

ADDENDUM

To the Construction Documents for the:

Project:	Bear Creek Fire Station	Addendum # 01
Owner:	Onslow County	
Owner ID No.:	Bid No. 102-25C	
DKA Project No.:	2324	
Prepared By:	Alexandre Penegre	
Bid Documents Issue Date:		4/1/2025

The date of issuance of this addendum is 4/1/2025. All conditions of the addendum are in effect as of this date. Bidders are hereby informed that the following additions, deletions, changes and/or clarifications supersede and supplement the Contract Documents for the above referenced project.

Each bidder shall be responsible for notifying his subcontractors and/or vendors of the contents of this Addendum. The items included in this Addendum are for all Contractors as the items relate to their respective trades.

From:	Davis Kane Architect
Transmitted to:	Plan Rooms; Known Interested Bidders; Ben Warren; Christina Russell
Total Number of Pages:	xx

RFI's:

1. 012300 Alternates – Alternate A-1 calls out the wrong door numbers.
 - a. Doors were revised to be 127.8, 127.9, 127.10, 127.11, 127.12.
2. Where PEB purlins are shown approximately 4' spacing horizontally. We need more detail for applying rigid insulation, sheetrock and exterior sheathing, there does not appear to be any metal framing in these walls.
 - a. This will be addressed in a future addendum.
3. Drawings F100 and F120 specify the hazard classifications for the building which in turn provides our sprinkler head spacing requirements. Most of the building is classified as Ordinary hazard on Drawing F100 and F120. On Drawing FP200 the sprinkler heads are spaced in the rooms to reflect light hazard spacing not ordinary hazard spacing as required on Drawings F100 and F120. Please provide which drawings to follow when supplying a proposal for this project.
 - a. The hazards shown on F100 and F120 are to be followed. It appears that only the sprinkler head layouts in the dorm rooms contradict the hazard plans. Please refer to revised sprinkler head layout to be included in Addendum 01.
4. Please advise, as to if this job is going to require Hurricane impact Glazing?
 - a. Per Specification 088000 – Glazing, all exterior glass is to meet the specified windborne debris impact resistance rating.
5. Please advise as single storefront doors Mark: [100.1], type: (D) is listed as an Aluminum Door, but the applicable door framing type: (III) is listed as Hollow Metal, believe this is a typo, should be called out as aluminum framing also, please advise?
 - a. Door Schedule on Sheet A700 was revised so that Door 100.1 shall be painted hollow metal.
6. In lieu of batt insulation in the cavity and R-13 CI with a U-Value of .064, can we use R-25 (0.060 U-Value) fabric liner system?
 - a. This will be addressed in a future addendum.

7. The notes and the floor plan call for 3 SS Goose necks. The roof plan M301 and M200 show only 1.
 - a. 3 goose necks are required. M301 revised to show them. Due to where section is cut on M200, they are not shown in on this sheet.
8. Can C-900 be used in lieu of Cast iron for the force main?
 - a. C-900 is not approved. The plans have been revised to clarify 3" PVC material for the force main.
9. Can the below AISC certification for structural steel be deleted. It reduces the number of bidders drastically and increase the cost drastically.

1.7 QUALITY ASSURANCE A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU or is accredited by the IAS Fabricator Inspection Program for Structural Steel (Acceptance Criteria 172)

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

- a. This will be addressed in a future addendum.

Specifications:

1. 011000 – Summary
 - a. Added "CONTRACT TIMES" and "LIQUIDATED DAMAGES" paragraphs.
2. 012300 – Alternates
 - a. Revised Section 3.1, Alternate A-1, so that doors listed are 127.8, 127.9, 127.10, 127.11, 127.12.
3. 089119 – Fixed Louvers
 - a. Revised Section 2.3 to require AMCA 540 and 550 ratings.
4. 333200 – Sewer Pump Station & Force Main
 - a. Replace specification in its entirety.

