFY ALL EXISTING OPENINGS IN FIELD.

**DOOR SCHEDULE - GYMNASIUM**

MARK	DOOR			FRAME			DETAILS			HARDWARE SET	FIRE RATING	REMARKS			
	DOOR SIZE	WIDTH	HEIGHT	THK	MAT	TYPE	LVS	MAT	TYPE				HEAD	JAMB	THRESH
600A	6'-0"	8'-0"	8'-0"	1 3/4"	ALUM	FG	2	ALUM	S7	13A6-03	--	2/A6-02	36	--	PANIC HARDWARE, AUTOMATIC DOOR OPERATOR, CARD READER
600B	6'-0"	8'-0"	8'-0"	1 3/4"	ALUM	FG	2	ALUM	S7	13A6-03	--	2/A6-02	34	--	PANIC HARDWARE
600C	6'-0"	8'-0"	8'-0"	1 3/4"	ALUM	FG	2	ALUM	S9	13A6-03	--	3/A6-03	38	--	PANIC HARDWARE
600D	6'-0"	8'-0"	8'-0"	1 3/4"	ALUM	FG	2	ALUM	S9	13A6-03	--	3/A6-03	37	--	PANIC HARDWARE
601A	SEE ELEVATIONS	SEE ELEVATIONS	1/2"	STL	R1	1	1	STL	--	1/A6-01	13/A6-01	1/A6-01	03	--	INSULATED COILING DOOR (JAMB MOUNTED)
601B	SEE ELEVATIONS	SEE ELEVATIONS	1/2"	STL	R2	1	1	STL	--	2/A6-01	14/A6-01	2/A6-01	03	--	INSULATED COILING DOOR (JAMB MOUNTED)
602	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	N	2	HM	HM1	18/A6-01	8/A6-01	8/A6-01	06	--	PANIC HARDWARE
603A	6'-0"	7'-2"	7'-2"	1 3/4"	SCWD	N	2	HM	HM1	15/A6-01	16/A6-01	2/A7-20	29	--	PANIC HARDWARE
603B	6'-0"	7'-2"	7'-2"	1 3/4"	SCWD	N	2	HM	HM1	15/A6-01	16/A6-01	2/A7-20	29	--	PANIC HARDWARE
603C	6'-0"	7'-2"	7'-2"	1 3/4"	HM	F	2	HM	HM1	18/A6-01	12/A6-01	7/A6-01	39	--	PANIC HARDWARE, CARD READER
604	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	F	1	HM	HM1	8/A6-01	3/A6-01	4/A7-20	06	--	
606	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	F	1	HM	HM1	8/A6-01	3/A6-01	4/A7-20	07	--	
608	6'-0"	7'-2"	7'-2"	1 3/4"	SCWD	HM	F	1	HM	8/A6-01	3/A6-01	4/A7-20	10	--	UNDERCUT 1" CARD READER
609	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	F	1	HM	HM1	8/A6-01	3/A6-01	5/A7-20	21	--	
610	3'-0"	7'-2"	7'-2"	1 3/4"	HM	N	1	HM	HM1	8/A6-01	3/A6-01	--	09	--	
611A	6'-0"	8'-0"	8'-0"	1 3/4"	ALUM	FG	2	ALUM	S3	13A6-03	8/A6-01	2/A6-02	35	--	PANIC HARDWARE, CARD READER
611B	6'-0"	8'-0"	8'-0"	1 3/4"	SCWD	N2	2	HM	HM1	18/A6-01	8/A6-01	8/A6-02	30	90 MIN	PANIC HARDWARE, FIRE RESISTANT RATED GLAZING, MAG HOLD OPENS, 180 DEGREES
611C	3'-0"	7'-0"	7'-0"	1 3/4"	HM	F	1	HM	HM1	17/A6-01	11/A6-01	6/A6-01	25	--	PANIC HARDWARE
611D	3'-0"	7'-0"	7'-0"	1 3/4"	EXISTING TO REMAIN	EXISTING TO REMAIN	1	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	32	--	EXISTING DOOR TO RECEIVE PANIC HARDWARE
612	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	N	1	HM	HM1	8/A6-01	3/A6-01	2/A7-20	04	--	
613	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	F	1	HM	HM1	8/A6-01	3/A6-01	1/A7-20	05	--	
614	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	N	1	HM	HM1	8/A6-01	3/A6-01	2/A7-20	04	--	
615	3'-0"	7'-2"	7'-2"	1 3/4"	HM	F	1	HM	HM1	18/A6-01	12/A6-01	7/A6-01	28	--	PANIC HARDWARE
616	6'-0"	7'-2"	7'-2"	1 3/4"	SCWD	N	2	HM	HM1	15/A6-01	16/A6-01	2/A7-20	10	--	
617A	3'-0"	7'-2"	7'-2"	1 3/4"	HM	F	1	HM	HM1	18/A6-01	12/A6-01	7/A6-01	17	--	
617B	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	F	1	HM	HM1	8/A6-01	3/A6-01	--	07	--	
618	3'-0"	7'-2"	7'-2"	1 3/4"	HM	F	1	HM	HM1	18/A6-01	12/A6-01	7/A6-01	17	--	
619A	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	F	1	HM	HM1	15/A6-01	16/A6-01	1/A7-20	33	--	
619B	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	F	1	HM	HM1	8/A6-01	3/A6-01	--	32	--	
619C	3'-0"	7'-2"	7'-2"	1 3/4"	HM	F	1	HM	HM1	18/A6-01	12/A6-01	7/A6-01	27	--	PANIC HARDWARE
620A	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	F	1	HM	HM1	15/A6-01	16/A6-01	1/A7-20	33	--	
620B	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	F	1	HM	HM1	18/A6-01	12/A6-01	7/A6-01	32	--	
620C	3'-0"	7'-2"	7'-2"	1 3/4"	HM	F	1	HM	HM1	18/A6-01	12/A6-01	7/A6-01	27	--	PANIC HARDWARE
621	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	F	1	HM	HM1	8/A6-01	3/A6-01	--	08	--	
622	3'-0"	7'-2"	7'-2"	1 3/4"	HM	F	1	HM	HM1	18/A6-01	12/A6-01	7/A6-01	12	--	
623	3'-0"	7'-2"	7'-2"	1 3/4"	HM	F	1	HM	HM1	18/A6-01	12/A6-01	7/A6-01	12	--	

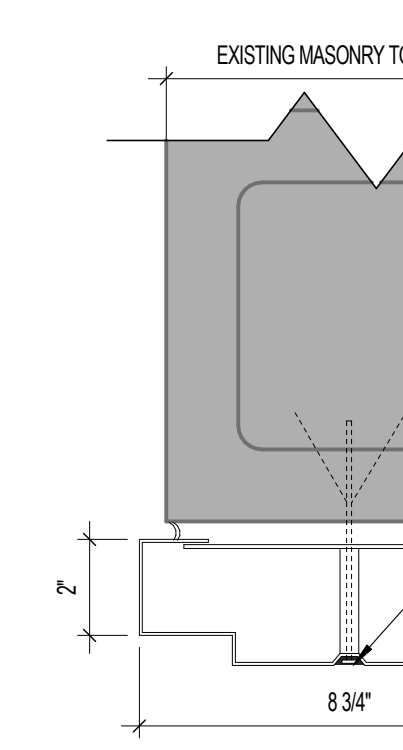
**DOOR TYPES**

1/4" = 1'-0"

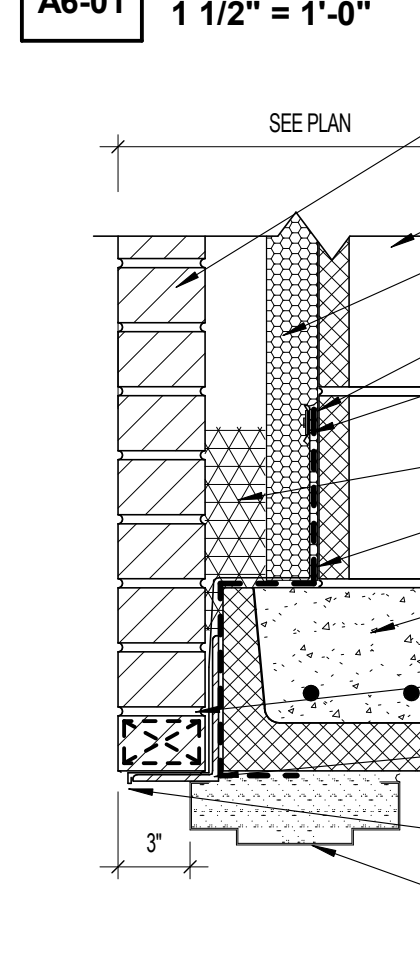


23 A6-01 HM HEAD AT 10" CMU/FURRING 1 1/2" = 1'-0"

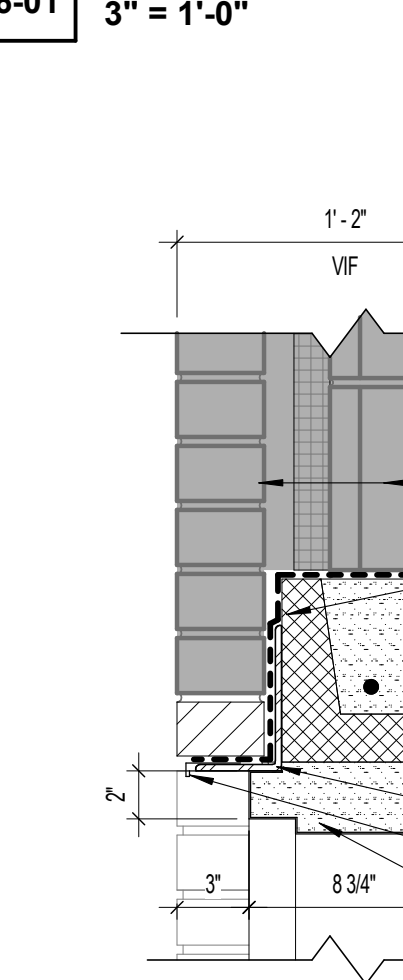
22 A6-01 HM HEAD AT 8" CMU 1 1/2" = 1'-0"



21 A6-01 HM JAMB AT 10" CMU/FURRING 1 1/2" = 1'-0"

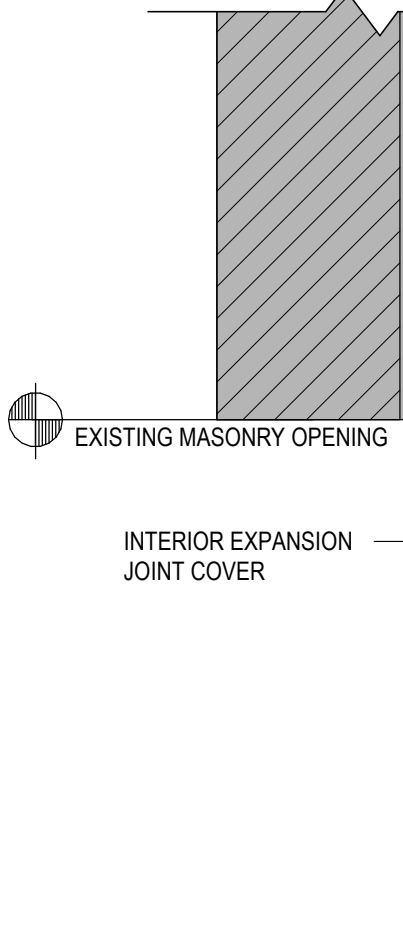


20 A6-01 HM JAMB/HEAD @ EXSTNG WALL 3" = 1'-0"

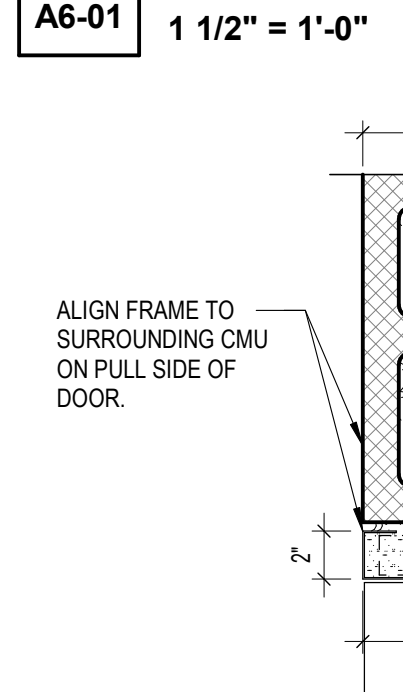


**FRAME TYPES**

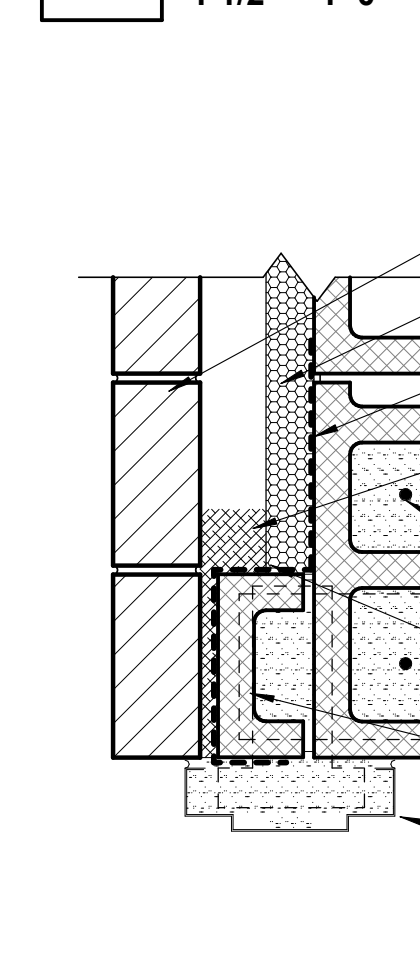
1/4" = 1'-0"



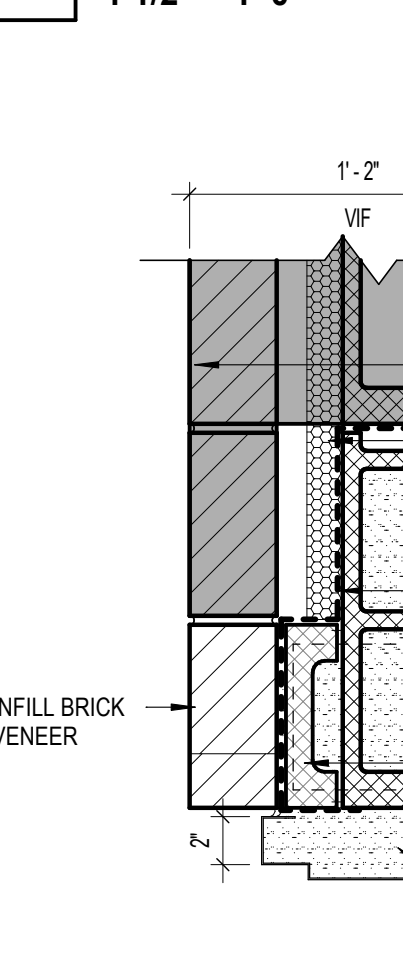
19 A6-01 HM HEAD/JAMB AT (2) 8" CMU 1 1/2" = 1'-0"