Drawings:

1. Drawing G002
 - a. Added detail HW-D-0489 to Fire Protection Requirements Table.
2. Drawing G005
 - a. Added UL System No. HW-D-0489.
3. Drawing C500
 - a. Pipe material revised from 3" DIP to 3" PVC.
4. Drawing C501
 - a. Pipe material revised from 3" DIP to 3" PVC.
 - b. Increaser was added for 2" to 3" continuation.
5. Drawing C502
 - a. Pipe material revised from 3" DIP to 3" PVC.
6. Drawing C503
 - a. Pipe material revised from 3" DIP to 3" PVC.
7. Drawing C504
 - a. Pipe material revised from 3" DIP to 3" PVC.
8. Drawing C505
 - a. Pipe material revised from 3" DIP to 3" PVC.
9. Drawing A002
 - a. Interior Partitions Legend – Revised partition type E3 gypsum board to not require abuse-resistance.
 - b. Interior Partitions Legend – Revised A3/A6/D6 drywall to end 6" above ceiling on one side.
 - c. Interior Partitions Legend – Added partition types F3 and F6.
 - d. Interior Partitions Legend – Removed partition Types B12 and C12.

10. Drawing A100
 - a. Revised 12" CMU to 8" CMU between Apparatus Bay and Business.
11. Drawing A301
 - a. Details A1/A6 - Removed mineral wool insulation from under floor slab.
 - b. Detail A3 - Revised 12" CMU to 8" CMU,
12. Drawing A340
 - a. Detail A3 - Revised 12" CMU to 8" CMU.
13. Drawing A400
 - a. Mirrored shower layout in ADA SHWR 108D and 108C.
14. Drawing A401
 - a. Interior stud partitions at Vest 104 are to be type F3
15. Drawing A700
 - a. Revised Door Schedule, Door 100.1 Door Material and Finish to "HM" and "PAINT" respectively.
 - b. Revised Door 108.2 to be 20 minute rated.
16. Drawing I001
 - a. Revised section cut callouts at non-ADA shower curbs to refer to Detail A5/A310.
17. Drawing S111
 - a. Updated footing elevations such that the bottom of the footings remain above the groundwater table. Revised graphics, annotations, and callout references. Removed extraneous and duplicated information from plan. Updated 12" CMU wall to 8" CMU.
18. Drawing S301
 - a. Revised graphics and annotations for all sections.
19. Drawing S501
 - a. Revised graphics and updated annotation for detail F4 for clarity.
20. Drawing S505
 - a. Revised name of detail A3 for clarity.
21. Drawing F200
 - a. Sprinkler head layout revised.
22. Drawing P400
 - a. Revised shower bench locations to match architectural revisions.
23. Drawing P401
 - a. Revised shower bench locations to match architectural revisions.
24. Drawing M301
 - a. Revised plan to show additional goosenecks above roof as noted on M101.

END OF ADDENDUM

Attachments:

CLH Design Addendum #1

Revised Specifications: 011000 "Summary", 012300 "Alternates", 089119 "Fixed Louvers", 333200 "Sewer Pump Station and Force Main"

Revised Sheets: G002, G005, C500, C501, C502, C502, C503, C504, C505, A002, A100, A301, A340, A400, A401, A700, I001, S111, S301, S501, S505, F200, P400, P401, M301

Bear Creek Fire Station

Hubert, North Carolina

CLH Project No: 23-123

CLH design, p.a.
400 Regency Forest Drive, Suite 120
Cary, NC 27518



Addendum #1

04-01-2025

Where any article, division or subparagraph of the original contract documents or other addenda is supplemented herein, the provisions of the original documents shall remain in effect. All the supplemental provisions shall be considered as added thereto. Where any such article, division or subparagraphs are amended, voided or superseded thereby, the provisions of such article, division or subparagraph not so specifically amended, voided or superseded shall remain in effect.

The attention of the Contractor is called to the following clarifications, additions to and changes in the plans and specifications on the above job. It will be the responsibility of each Contractor to call such clarifications, additions to and changes in the plans and specifications to the attention of subcontractors concerned. The Engineer in no way assumes any responsibility for notifying any subcontractor, material dealers or others not having received the original contract documents.

ITEM 1. Replace specification Section 33 32 00 – Sewer Pump Station & Force Main in its entirety

ITEM 2. **Bidder Question: Can C-900 be used in lieu of Cast iron for the force main?**

Response: C-900 is not approved. The plans have been revised to clarify 3" PVC material for the force main.