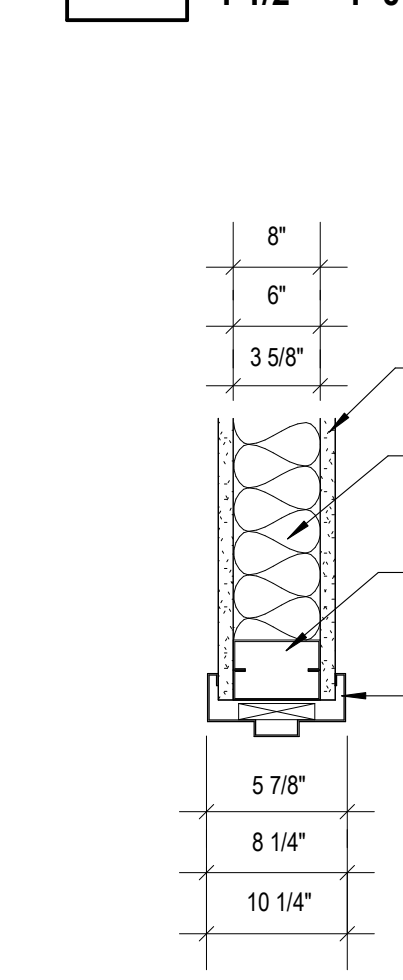
18 A6-01 HM HEAD AT EXTERIOR MAS 1 1/2" = 1'-0"



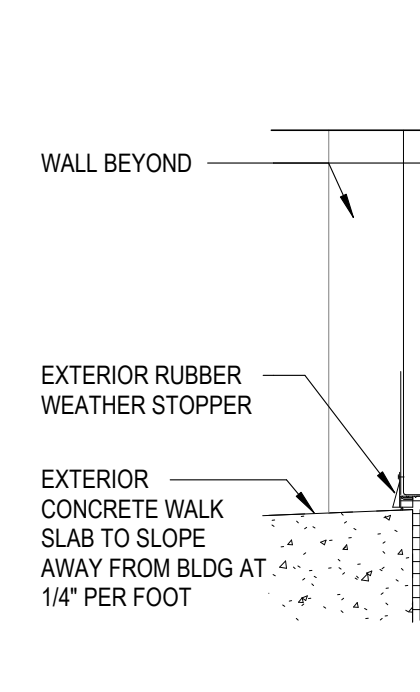
17 A6-01 HM HEAD @ EXISTING 1 1/2" = 1'-0"



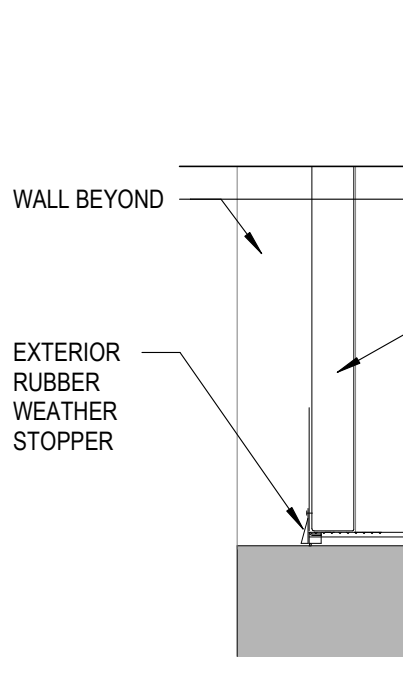
16 A6-01 HM JAMB AT (2) 8" CMU 1 1/2" = 1'-0"



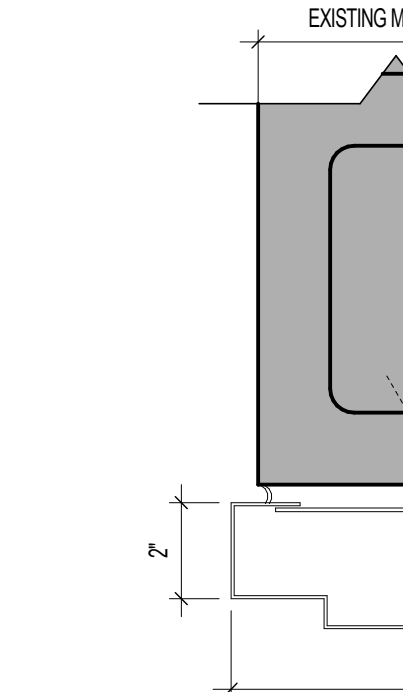
12 A6-01 HM JAMB AT EXTERIOR MAS 1 1/2" = 1'-0"



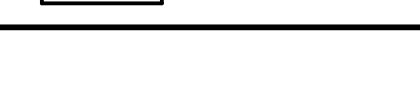
11 A6-01 HM JAMB @ EXISTING 1 1/2" = 1'-0"



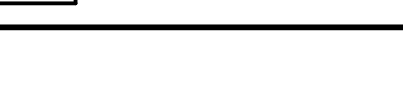
10 A6-01 HM HEAD/JAMB @ STUD WALL 1 1/2" = 1'-0"



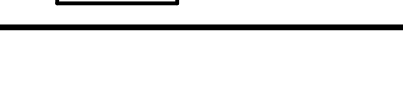
7 A6-01 TYP HM THRESHOLD AT EXT. 1 1/2" = 1'-0"



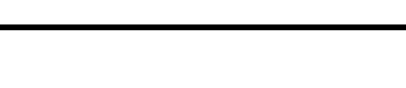
6 A6-01 EXT. HM THRESHOLD AT EXISTING 1 1/2" = 1'-0"



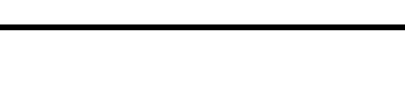
5 A6-01 HM JAMB/HEAD @ EXSTNG WALL 3" = 1'-0"



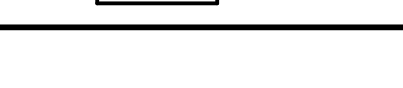
4 A6-01 HM JAMB AT 8" CMU 1 1/2" = 1'-0"



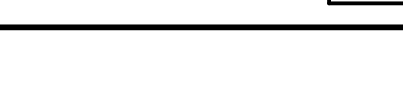
3 A6-01 HM JAMB AT 8" CMU 1 1/2" = 1'-0"



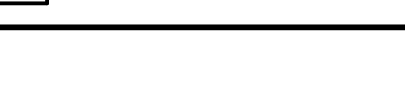
2 A6-01 SECTION @ R2 1 1/2" = 1'-0"



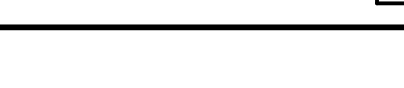
1 A6-01 SECTION @ R1 1 1/2" = 1'-0"



13 A6-01 JAMB AT R2 1 1/2" = 1'-0"



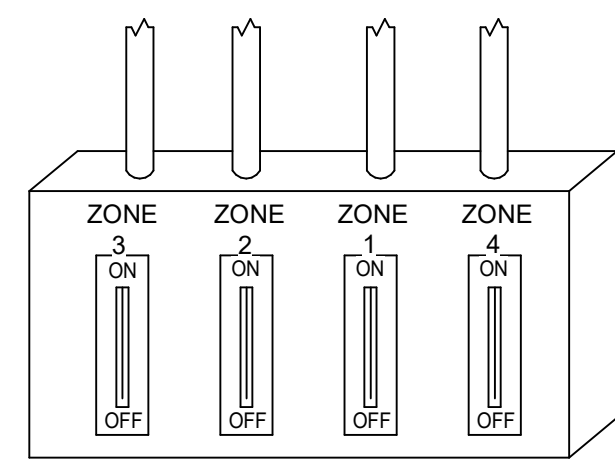
14 A6-01 JAMB AT R1 1 1/2" = 1'-0"



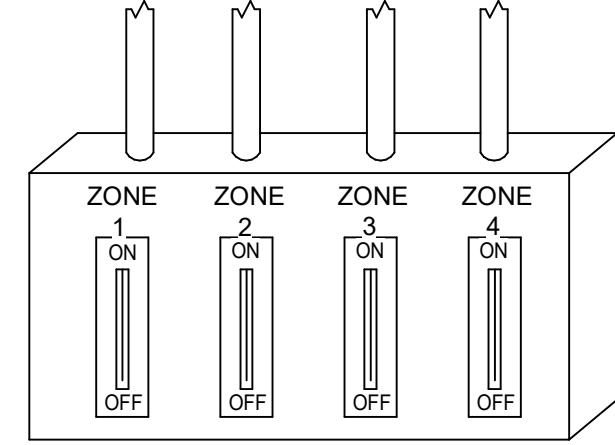
**DOOR SCHEDULE - RENOVATION**

MARK	DOOR			FRAME			DETAILS			HARDWARE SET	FIRE RATING	REMARKS			
	DOOR SIZE	WIDTH	HEIGHT	THK	MAT	TYPE	LVS	MAT	TYPE				HEAD	JAMB	THRESH
1000A	3'-0"	6'-8"	6'-8"	1 3/4"	EXISTING TO REMAIN	EXISTING TO REMAIN	1	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	01	--	EXISTING DOOR & HARDWARE (PANIC) TO REMAIN
1000B	3'-0"	6'-8"	6'-8"	1 3/4"	EXISTING TO REMAIN	EXISTING TO REMAIN	1	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	01	--	EXISTING DOOR & HARDWARE (PANIC) TO REMAIN
1000C	3'-0"	6'-8"	6'-8"	1 3/4"	EXISTING TO REMAIN	EXISTING TO REMAIN	1	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	01	--	EXISTING DOOR & HARDWARE (PANIC) TO REMAIN
1000D	2'-8"	6'-8"	6'-8"	1 3/4"	SCWD	F	1	HM	HM1	20/A6-01	20/A6-01	EXISTING TO REMAIN	11	20 MIN	FIELD VERIFY DIMENSIONS
1000E	2'-8"	6'-8"	6'-8"	1 3/4"	SCWD	F	1	HM	HM1	20/A6-01	20/A6-01	EXISTING TO REMAIN	18	20 MIN	FIELD VERIFY DIMENSIONS
1000F	3'-0"	6'-8"	6'-8"	1 3/4"	EXISTING TO REMAIN	EXISTING TO REMAIN	2	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	02	--	EXISTING DOOR & HARDWARE (PANIC) TO REMAIN
1000G	3'-0"	6'-8"	6'-8"	1 3/4"	EXISTING TO REMAIN	EXISTING TO REMAIN	2	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	EXISTING TO REMAIN	02	--	EXISTING DOOR & HARDWARE (PANIC) TO REMAIN
1001A	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	N1	1	HM	HM2	22/A6-01	3/A6-01	--	24	45 MIN	VERIFY HARDWARE HAS CLOSER, PANIC HARDWARE
1001B	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	N1	1	HM	HM2	22/A6-01	3/A6-01	--	24	45 MIN	VERIFY HARDWARE HAS CLOSER, PANIC HARDWARE
1002	3'-0"	7'-0"	7'-0"	1 3/4"	SCWD	N	1	HM	HM1	10/A6-01	10/A6-01	--	14	20 MIN	FIELD VERIFY DIMENSIONS
1003	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	N1	1	HM	HM2	4/A6-01	4/A6-01	7/A7-20	15	20 MIN	UNDERCUT 3/4"
1004	6'-0"	7'-0"	7'-0"	1 3/4"	SCWD	F	2	HM	HM1	10/A6-01	10/A6-01	7/A7-20	23	20 MIN	UNDERCUT 3/4"
1005	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	F	1	HM	HM2	23/A6-01	21/A6-01	8/A7-20	22	20 MIN	
1006	3'-0"	7'-0"	7'-0"	1 3/4"	SCWD	N1	1	HM	HM1	10/A6-01	10/A6-01	7/A7-20	20	20 MIN	
1007	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	N1	1	HM	HM2	23/A6-01	21/A6-01	8/A7-20	13	20 MIN	
1007A	3'-0"	7'-0"	7'-0"	1 3/4"	SCWD	F	1	HM	HM1	10/A6-01	10/A6-01	--	08	--	
1008	3'-0"	7'-0"	7'-0"	1 3/4"	SCWD	N1	1	HM	HM1	10/A6-01	10/A6-01	--	20	20 MIN	
1009	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	N1	1	HM	HM2	23/A6-01	21/A6-01	9/A7-20	15	20 MIN	
1009A	3'-0"	7'-0"	7'-0"	1 3/4"	SCWD	F	1	HM	HM1	10/A6-01	10/A6-01	--	16	--	
1010	3'-0"	7'-0"	7'-0"	1 3/4"	SCWD	N1	1	HM	HM1	10/A6-01	10/A6-01	--	20	20 MIN	
1011	3'-0"	7'-2"	7'-2"	1 3/4"	SCWD	F	1	HM	HM2	23/A6-01	21/A6-01	8/A7-20	22	--	

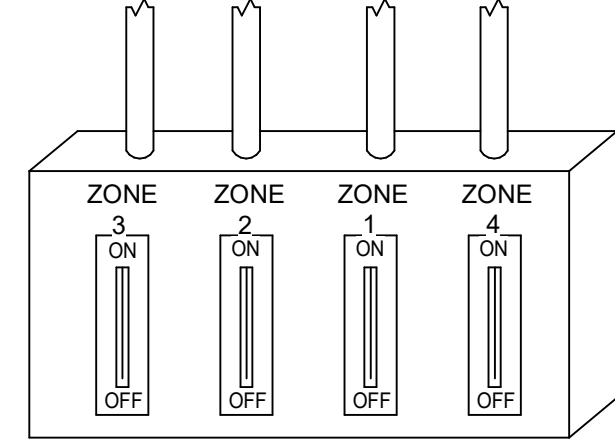




SWITCH BANK '3'  
NOTE: ALL SWITCHES SHALL BE 4-WAY KEYED SWITCHES.



SWITCH BANK '2'  
NOTE: ALL SWITCHES SHALL BE 3-WAY KEYED SWITCHES.

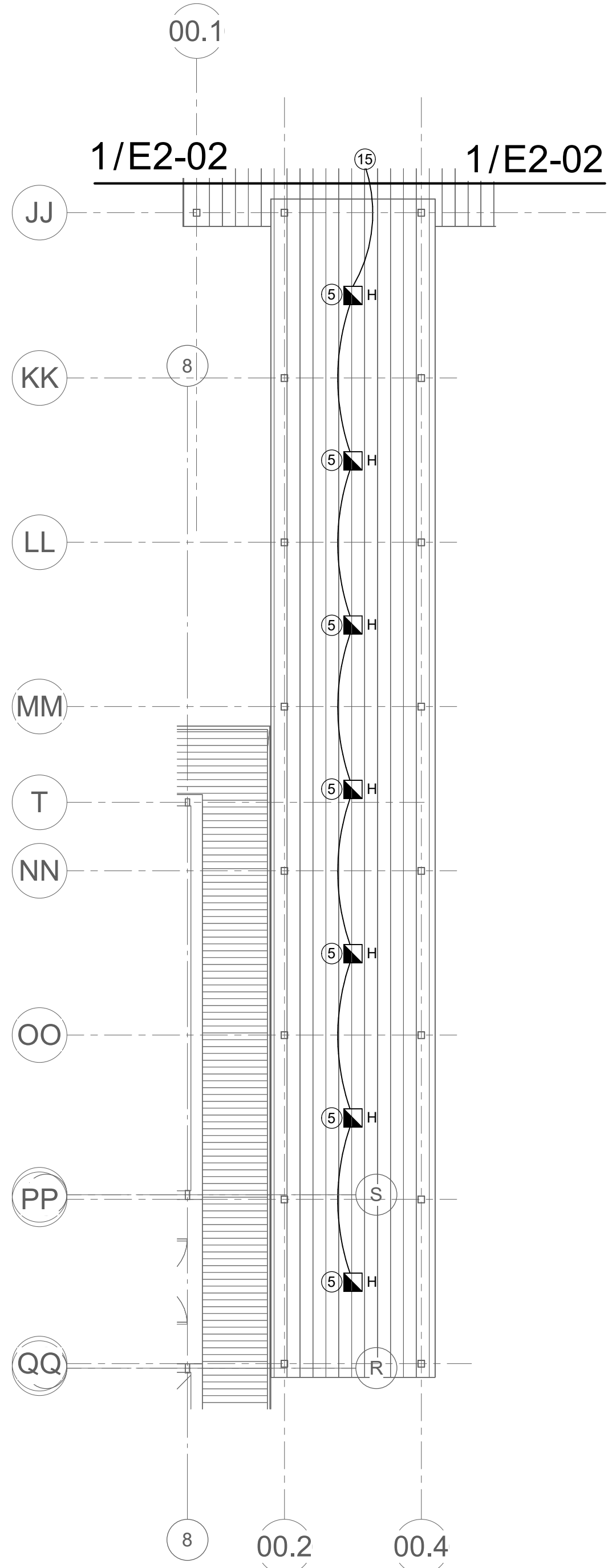


SWITCH BANK '1'  
NOTE: ALL SWITCHES SHALL BE 3-WAY KEYED SWITCHES.

ALL SWITCH BANKS SHALL BE FLUSH MOUNTED

2 GYMNASIUM SWITCH BANKS

NOT TO SCALE

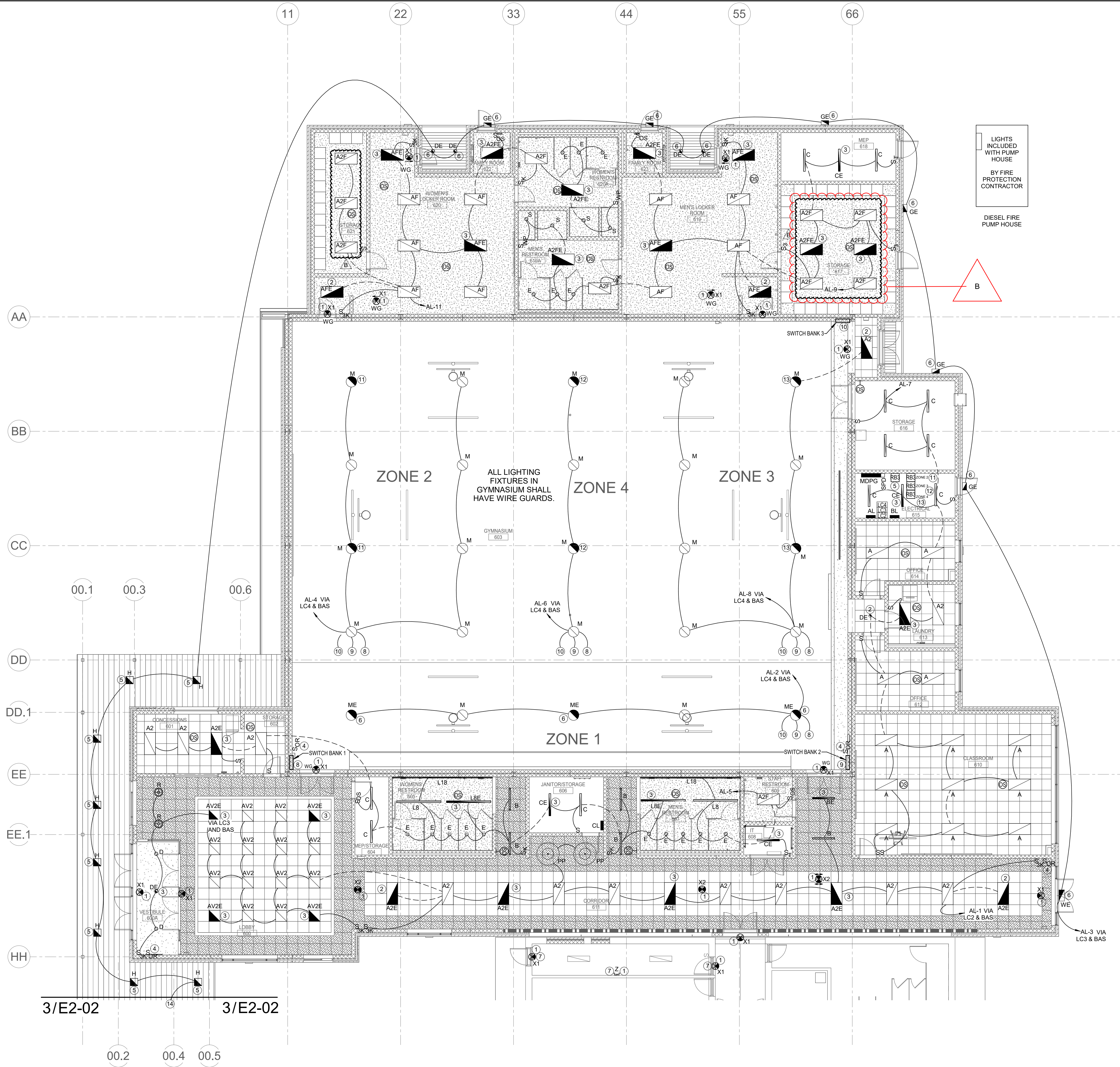


3 GYM CANOPY LIGHTING

1/8" = 1'-0"

1 GYM ADDITION LIGHTING

1/8" = 1'-0"



LIGHTS INCLUDED WITH PUMP HOUSE  
BY FIRE PROTECTION CONTRACTOR  
DIESEL FIRE PUMP HOUSE

KEYNOTES:

- EMERGENCY EXIT FIXTURE WITH BATTERY BACK-UP - WIRE AHEAD OF SWITCHES AND/OR BAS.
- NIGHT LIGHT/EMERGENCY LIGHT - WIRE AHEAD OF SWITCHES AND/OR BAS.
- EMERGENCY EGRESS FIXTURE - WIRE FIXTURE SO THAT FIXTURE TURNS ON/OFF WITH OTHER EXTERIOR FIXTURES, BUT MAINTAINS BATTERY CHARGE. FIXTURE SHALL ILLUMINATE UPON LOSS OF NORMAL POWER.
- LIGHTING OVERRIDE SWITCH. REFER TO MECHANICAL CONTROLS SEQUENCE OF OPERATION AND SPECIFICATION 260923.
- PROVIDE 550KW EMERGENCY LIGHTING INVERTER FOR EXTERIOR FIXTURE TYPE H. WIRE TO CIRCUIT AS SHOWN. THESE FIXTURES SHALL TURN ON/OFF WITH OTHER EXTERIOR FIXTURES, BUT UPON LOSS OF NORMAL POWER THESE FIXTURES SHALL ILLUMINATE VIA INVERTER RB3. LOCATE RB3 IN ELECTRICAL ROOM 615.
- FIXTURE TYPES DE, WE, ME AND GE SHALL HAVE INTERNAL BATTERY BACKUP. THESE FIXTURES SHALL BE WIRED SUCH THAT FIXTURES TURN ON/OFF WITH OTHER EXTERIOR FIXTURES, BUT UPON LOSS OF NORMAL POWER FIXTURES SHALL ILLUMINATE.
- AS PART OF PHASE 1, PROVIDE EXIT AND EGRESS FIXTURES AS A TEMPORARY EGRESS PATH WHILE CONSTRUCTION IS IN PROGRESS. AS PART OF PHASE 2 CONSTRUCTION, FIXTURES SHALL BE REMOVED.
- WIRE TO SWITCH BANK 1. REFER TO DETAIL 2 ON THIS DRAWING.
- WIRE TO SWITCH BANK 2. REFER TO DETAIL 2 ON THIS DRAWING.
- WIRE TO SWITCH BANK 3. REFER TO DETAIL 2 ON THIS DRAWING.
- EMERGENCY FIXTURE - WIRE THROUGH 550 WATT EMERGENCY LIGHTING INVERTER RB3 FOR ZONE 1 LOCATED IN ELECTRICAL ROOM 615. FIXTURES SHALL TURN ON/OFF WITH OTHER FIXTURES, BUT UPON LOSS OF NORMAL POWER, FIXTURE SHALL ILLUMINATE.
- EMERGENCY FIXTURE - WIRE THROUGH 550 WATT EMERGENCY LIGHTING INVERTER RB3 FOR ZONE 2 LOCATED IN ELECTRICAL ROOM 615. FIXTURES SHALL TURN ON/OFF WITH OTHER FIXTURES, BUT UPON LOSS OF NORMAL POWER, FIXTURE SHALL ILLUMINATE.
- EMERGENCY FIXTURE - WIRE THROUGH 550 WATT EMERGENCY LIGHTING INVERTER RB3 FOR ZONE 3 LOCATED IN ELECTRICAL ROOM 615. FIXTURES SHALL TURN ON/OFF WITH OTHER FIXTURES, BUT UPON LOSS OF NORMAL POWER, FIXTURE SHALL ILLUMINATE.
- REFER TO GYM CANOPY LIGHTING PLAN E2-02/3 ON THIS DRAWING FOR CONTINUATION.
- REFER TO GYM ADDITION LIGHTING PLAN E2-02/1 ON THIS DRAWING FOR CONTINUATION.

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PROJECT # 2014

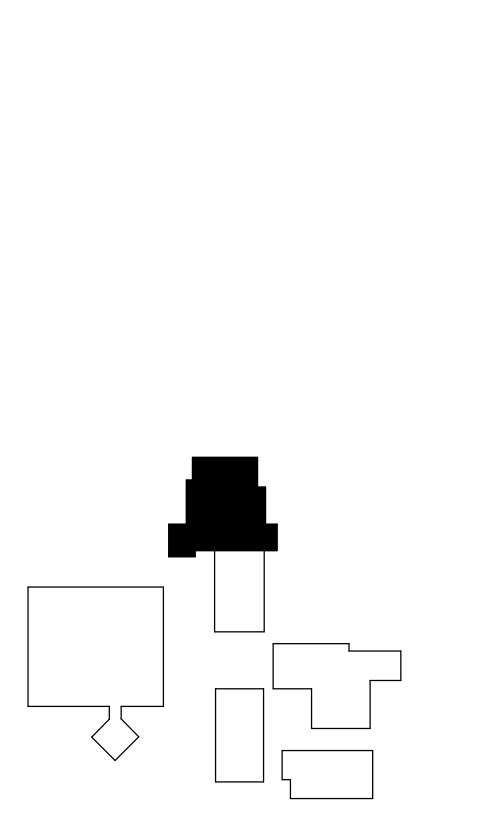
CONSTRUCTION DOCUMENTS  
3/29/24

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Smith Sinnett Architecture, P.A. 2024  
THE DRAWINGS IS/ARE INTENDED TO BE PRINTED ON A 30" X 42" SHEET

**ONSLOW COUNTY SCHOOLS**  
**NORTHWOODS PARK MIDDLE SCHOOL**  
**ADDITION & RENOVATION**  
904 SIOUX DR, JACKSONVILLE, NC 28540