ITEM 3. Refer to Plan Sheets C501 - C503

REPLACE sheets C501-C503 in their entirety with revised sheets of the same name/number.

Revisions:

1. Pipe material has been revised from 3" DIP to 3" PVC
2. C501 – Increaser was added for 2" to 3" condition

ITEM 4. Refer to Plan Sheets C504 - C505

REPLACE sheets C504-C505 in their entirety with revised sheets of the same name/number.

Revisions:

1. Pipe material has been revised from 3" DIP to 3" PVC
2. C501 – Increaser was added for 2" to 3" condition

END OF SITE/CIVIL ITEMS FOR THIS ADDENDUM

SECTION 011000 - SUMMARY**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section Includes:

- 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Work performed by Owner.
 - 4. Multiple Work Packages.
 - 5. Work under Owner's separate contracts.
 - 6. Contractor's use of site and premises.
 - 7. Coordination with occupants.
 - 8. Work restrictions.
 - 9. Specification and Drawing conventions.

- B. Related Requirements:

- 1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.
 - 2. Section 017300 "Execution" for coordination of Owner-installed products.

1.3 PROJECT INFORMATION

- A. Project Identification: Bear Creek Fire Station.

- 1. Project Location: 138 Old Sand Ridge Rd, Hubert, NC 28539.

- B. Owner: Onslow County.

- 1. Owner's Representative: Christina Russell.
 - a. christina_russell@onslowcountync.gov

- C. Architect: Davis Kane Architects.

- 1. Architect's Representative: Alexandre Penegre.
 - a. apenegre@daviskane.com

- D. Architect's Consultants: Architect has retained the following design professionals, who have prepared designated portions of the Contract Documents:

1. Civil Engineer:
 - a. CLH Design
 - b. Y'Hoshua Aal-Anubia
 - c. 919-443-4072
2. Structural Engineer:
 - a. Lynch Mykins
 - b. Scott Francis
 - c. 757-293-8549
3. Plumbing, Mechanical, & Electrical Engineer:
 - a. Cheatham and Associates
 - b. Kenneth Lynch
 - c. 910-452-4210

E. Web-Based Project Software: Project software will be used for purposes of managing communication and documents during the construction stage.

1. See Section 013100 "Project Management and Coordination." for requirements for using web-based Project software.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:

1. The new station will be approximately 14,680 square feet and will include 5 drive-through bays, bunk rooms, day room, kitchen, office spaces, and accessory rooms for servicing the fire station. This project is located on an undeveloped piece of property located by Sand Ridge Elementary School in Hubert, NC, and will also include all site work and landscaping. Trenching and waste/plumbing line installation will need to occur to connect at Sand Ridge Rd.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.5 CONTRACT TIMES

1. Time of the Essence
 - a. All time limits for Milestones, if any, Substantial Completion and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
2. Days to Achieve Substantial Completion and Final Payment
 - a. The Work will be substantially completed within three hundred and sixty-four (364) calendar days after the date when the Contract Times commence to run and ready for final payment within four hundred (400) calendar days from the date when the Contract Times commence to run.

1.6 LIQUIDATED DAMAGES

- A. The parties recognize and acknowledge that Owner will suffer financial losses if the Work is not completed as required within the Contract Times. They also recognize and acknowledge the delays, expense, and difficulty to both parties that would be involved in proving or contesting the amounts of those losses. Instead of requiring proof of those amounts, it is agreed that if the Contractor shall fail to complete the Work to the standard and degree required within the Contract Times, or either of them, and within any extension of time granted by the Owner in accordance with the General Conditions, then the Contractor shall pay to the Owner \$500/day for each calendar day after the Contract Times, or after a relevant extended time if applicable, that the Work remains incomplete to the standard or degree required by the Contract Documents.
- B. Payment of the charges described herein shall not excuse or relieve the Contractor for any other liability under the Contract Documents for delay in the progress schedule of the Work, and all other penalties imposed on the Contractor and remedies available to the Owner under the Contract Documents shall remain in full force and effect.

1.7 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Unrestricted Use of Site: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

1.8 WORK RESTRICTIONS

- A. Comply with restrictions on construction operations.
1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work to between 7:00 a.m. to 7:00 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.
1. Weekend Hours: None, unless approved by Owner and authorities having jurisdiction.
 2. Early Morning Hours: None, unless approved by Owner and authorities having jurisdiction.
- C. Smoking and Controlled Substance Restrictions: Use of tobacco products , alcoholic beverages, and other controlled substances on Project site is not permitted.
- D. Employee Contractor personnel to wear identifiable corporate logos on PPE and/or clothing attire.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
 3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
 4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.
- C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012300 - ALTERNATES**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

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

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include, as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation, whether or not indicated as part of alternate.
- B. Execute accepted alternates under the same conditions as other Work of the Contract.
- C. Schedule: A Part 3 "Schedule of Alternates" Article 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 A-1: Four-Fold Doors in Lieu of Sectional Doors.
 - 1. Base Bid: Doors 127.8, 127.9, 127.10, 127.11, 127.12 to be Type G as indicated on Sheet A700 and as specified in Section 083613 "Sectional Doors".
 - 2. Alternate: Doors 127.8, 127.9, 127.10, 127.11, 127.12 to be Type F as indicated on Sheet A700 and as specified in Section 083713 "Exterior Four-Fold Doors".
- B. Alternate C-1: Concrete Pavement in Lieu of Heavy Duty Asphalt Pavement Drive.
 - 1. Base Bid: Heavy duty asphalt pavement with extents as shown on Sheet C100 and as specified in Section 321216 "Asphalt Paving".
 - 2. Alternate: Concrete pavement with extents as shown on Sheet C100 and as specified in Section 321313 "Concrete Paving".
- C. Alternate C-2: Concrete Pavement in Lieu of Light Duty Asphalt Pavement at Parking.
 - 1. Base Bid: Light duty asphalt pavement with extents as shown on Sheet C100 and as specified in Section 321216 "Asphalt Paving".
 - 2. Alternate: Concrete pavement with extents as shown on Sheet C100 and as specified in Section 321313 "Concrete Paving".
- D. Alternate G-1: Door Hardware Lock Cylinders (preferred brand alternate)
 - 1. Base Bid: Provide Door Lock Cylinders as specified in Section 087100 "Door Hardware".
 - 2. Alternate: Provide Door Lock Cylinders by Best, dormakaba Group in lieu of door closers by other acceptable manufacturers.
- E. Alternate G-2: Provide Door Hardware Door Keying and Cylinders
 - 1. Base Bid: Provide Door Hardware Keying and Cores as specified in Section 087100 "Door Hardware".
 - 2. Alternate: Provide Door Hardware Keying and Cores by Best, dormakaba Group in lieu of door keying and cores by other acceptable manufacturers.
- F. Alternate M-1: Provide and install ten air scrubbers to Apparatus Bay.
 - 1. Base Bid: No air scrubbers.
 - 2. Alternate: Provide and install ten air scrubbers as shown on Sheets M100 and M701.

END OF SECTION 012300

SECTION 089119 - FIXED LOUVERS**PART 1 - GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Fixed extruded-aluminum louvers.

1.2 DEFINITIONS

- A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.
- B. Horizontal Louver: Louver with horizontal blades (i.e., the axis of the blades are horizontal).
- C. Wind-Driven-Rain-Resistant Louver: Louver that provides specified wind-driven-rain performance, as determined by testing in accordance with AMCA 500-L.
- D. Windborne-Debris-Impact-Resistant Louver: Louver that provides specified windborne-debris-impact resistance, as determined by testing in accordance with AMCA 540.

1.3 ACTION SUBMITTALS**A. Product Data: For each type of product.**

1. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.

B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.

1. Show weep paths, gaskets, flashings, sealants, and other means of preventing water intrusion.
2. Show mullion profiles and locations.

C. Samples: For each type of metal finish required.**1.4 INFORMATIONAL SUBMITTALS**

- A. Product Test Reports: Based on evaluation of comprehensive tests performed in accordance with AMCA 500-L by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for each type of louver and showing compliance with performance requirements specified.