B 03/29/24 ADDENDUM 2

ID	DATE	DESCRIPTION



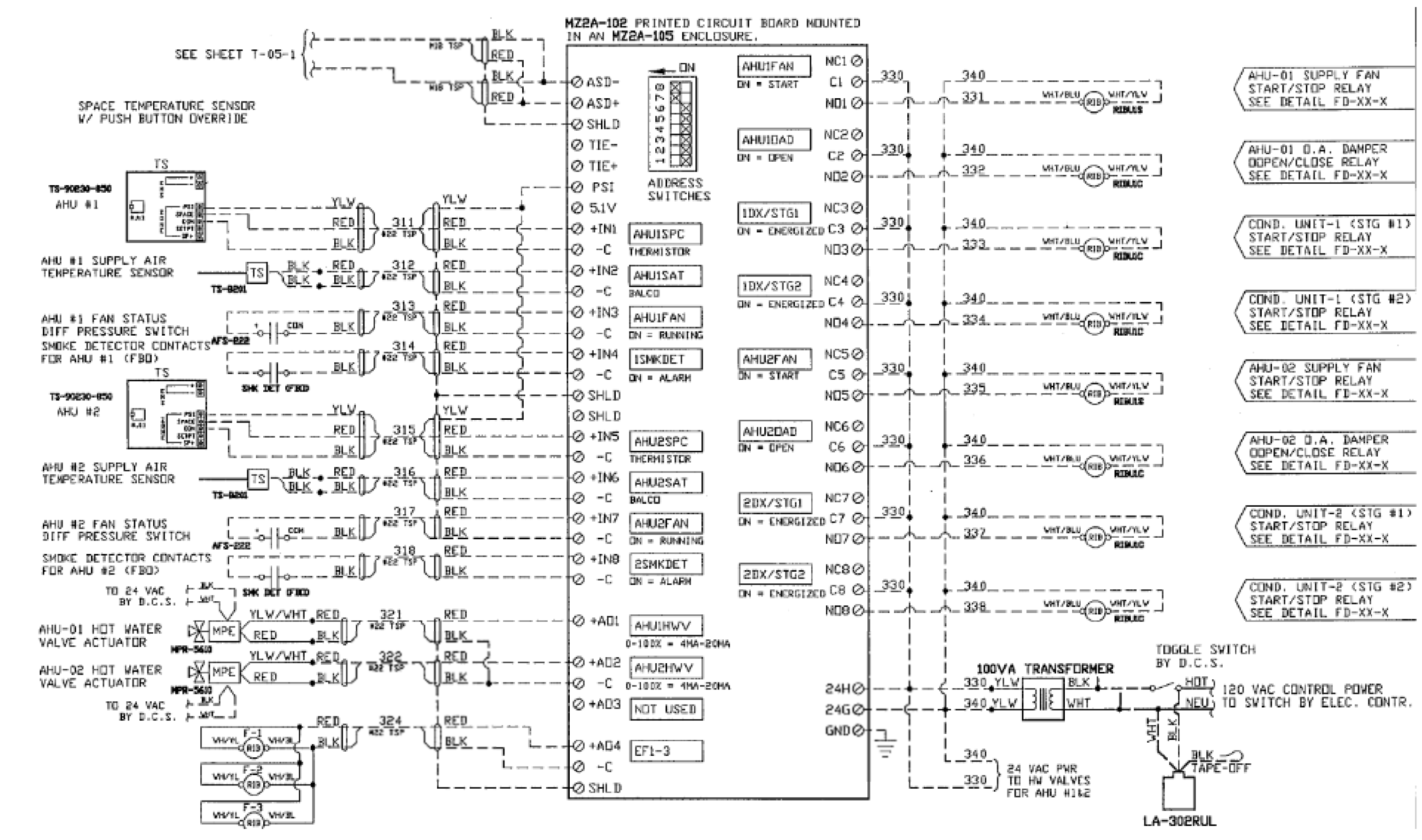
KEY PLAN: NO SCALE

DRAWN BY: JPT  
CHECKED BY: JTB

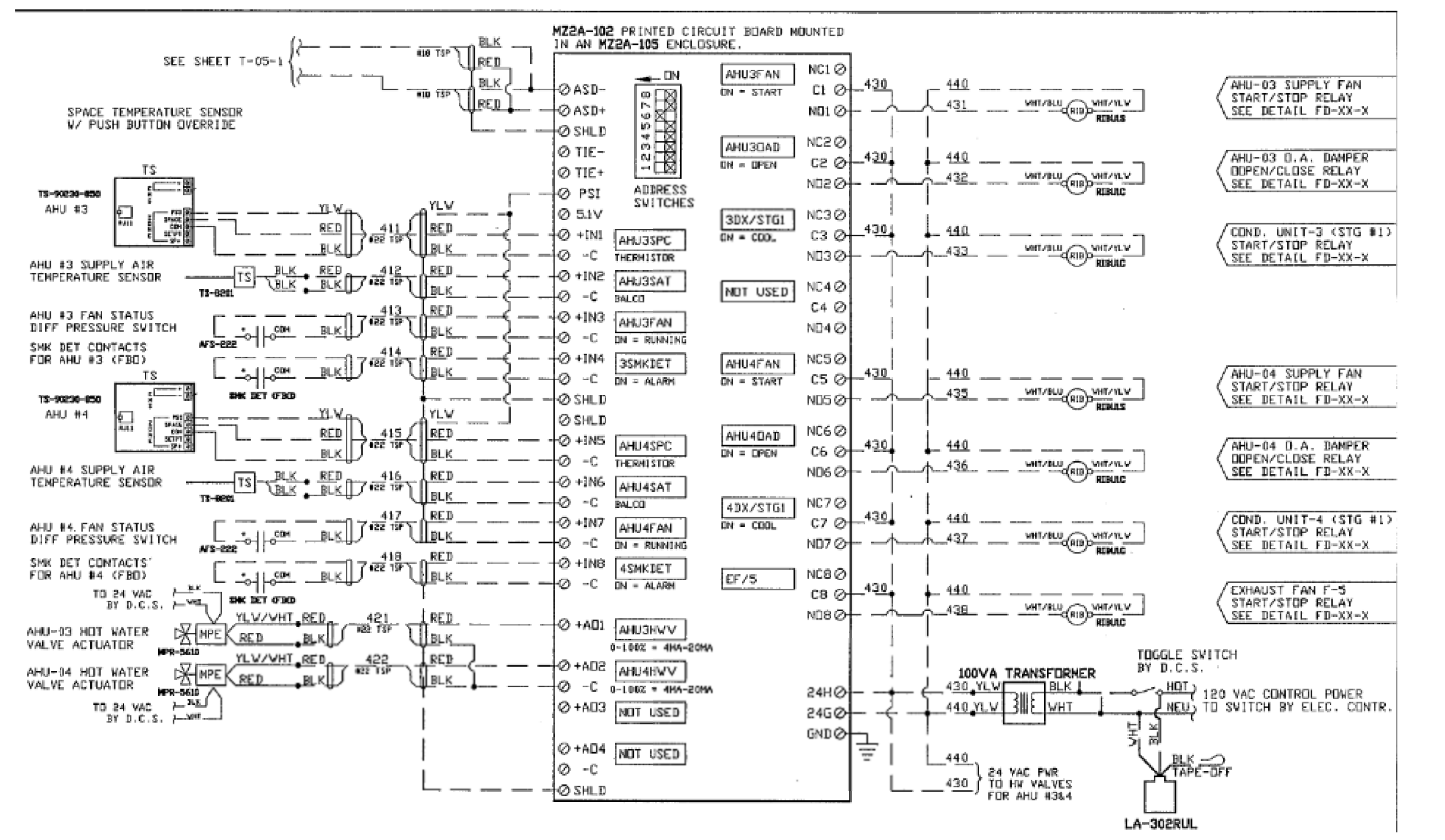
LIGHTING PLAN - GYM ADDITION

Autodesk Docs: 02/2023/05: Northwoods Park Middle Add-Ren(2014 Northwoods Park MS\_MEP\_R22.rvt 3/29/24 8:46:15 AM

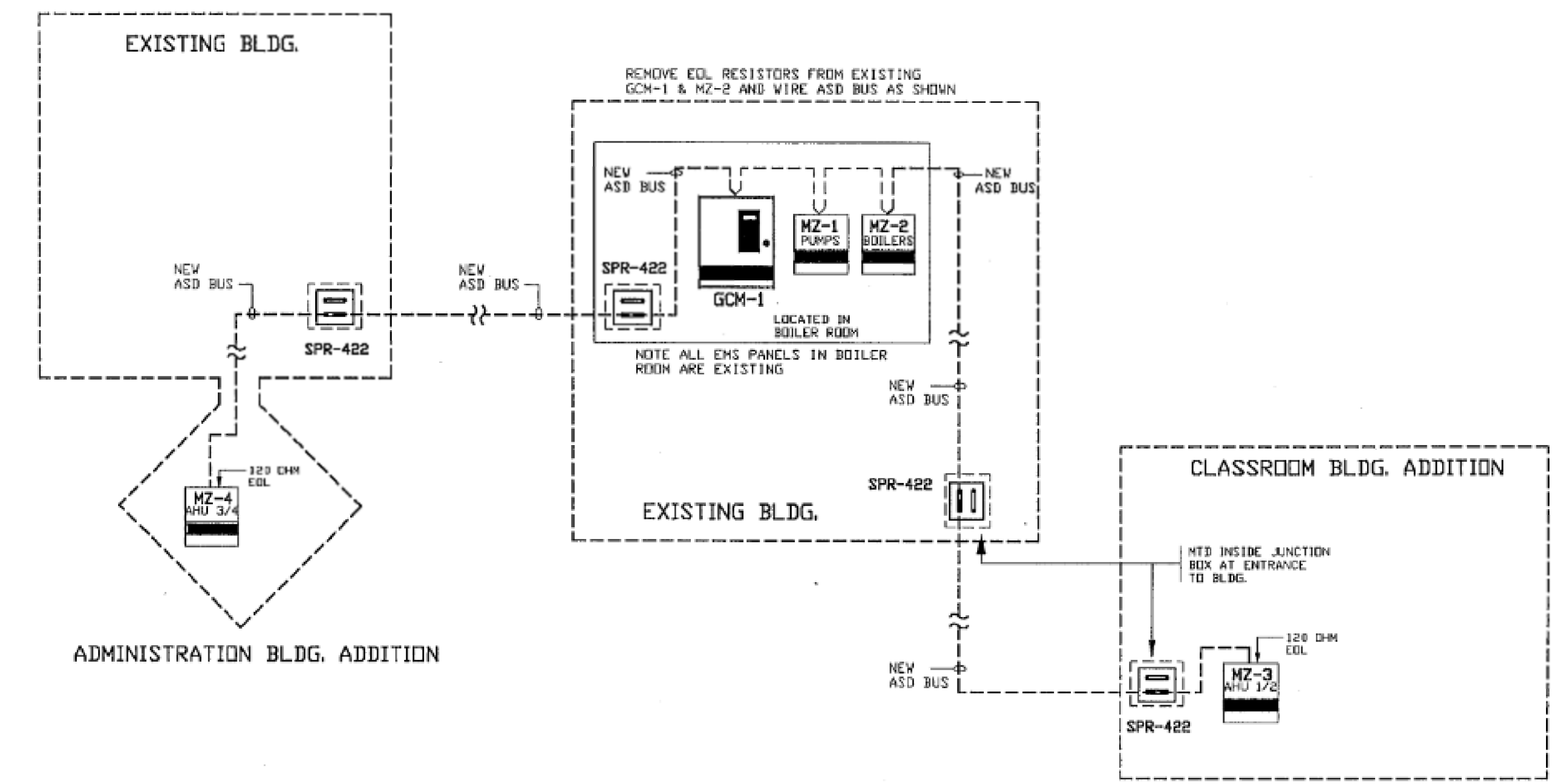




1 EXISTING AHU-1 AND AHU-2 WIRING DIAGRAM  
NO SCALE



2 EXISTING AHU-3 AND AHU-4 WIRING DIAGRAM  
NO SCALE



3 EXISTING BUILDING ENERGY MANAGEMENT SYSTEM ARCHITECTURE  
NO SCALE

- GENERAL NOTES:**
- THE EXISTING CONTROLS FOR THE SYSTEMS ON THIS PLAN SHALL BE UPGRADED AND INCORPORATED ONTO THE NEW BUILDING ENERGY MANAGEMENT SYSTEM.
  - PROVIDE ALL NECESSARY CONTROLLERS, PANELS, DEVICES, RELAYS, SWITCHES AND GRAPHICS REQUIRED TO ENSURE A FULLY OPERATIONAL SYSTEM PER THE EXISTING SEQUENCE OF OPERATIONS.

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Smith Sinnett Architecture, P.A. 2024

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ID	DATE	DESCRIPTION
B	03/29/2024	ADDENDUM 2

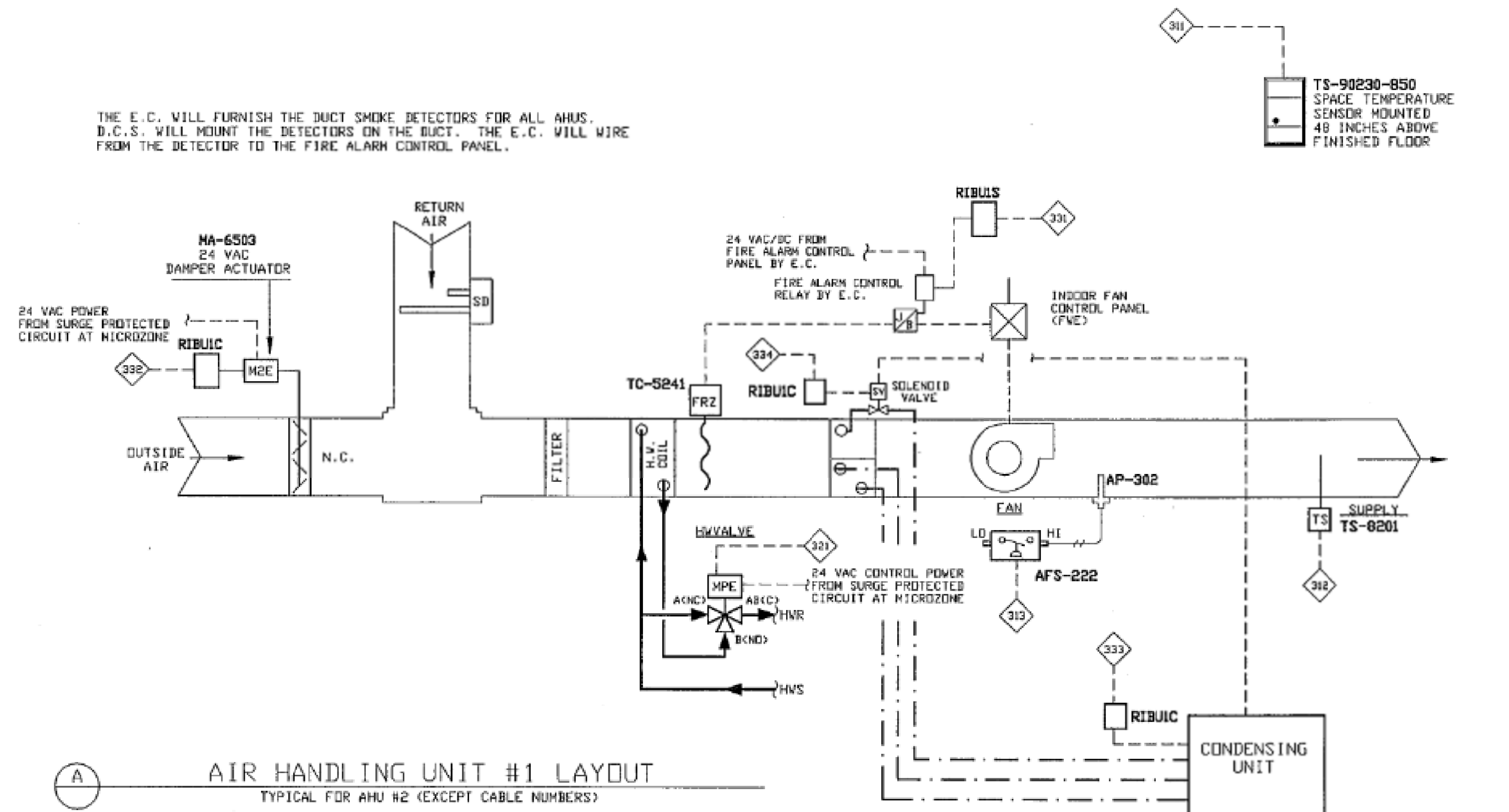
DRAWN BY: TLH  
CHECKED BY: SWC

**EXISTING CONTROLS - ALTERNATE 8**

2022035 11 MARCH 2024

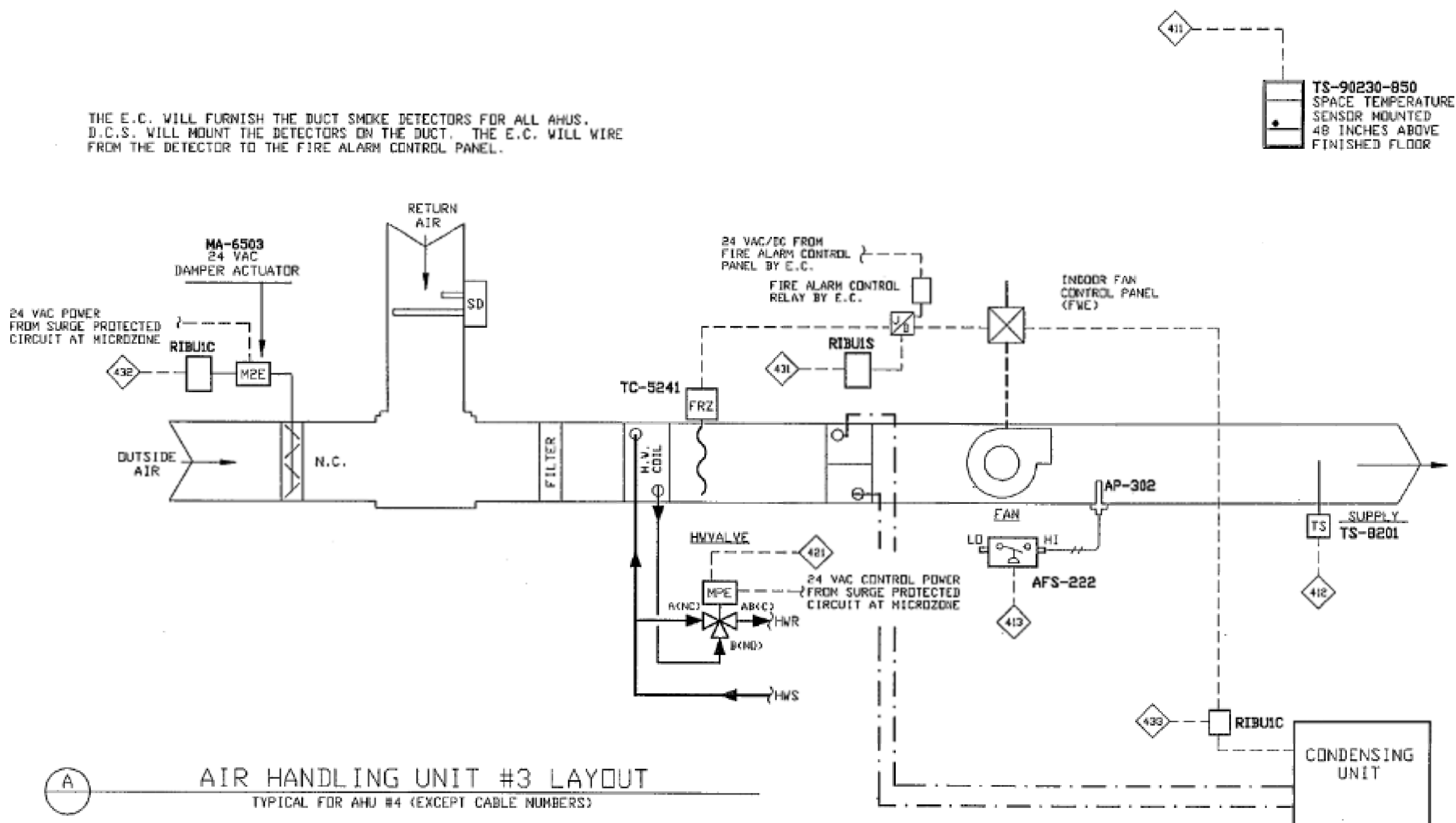
**M4-04**

THE E.C.S. WILL FURNISH THE DUCT SMOKE DETECTORS FOR ALL AHUS. D.C.S. WILL MOUNT THE DETECTORS ON THE DUCT. THE E.C. WILL WIRE FROM THE DETECTOR TO THE FIRE ALARM CONTROL PANEL.



AIR HANDLING UNIT #1 LAYOUT  
TYPICAL FOR AHU #2 (EXCEPT CABLE NUMBERS)

THE E.C.S. WILL FURNISH THE DUCT SMOKE DETECTORS FOR ALL AHUS. D.C.S. WILL MOUNT THE DETECTORS ON THE DUCT. THE E.C. WILL WIRE FROM THE DETECTOR TO THE FIRE ALARM CONTROL PANEL.



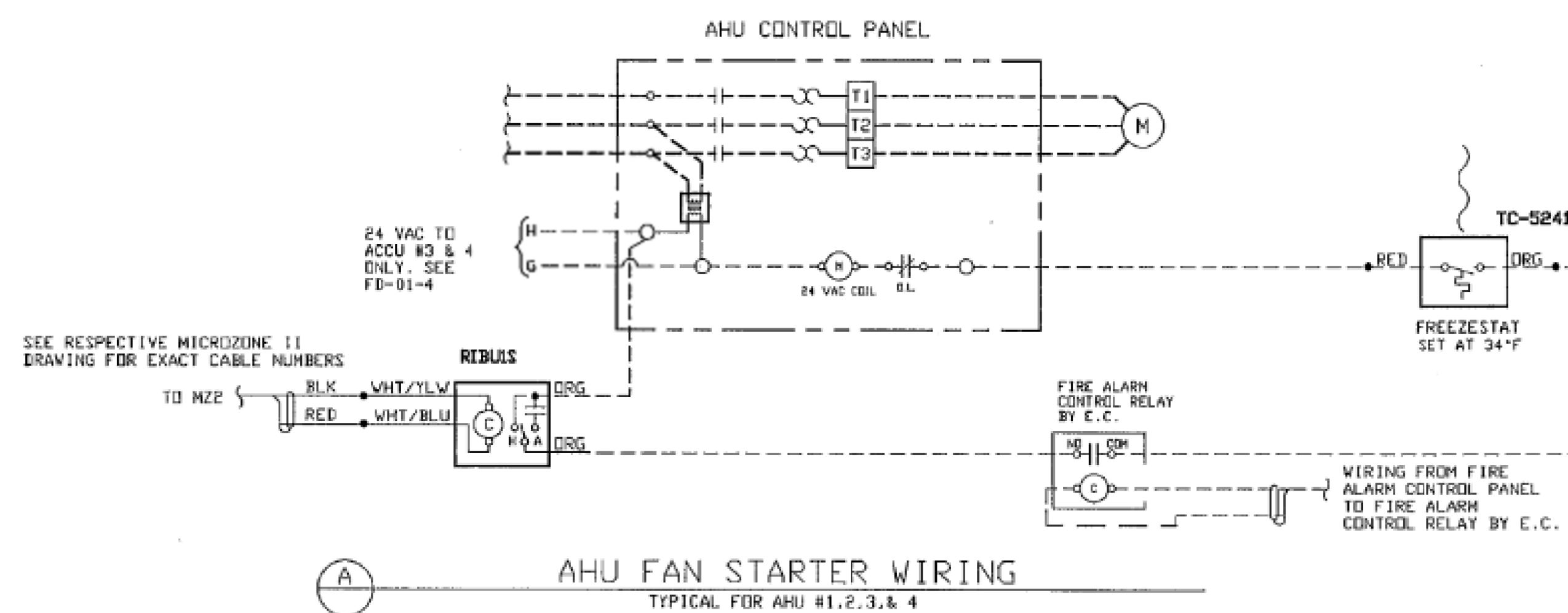
AIR HANDLING UNIT #3 LAYOUT  
TYPICAL FOR AHU #4 (EXCEPT CABLE NUMBERS)

**SEQUENCE OF OPERATION:**

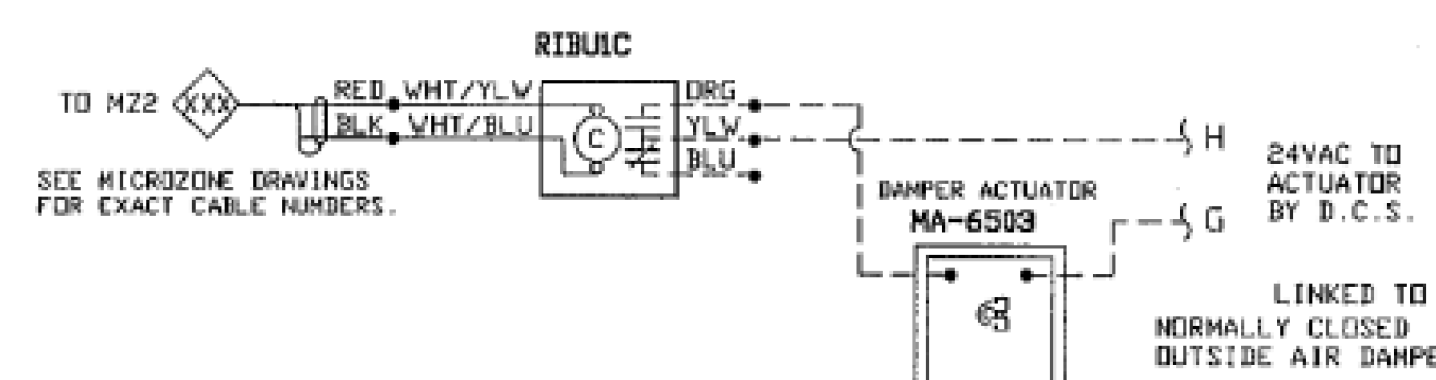
- 1) The BAS will optimally index Air Handling Units #1, 2, 3, & 4 on/off based on a daily occupancy schedule. Override of each A.H. Unit will be provided by a push button at the respective temperature sensor for up to two hours.
- 2) Smoke detectors located in the return air streams will signal the building fire alarm system upon sensing particles of smoke. All Air Handling Units will shut down on a signal from the fire alarm system.

**TYPICAL AIR HANDLING UNIT CONTROL**

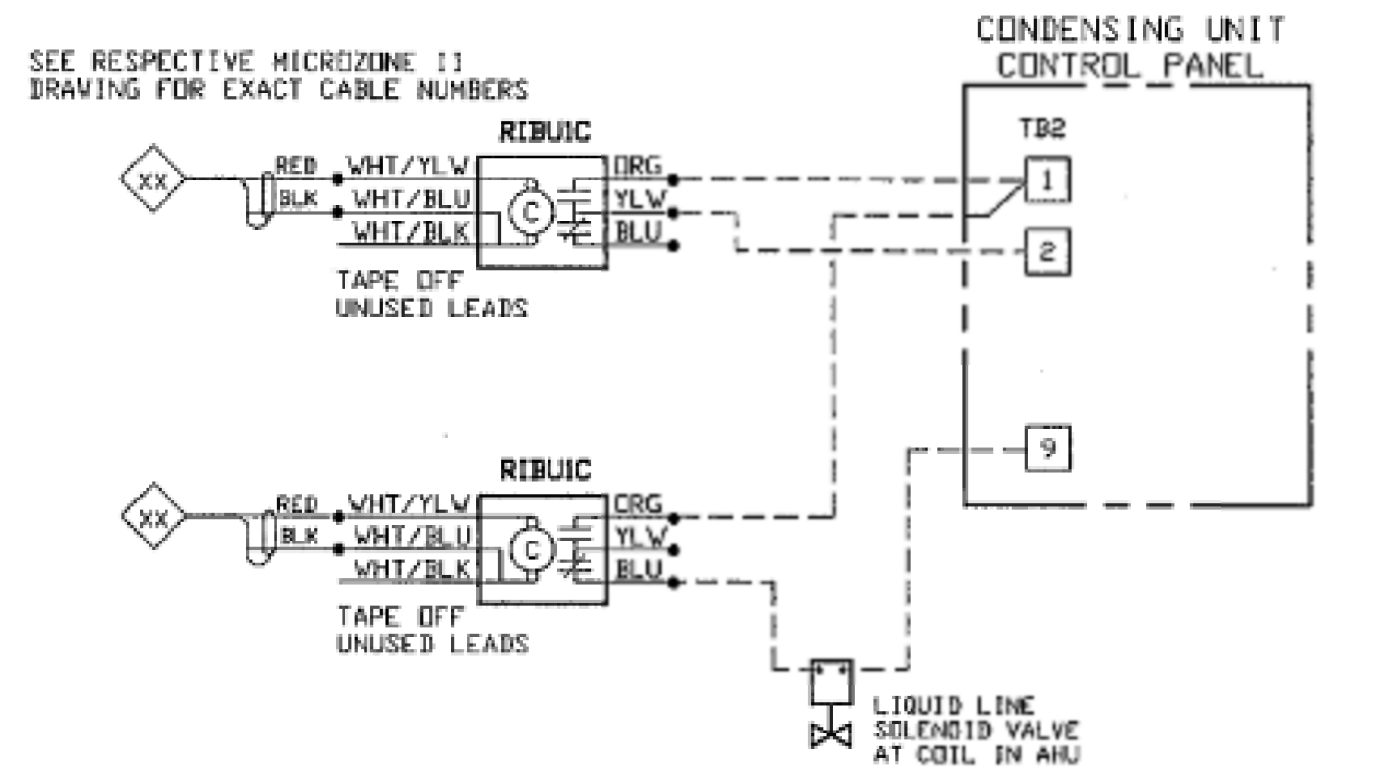
- 1) During occupied times, the Air Handling Unit fan operates continuously.
- 2) The outside air damper opens to a minimum when the air handling unit fan operates during occupied times.
- 3) During the Heating Mode of operation, on a drop in space below setpoint, heat will be generated by modulating a three-way hot water valve open as required to maintain space setpoint. The reverse will occur on a rise in temperature above setpoint.
- 4) During the Cooling Mode of operation, on a rise in space below setpoint, cooling will be generated from the air cooled condensing unit.
- 5) The outside air damper will remain closed when the ahv fan operates during unoccupied times and morning warm-up.
- 6) The space temperature will be monitored. The EMS will generate an alarm if the limit is exceeded.
- 7) The supply air temperature will be monitored. The EMS will generate an alarm if the limit is exceeded.
- 8) If the air handling unit fan fails to run when commanded, the EMS will generate an alarm.
- 8) The return air smoke detector will be monitored. The EMS will generate an alarm if it changes state.