- B. Windborne-debris-impact-resistance test reports.
- C. Sample Warranties: For manufacturer's special warranties.

1.5 FIELD CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.6 WARRANTY

- A. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of baked enamel, powder coat, or organic finishes within specified warranty period.

- 1. Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
- 2. Warranty Period: 10 years from date of Substantial Completion.

2.1 MANUFACTURERS

- A. Source Limitations: Obtain fixed louvers from single source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.

2.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Louvers withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver-blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures are considered to act normal to the face of the building.
 - 1. Wind Loads:
 - a. Determine loads based on pressures as indicated on Drawings.
- B. Louver Performance Ratings: Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width in accordance with AMCA 500-L.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- D. SMACNA Standard: Comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

2.3 FIXED EXTRUDED-ALUMINUM LOUVERS

- A. Horizontal, Wind-Driven-Rain-Resistant Louver, Extruded Aluminum:
 1. Louver Depth: 4 inches (100 mm).
 2. Frame and Blade Nominal Thickness: Not less than 0.080 inch (2.03 mm).
 3. Louver Performance Ratings:
 - a. Free Area: Not less than 6.0 sq. ft. (0.56 sq. m) for 48-inch- (1220-mm-) wide by 48-inch- (1220-mm-) high louver.
 - b. Air Performance: Not more than 0.25 inch static pressure drop at 1,300 fpm free-area exhaust and intake velocity.
 - c. Wind-Driven Rain Performance: Not less than 99 percent effectiveness when subjected to a rainfall rate of 8 inches (200 mm) per hour and a wind speed of 50 mph (22.4 m/s) at a core-area intake velocity of 600 fpm.
 4. AMCA Seal: Mark units with AMCA Certified Ratings Seal.
 5. AMCA Rating: AMCA 540, AMCA 550.

2.4 LOUVER SCREENS

- A. General: Provide screen at each exterior louver.
 1. Screen Location for Fixed Louvers: Interior face.
 2. Screening Type: Insect screening.
- B. Secure screen frames to louver frames with stainless steel machine screws, spaced a maximum of 6 inches (150 mm) from each corner and at 12 inches (300 mm) o.c.
- C. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.
 1. Metal: Same type and form of metal as indicated for louver to which screens are attached. Reinforce extruded-aluminum screen frames at corners with clips.
 2. Finish: Same finish as louver frames to which louver screens are attached.
 3. Type: Rewirable frames with a driven spline or insert.
- D. Louver Screening for Aluminum Louvers:
 1. Bird Screening, Aluminum: 1/2-inch- (13-mm-) square mesh, 0.063-inch (1.60-mm) wire.
 2. Insect Screening, Aluminum: 18-by-16 (1.4-by-1.6-mm) mesh, 0.012-inch (0.30-mm) wire.

2.5 MATERIALS

- A. Aluminum Extrusions: **ASTM B221** (**ASTM B221M**), Alloy 6063-T5, T-52, or T6.
- B. Aluminum Sheet: **ASTM B209** (**ASTM B209M**), Alloy 3003 or 5005, with temper as required for forming, or as otherwise recommended by metal producer for required finish.
- C. Fasteners: Use types and sizes to suit unit installation conditions.
 - 1. Use hex-head or Phillips pan-head screws for exposed fasteners unless otherwise indicated.
 - 2. For fastening aluminum, use aluminum or 300 series stainless steel fasteners.
 - 3. For color-finished louvers, use fasteners with heads that match color of louvers.
- D. Postinstalled Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, fabricated from stainless steel components, with allowable load or strength design capacities calculated in accordance with ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing in accordance with ASTM E488/E488M conducted by a qualified testing agency.
- E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.6 FABRICATION