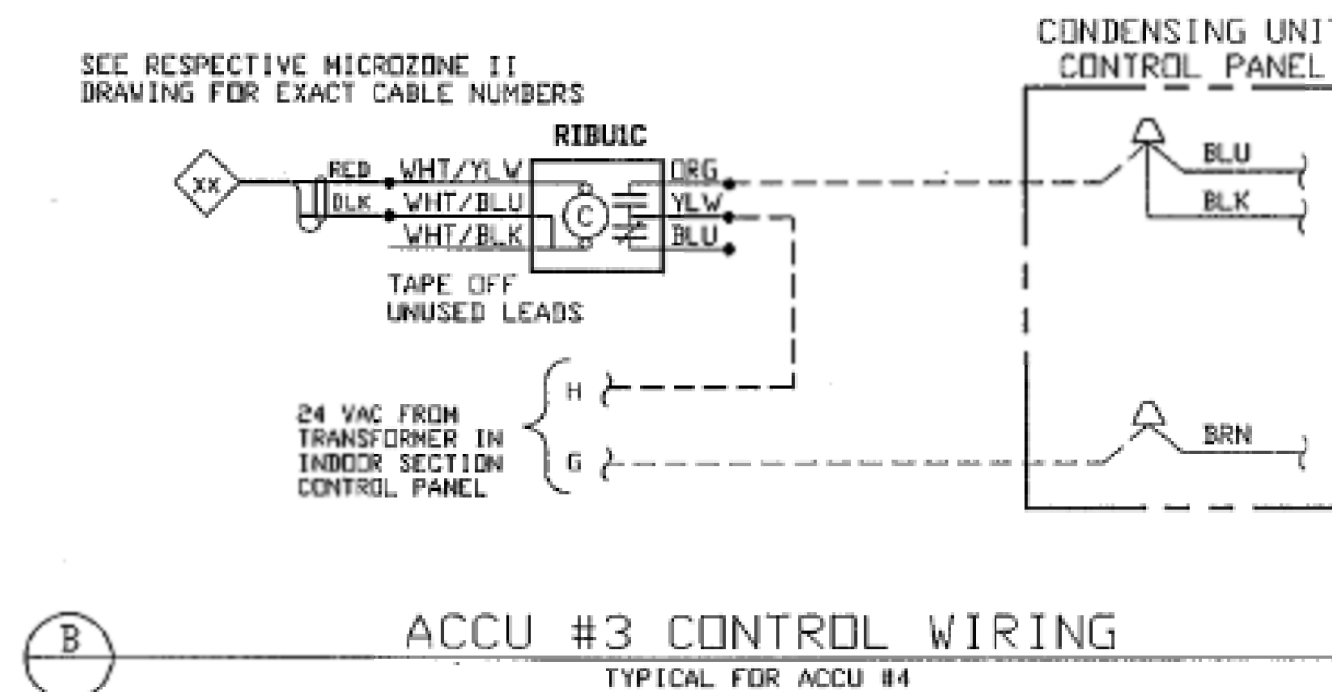
AHU FAN STARTER WIRING  
TYPICAL FOR AHU #1, 2, 3, & 4



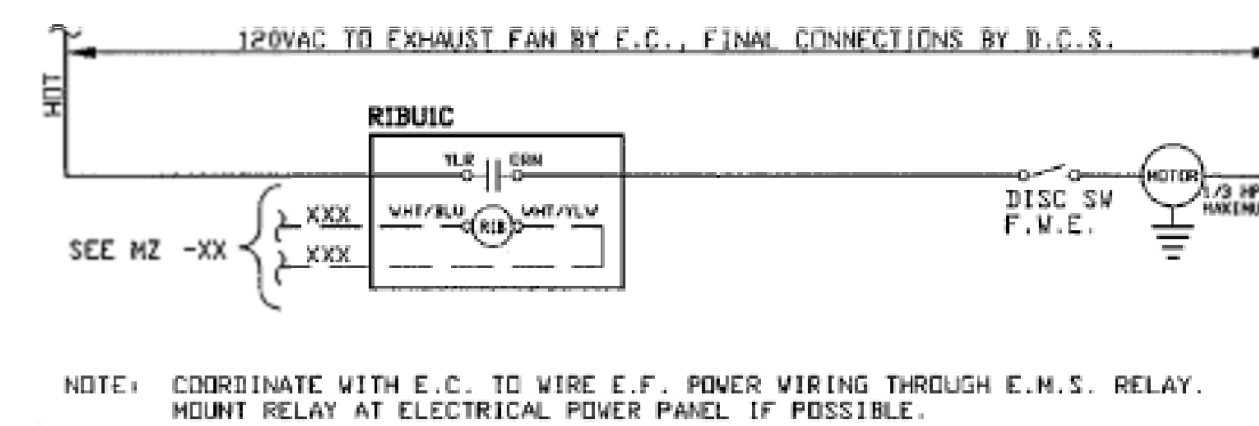
TYPICAL O.A. DAMPER ACTUATOR WIRING  
TYP FOR A.H.U. #1, 2, 3, & 4 (4 TOTAL)



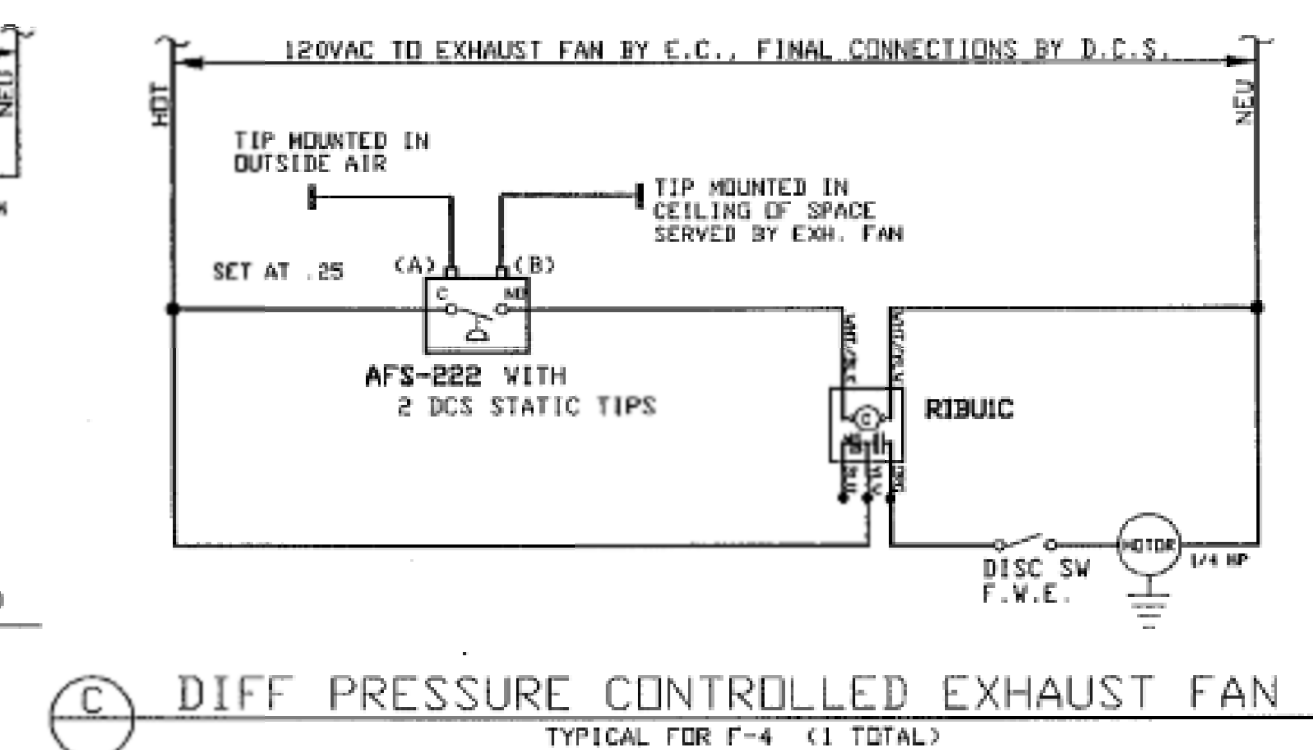
ACCU #1 CONTROL WIRING  
TYPICAL FOR ACCU #2



ACCU #3 CONTROL WIRING  
TYPICAL FOR ACCU #4



TYP. EMS EXHAUST FAN (1/3 H.P. MAXIMUM)  
TYPICAL FOR F-1, F-2, F-3 & F-5 (4 TOTAL)



DIFF PRESSURE CONTROLLED EXHAUST FAN  
TYPICAL FOR F-4 (1 TOTAL)

**SEQUENCE OF OPERATION: (continued)**

- EXHAUST FANS F-1, F-2, F-3 & F-5**
- 1) Exhaust Fans (F-1, 2, 3, & 5) will be controlled by the EMS to run when their respective zones are in occupied mode.
- EXHAUST FANS HF-4**
- 1) Exh. Fan (F-4) will be controlled by a differential switch and will start fan (F-4) on rise in differential pressure above .25 inches w.c.

**GENERAL NOTES:**

- 1) THE EXISTING CONTROLS FOR THE SYSTEMS ON THIS PLAN SHALL BE UPGRADED AND INCORPORATED ONTO THE NEW BUILDING ENERGY MANAGEMENT SYSTEM.
- 2) PROVIDE ALL NECESSARY CONTROLLERS, PANELS, DEVICES, RELAYS, SWITCHES AND GRAPHICS REQUIRED TO ENSURE A FULLY OPERATIONAL SYSTEM PER THE EXISTING SEQUENCE OF OPERATIONS.

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CONSTRUCTION DOCUMENTS

3/29/24

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Smith Sinnett Architecture, P.A. 2024

THE DRAWINGS FORMED TO BE PRINTED ON A 36" X 48" SHEET

**ONSLOW COUNTY SCHOOLS**  
**NORTHWOODS PARK MIDDLE SCHOOL**  
**ADDITION & RENOVATION**  
904 SIOUX DR, JACKSONVILLE, NC 28540

B 03/29/2024 ADDENDUM 2

ID	DATE	DESCRIPTION

DRAWN BY: TLH  
CHECKED BY: SWC

**EXISTING CONTROLS - ALTERNATE 8**

2022035 11 MARCH 2024

**M4-03**



**RATED WALLS LEGEND**

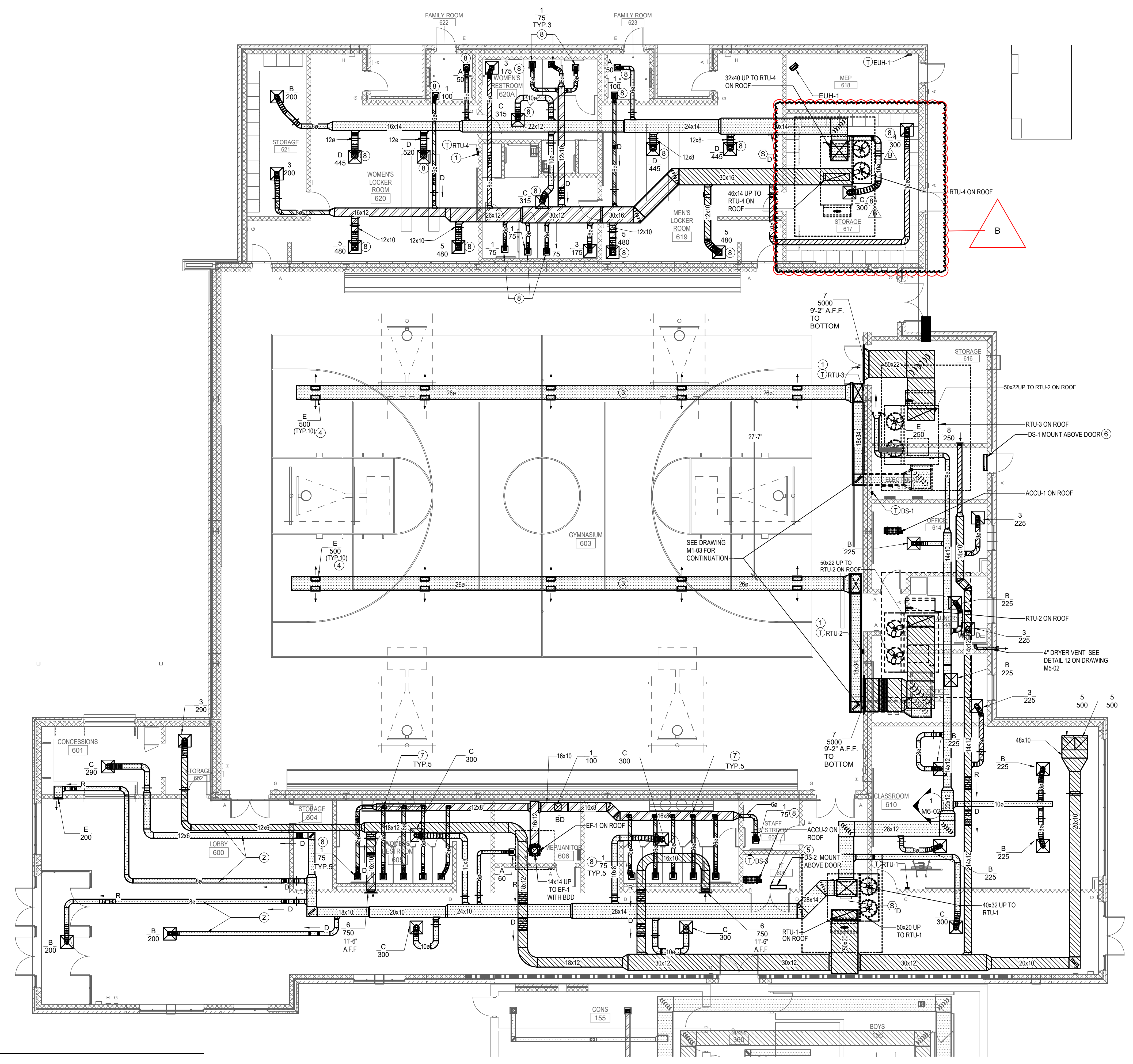
- 1HR RATED
- 2HR RATED
- 3HR RATED

**GENERAL NOTES:**

- A. ALL DUCT DIMENSIONS INDICATED ARE INSIDE CLEAR.
- B. ALL EXTERIOR DUCT WORK TO BE INSULATED AND COVERED WITH WEATHER PROOF ALUMINUM JACKET. SEE SPECIFICATIONS.
- C. EXPOSED DUCTWORK IN GYMNASIUM AND LOBBY SHALL BE DOUBLE WALL DUCTWORK AND DIFFUSERS SHALL HAVE PAINT GRIP FINISH FOR FIELD PAINTING. COORDINATE WITH ARCHITECTURAL RCP
- D. AT THE COMPLETION OF THE PROJECT THE CONTRACTOR SHALL PERFORM A FINAL TEST, ADJUST AND BALANCE (TAB) REPORT.
- E. PRIOR TO INSTALLING DUCTWORK IN THE GYMNASIUM, COORDINATE FINAL LOCATIONS WITH APPROVED TRUSS PLANS.

**KEYNOTES:**

- 1 PROVIDE HEAVY DUTY CLEAR ACRYLIC LOCKABLE COVER OVER THERMOSTAT.
- 2 COORDINATE LOCATION OF DUCTWORK ABOVE CEILING IN LOBBY 601 WITH LIGHTS AND CEILING DEVICES.
- 3 COORDINATE DUCTWORK AND DIFFUSER WITH APPROVED SUBMITTED STRUCTURAL PLANS PRIOR TO INSTALLATION
- 4 INSTALL DIFFUSERS IN THE 4 AND 8 O' CLOCK POSITIONS ON DUCTWORK.
- 5 PROVIDE 3/4" CONDENSATE PIPING FROM DS-2 AND ROUTE TO MOP SINK IN ROOM 606.
- 6 PROVIDE 3/4" CONDENSATE PIPING FROM DS-1 DROP DOWN WALL TO 6" A.F.F. AND RUN TO OUTDOORS TERMINATE AT SPLASH BLOCK
- 7 TAP OFF TOP OF EXHAUST MAIN AND RUN BRANCH DUCT UP IN OPEN TRUSS SPACE.
- 8 PROVIDE MANUFACTURERS OPPOSED BLADE DAMPER BEHIND DIFFUSER / GRILLE FOR AIRFLOW BALANCING.



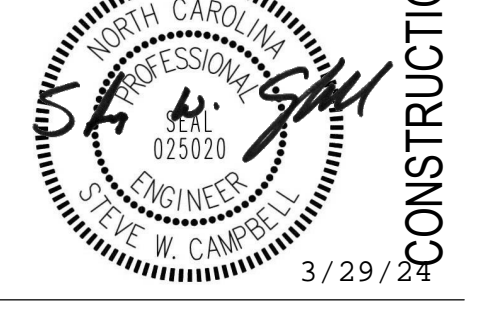
1 LEVEL 1 DUCTWORK - Gym  
1/8" = 1'-0"



T 919 781 8582  
F 919 781 3979  
4600 Lake Boone Trail  
Suite 205  
Raleigh, NC 27607  
info@smithsinnett.com



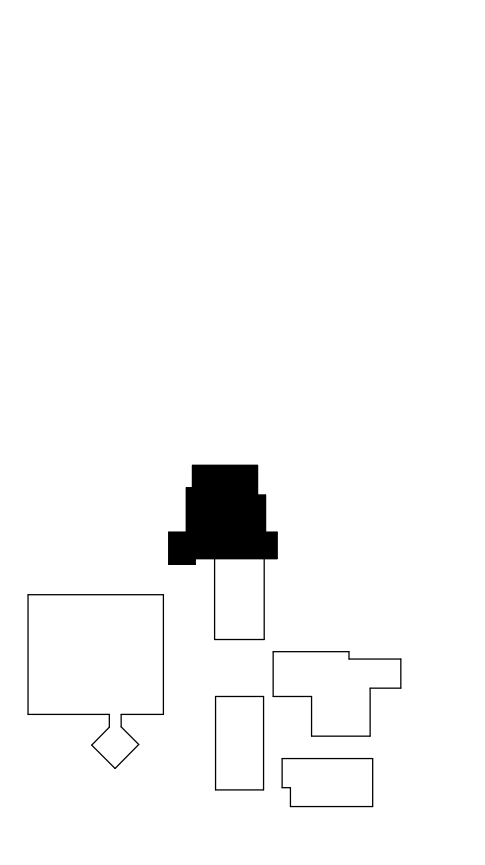
5101 Poplarwood Court, Suite 500  
Raleigh, North Carolina 27604  
919.790.9999  
License # C 0185  
PROJECT# 23014



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Smith Sinnett Architecture, P.A. 2024  
THE DRAWING IS FORWARDED TO BE PRINTED ON A 30" X 42" SHEET

**ONSLAW COUNTY SCHOOLS  
NORTHWOODS PARK MIDDLE SCHOOL  
ADDITION & RENOVATION  
904 SIOUX DR, JACKSONVILLE, NC 28540**

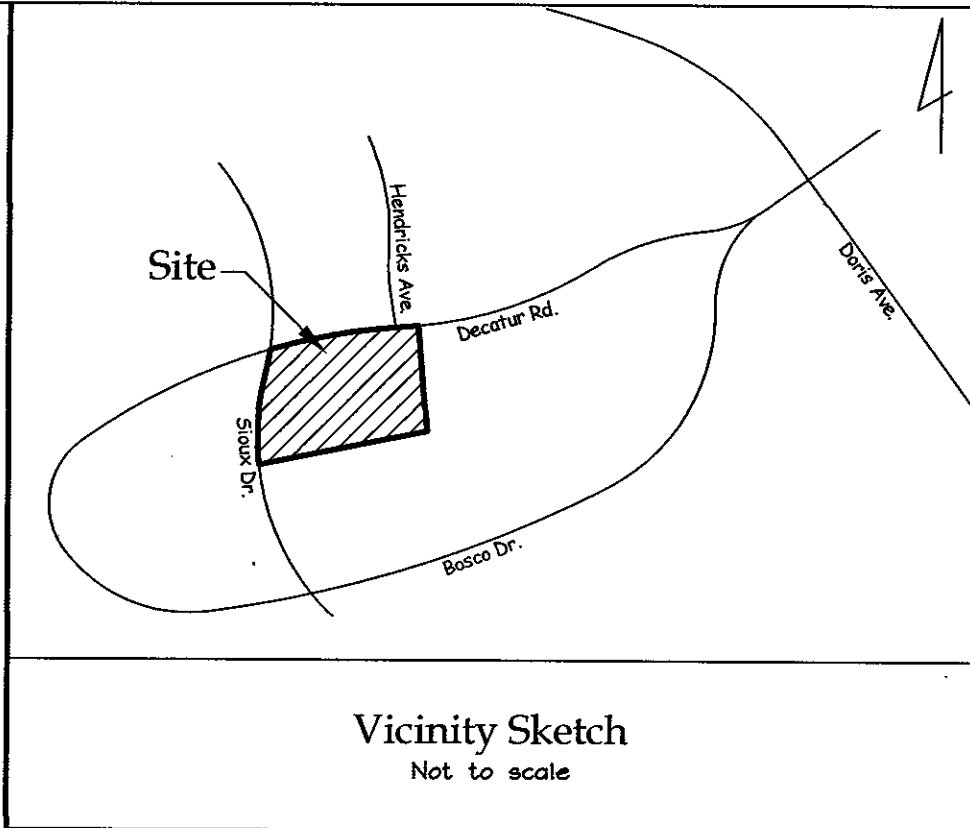
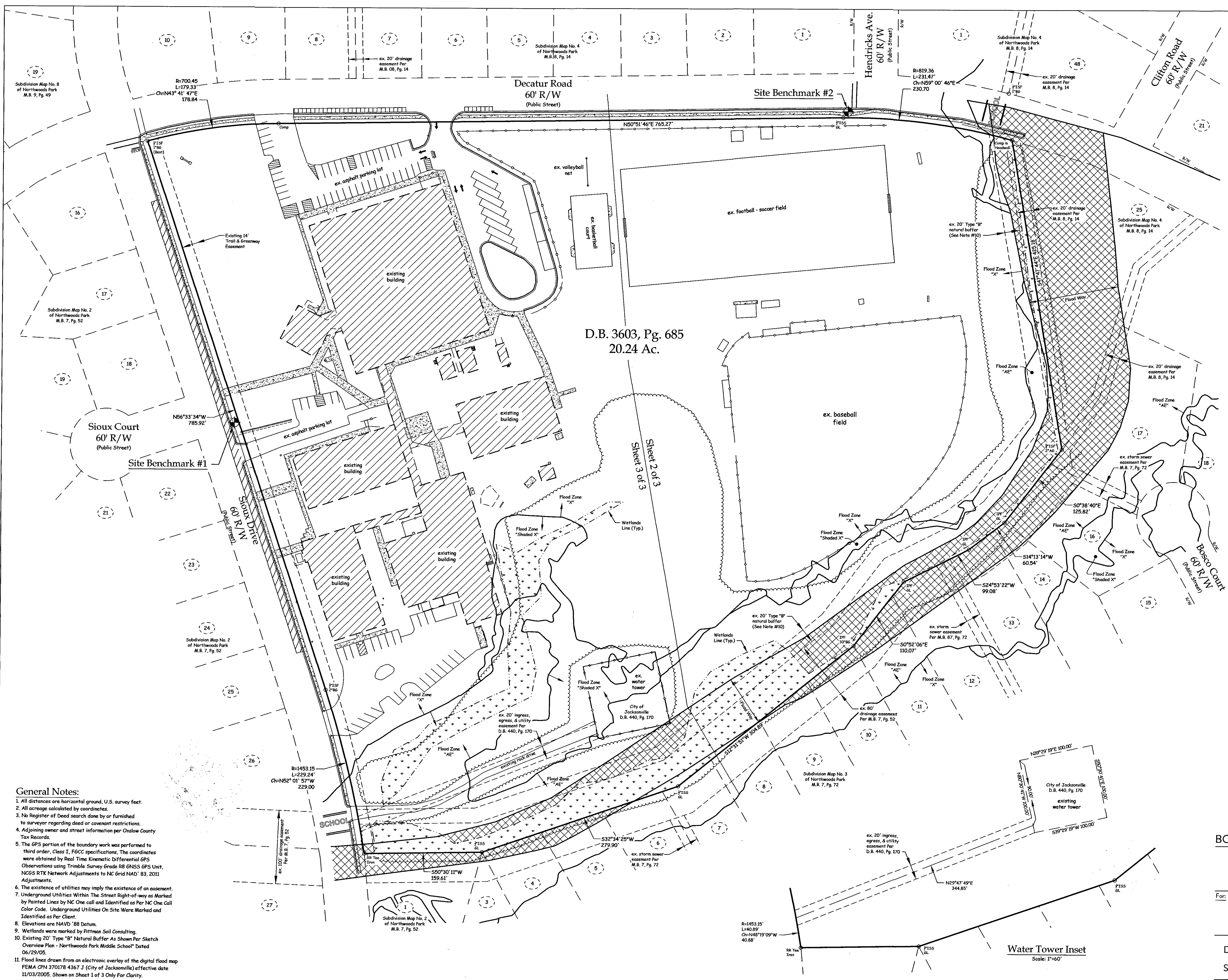
ID	DATE	DESCRIPTION
B	03/29/2024	ADDENDUM 2



KEY PLAN: NO SCALE  
DRAWN BY: JAV  
CHECKED BY: SWC  
DUCTWORK PLAN - GYM ADDITION

Altodesk Docs: /7022035: Northwoods Park Middle Add-Ren(2014 Northwoods Park MS\_Gym\_MEP\_R22.rvt 3/29/24 2:13:57 PM





- Site Benchmark #1**  
 Fire Hydrant, The "O" in Open  
 Elev. 23.35 (NAVD '88 Datum)  
 N = 375,622.51  
 E = 2,468,729.73
- Site Benchmark #2**  
 Fire Hydrant Bolt Closest to "SR62"  
 Elev. 25.66 (NAVD '88 Datum)  
 N = 376,471.35  
 E = 2,469,115.12
- Master Legend:**
- Ac - Acres
  - a/c - Air Condition
  - bfp - Back Flow Preventer
  - BG - Below Ground
  - C - Centerline
  - C&G - Curb and Gutter
  - Ch - Chord
  - Comp - Computed Point
  - conc. - Concrete
  - D.B. - Dead Book
  - E - Easting
  - elec. - Electric
  - esp - Edge of Pavement
  - ex. - Existing
  - excatv - Existing Cable TV Box
  - excb - Existing Catch Basin
  - excc - Existing Cleanout
  - exeb - Existing Electric Box
  - exfh - Existing Fire Hydrant
  - exfab - Existing Fiber Optic Box
  - exfap - Existing Fiber Optic Post
  - exgv - Gate Valve
  - exgw - Guy Wire
  - exicv - Existing Irrigation Control Valve
  - exlp - Existing Light Pole
  - expb - Existing Phone Box
  - expp - Existing Power Pole
  - exsmh - Existing Sanitary Sewer Manhole
  - exug - Existing Underground Box
  - exwm - Existing Water Meter
  - exyi - Existing Yard Inlet
  - inv. - Invert
  - ISF - Iron Stake Found
  - L - Arc Length
  - M.B. - Map Book
  - N - Northing
  - Pg. - Page
  - R - Radius
  - rcp - Reinforced Concrete Pipe
  - RR - Railroad Tie Iron
  - R/W - Right-of-way
  - STOP - Stop Bar
  - STOP - Stop Sign
  - Traffic Flow Arrow - Traffic Flow Arrow
  - Ditch - Ditch
  - Existing Fence Line - Existing Fence Line
  - Existing Water Line - Existing Water Line
  - ohpl - Overhead Power Line
  - Underground Communications Line - Underground Communications Line
  - Underground Electric Line - Underground Electric Line
  - GAS - Underground Gas Line

D.B. 3603, Pg. 685  
 20.24 Ac.

- General Notes:**
1. All distances are horizontal ground, U.S. survey feet.
  2. All acreage calculated by coordinates.
  3. No Register of Deed search done by or furnished to surveyor regarding deed or covenant restrictions.
  4. Adjoining owner and street information per Onslow County Tax Records.
  5. The GPS portion of the boundary work was performed to third order, Class I, FGCC specifications. The coordinates were obtained by Real Time Kinematic Differential GPS Observations using Trimble Survey Grade R8 GNSS GPS Unit, NCGS RTK Network Adjustments to NC Grid NAD 83, 2011 Adjustments.
  6. The existence of utilities may imply the existence of an easement.
  7. Underground Utilities Within The Street Right-of-way as Marked by Painted Lines by NC One Call and Identified as per NC One Call Color Code. Underground Utilities On Site Were Marked and Identified as per Client.
  8. Elevations are NAVD '88 Datum.
  9. Wetlands were marked by Pittman Soil Consulting.
  10. Existing 20' Type "B" Natural Buffer As Shown Per Sketch Overview Plan - Northwoods Park Middle School' Dated 06/29/05.
  11. Flood lines drawn from an electronic overlay of the digital flood map FEMA CPN 370178 4367 J (City of Jacksonville) effective date 11/03/2005. Shown on Sheet 1 of 3 Only For Clarity.

I certify that this map was drawn under my supervision from an actual survey made under my supervision with reference source noted; that the boundaries not surveyed are indicated as dashed / computed from reference source; that this map meets the requirements of the standards of practice for Land Surveying in NC (21NCAC06.1600). Ratio of precision / average positional accuracy is 0.08".

*SJS* Date: 02-20-2023

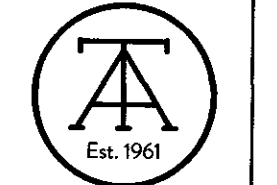


**BOUNDARY & TOPOGRAPHIC SURVEY MAP**  
**NORTHWOOD PARK MIDDLE SCHOOL**  
 910 Sioux Drive  
 Jacksonville Twp., Onslow Co., North Carolina

For: **Onslow County Board of Education**  
 200 Broadhurst Road  
 Jacksonville, North Carolina 28540  
 (910) 455-2211

DATE: 02/20/23  
 SCALE: 1"=60'  
 GRAPHIC SCALE: 1"=60'  
 0 30 60 120 180 FEET

**TIDEWATER ASSOCIATES, INC.**  
 Consulting Engineers - Land Surveyors - Land Planners  
 Jacksonville, North Carolina  
 P.O. Box 976 - 306 New Bridge Street - 28540  
 Phone (910) 455-2414 - www.TidewaterINC.com  
 Firm License Number: F-0108

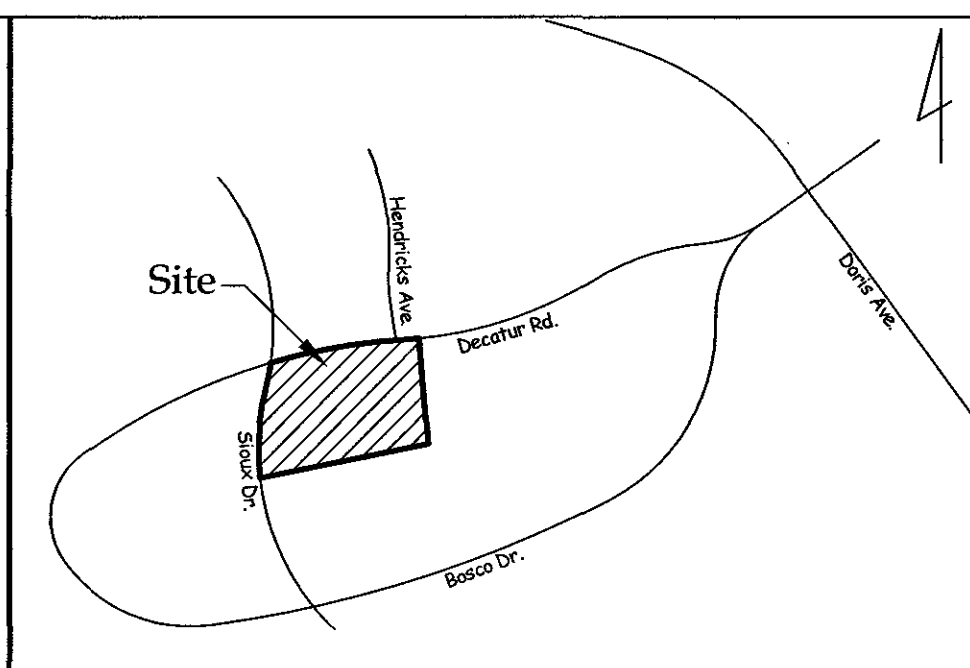


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 Filename: NWPM-ALTA.dwg KHW  
 Job No.: S22110-8239



**Legend:**  
See Sheet 1 of 3

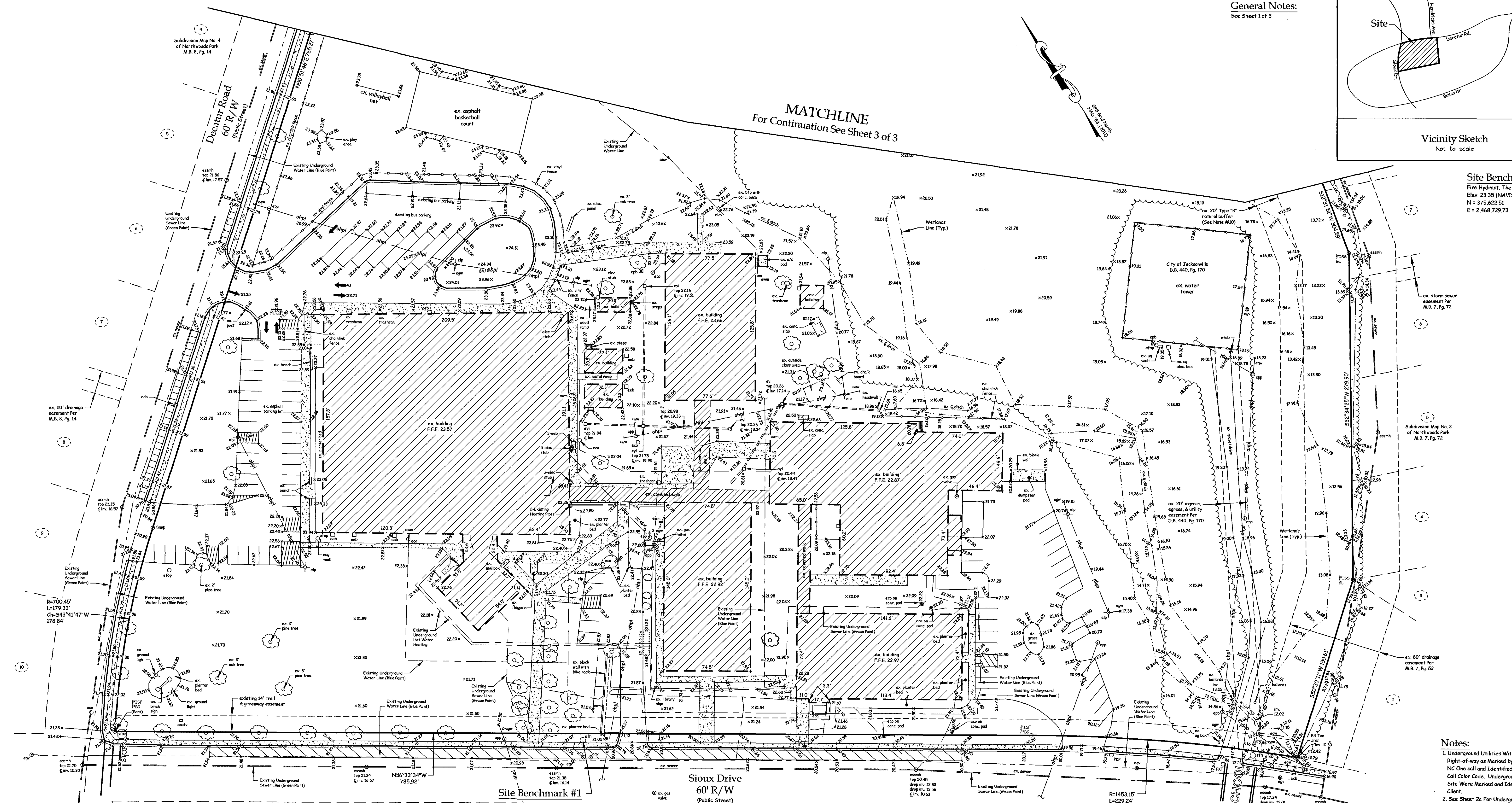
**General Notes:**  
See Sheet 1 of 3



Vicinity Sketch  
Not to scale

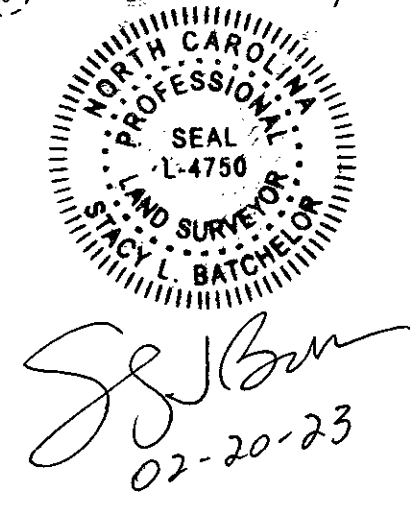
**Site Benchmark #1**  
Fire Hydrant, The "O" in Open  
Elev: 23.35 (NAVD '88 Datum)  
N = 375,622.51  
E = 2,468,729.73

MATCHLINE  
For Continuation See Sheet 3 of 3



**Notes:**

- Underground Utilities Within The Street Right-of-way as Marked by Painted Lines by NC One Call and Identified as Per NC One Call Color Code. Underground Utilities On Site Were Marked and Identified as Per Client.
- See Sheet 2a For Underground Utility Locations



**BOUNDARY & TOPOGRAPHIC SURVEY MAP**  
**NORTHWOOD PARK MIDDLE SCHOOL**  
910 Sioux Drive  
Jacksonville Twp., Onslow Co., North Carolina

For: **Onslow County Board of Education**  
200 Broadhurst Road  
Jacksonville, North Carolina 28540  
(910) 455-2211

DATE: 02/20/23  
SCALE: 1"=40'  
GRAPHIC SCALE: 1"=40'  
0 40 80 120 FEET

**TIDEWATER ASSOCIATES, INC.**  
Consulting Engineers - Land Surveyors - Land Planners  
Jacksonville, North Carolina  
P.O. Box 976 - 306 New Bridge Street - 28540  
Phone (910) 455-2414 - www.tidewaterinc.com  
Firm License Number: F-0108

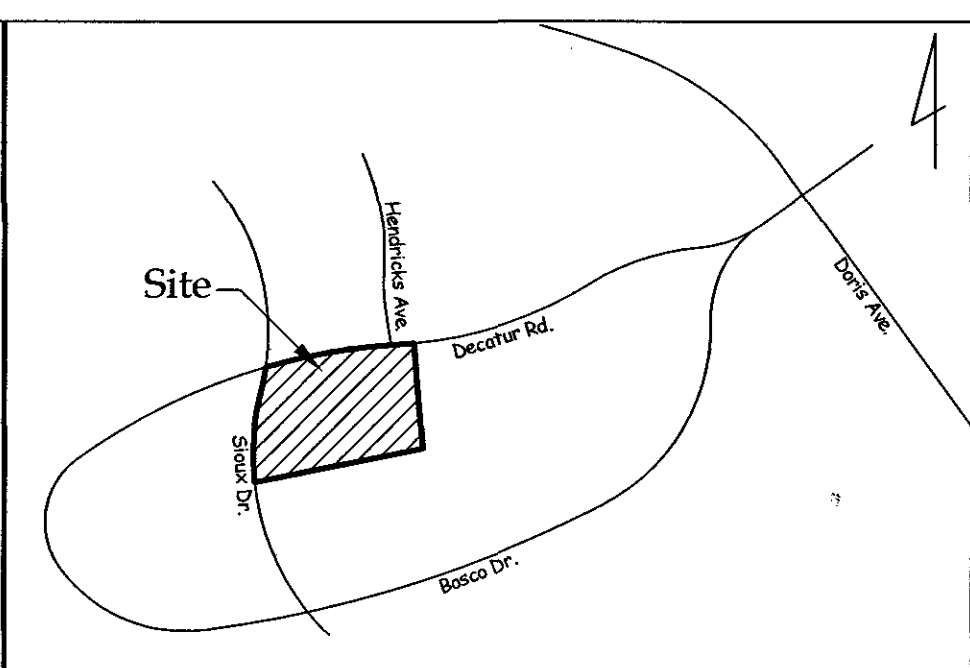


Field Book: Northwoods Pky. #7, Pg. 25-29  
Disk Name: Acad 3152  
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Job No.: S27110-6239

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Legend:  
See Sheet 1 of 3

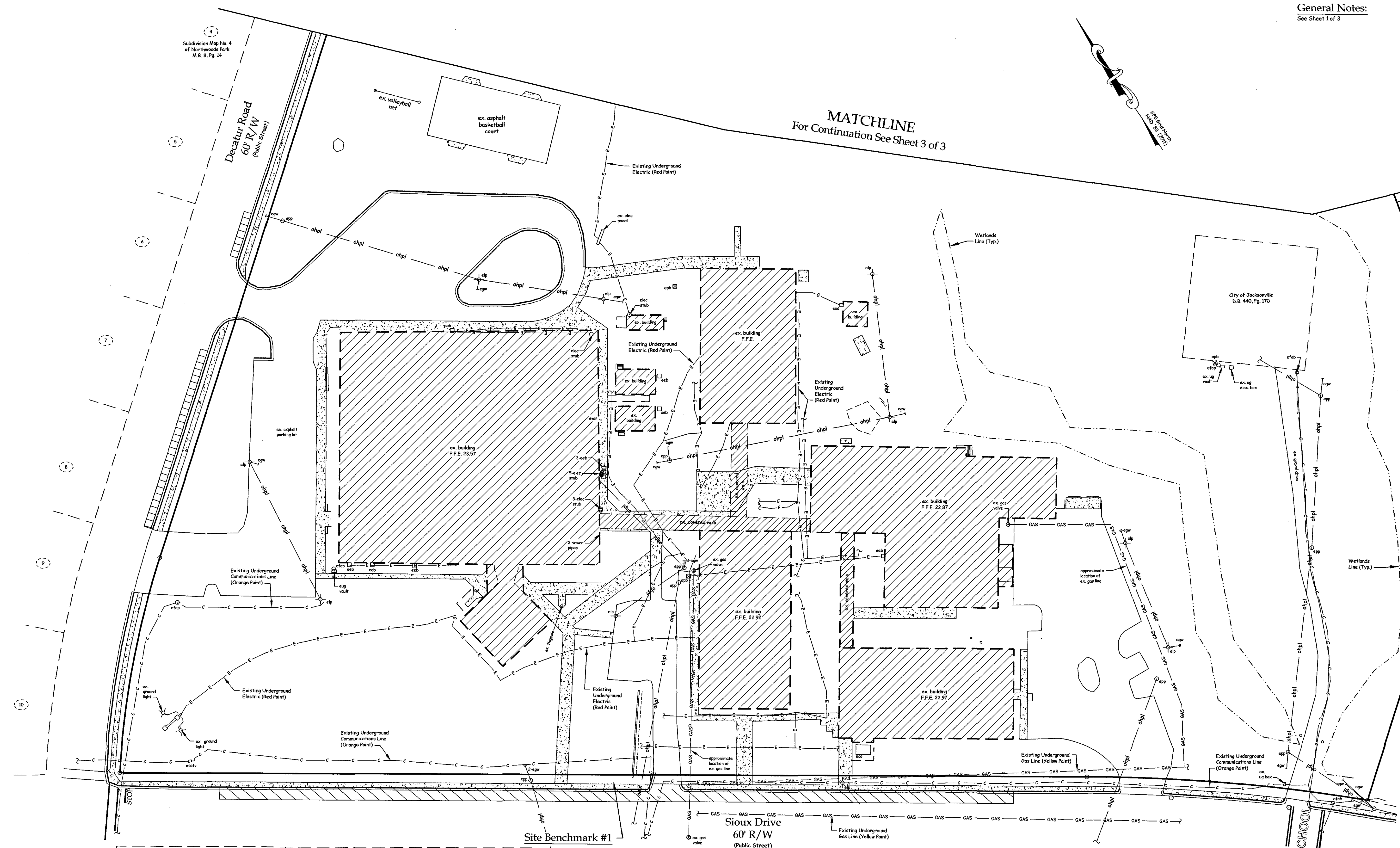
General Notes:  
See Sheet 1 of 3



Vicinity Sketch  
Not to scale

Site Benchmark #1  
Fire Hydrant, The "O" in Open  
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N = 375,622.91  
E = 2,468,729.73

MATCHLINE  
For Continuation See Sheet 3 of 3



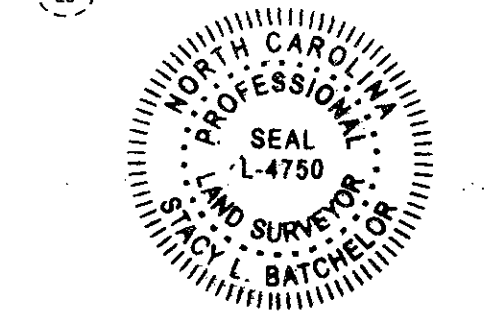
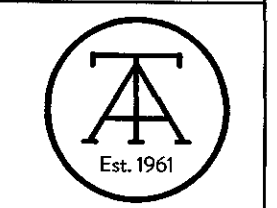
Notes:  
1. Underground Utilities Within The Street  
Right-of-way as Marked by Painted Lines by  
NC One call and Identified as Per NC One  
Call Color Code. Underground Utilities On  
Site Were Marked and Identified as Per  
Client.

BOUNDARY & TOPOGRAPHIC SURVEY MAP  
NORTHWOOD PARK MIDDLE SCHOOL  
910 Sioux Drive  
Jacksonville Twp., Onslow Co., North Carolina

For:  
Onslow County Board of Education  
200 Broadhurst Road  
Jacksonville, North Carolina 28540  
(910) 455-2211

DATE: 02/20/23  
SCALE: 1"=40'  
GRAPHIC SCALE: 1"=40'  
0 40 80 120 FEET

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Jacksonville, North Carolina  
P.O. Box 976 - 306 New Bridge Street - 28540  
Phone (910) 455-2414 - www.tidewater-ENC.com  
Firm License Number: F-0108



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