- A. Factory assemble louvers to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- B. Maintain equal louver blade spacing to produce uniform appearance.
- C. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.
 - 1. Frame Type: Channel unless otherwise indicated.
- D. Include supports, anchorages, and accessories required for complete assembly.
- E. Provide vertical mullions of type and at spacings indicated, but not more than is recommended by manufacturer, or **72 inches** (**1830 mm**) o.c., whichever is less.
 - 1. Semirecessed Mullions: Where indicated, provide mullions partly recessed behind louver blades, so louver blades appear continuous. Where length of louver exceeds fabrication and handling limitations, fabricate with interlocking split mullions and close-fitting blade splices designed to permit expansion and contraction.
 - 2. Exterior Corners: Prefabricated corner units with mitered and welded blades and with semirecessed mullions at corners.
- F. Join frame members to each other and to fixed louver blades with fillet welds, threaded fasteners, or both, as standard with louver manufacturer unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.7 ALUMINUM FINISHES

- A. Finish louvers after assembly.
- B. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.
 - 1. Color: Dark bronze.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine substrates and openings, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.3 INSTALLATION

- A. Locate and place louvers level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
- C. Form closely fitted joints with exposed connections accurately located and secured.
- D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- E. Protect unpainted galvanized- and nonferrous-metal surfaces that are in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.
- F. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 079200 "Joint Sealants" for sealants applied during louver installation.

3.4 ADJUSTING AND CLEANING

- A. Clean exposed louver surfaces that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.
- B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- C. Restore louvers damaged during installation and construction, so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.
 - 1. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

END OF SECTION 089119

SECTION 33 32 00 – SEWER PUMP STATION & FORCE MAIN

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Submersible grinder wastewater pumps.
 - 2. Fiberglass wet well and appurtenances.
 - 3. Pump controls.
 - 4. Auto-dialer.
 - 5. Sewer force main piping.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
 - 1. Product data for the following:
 - a. Pumps (including performance curves).
 - b. Lift-out rail system.
 - c. Discharge pipe and fittings.
 - d. Control panel and alarm.
 - e. Wet well, tanks and vaults.
 - f. Hatches and castings.
 - g. Float switches.
 - h. Valves.
 - i. Other appurtenances.
 - j. Control panel.
 - k. Alarms.
 - l. Elapsed time meter.
 - m. Pipes

- C. Inspection and test reports specified in the “Field Quality Control” Article.

- D. Two complete manufacturer’s operations and maintenance manuals with schematics, warranties, etc. for all operating systems.

1.6 QUALITY ASSURANCE

- A. Pumps and Motors: Pumps and motors are to be engineered, manufactured and assembled in the United States under a written quality assurance program. The written quality assurance program shall have been in effect for at least five years and shall include a written record of periodic internal and external audits to confirm compliance with UL Quality Assurance specifications. Pumps and motors shall be manufactured by ISO-9001 certified companies only.
- B. Pump and Motor Warranty: All components shall be warranted by the installer against defects in material and workmanship for a period of one year after final acceptance. Such warranty shall include replacement of defective items and service costs of qualified labor to make repairs.

- C. All products and construction associated with the pump station shall be warrantied against defects in material and workmanship for at least 1-year from the date of final acceptance.
- D. Listing and Labeling: Provide equipment and accessories that are listed and labeled.
 - 1. The Terms "Listed" and "Labeled": As defined in "National Electrical Code," Article 100.
 - 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect all materials. Do not store plastic structures in direct sunlight.
- B. Protect pumps and all appurtenances from dirt and damage.

1.8 PROJECT CONDITIONS

- A. Site Information: Perform site survey, research public utility records, and verify existing utility locations.

PART 2 – PRODUCTS

2.1 **PUMP PERFORMANCE CRITERIA**

- A. **Heavy-duty submersible grinder pumps shall be capable of handling raw unscreened sewage and other similar solids-laden fluids without clogging. The pump shall be driven by a Premium Efficiency motor, providing the highest levels of operational reliability and energy efficiency.**
- B. **Each pump shall provide the minimum hydraulic conditions as indicated on the drawings.**

2.2 **PUMPS**

- A. **Submersible Grinder Pumps: Pumps shall be capable of handling residential and commercial sewage and grinding it to a fine slurry, enabling it to be pumped over long distances in pipelines as small as 1.25" in diameter. Pump and motor assembly shall be UL listed for Class 1, Group D explosion-proof service.**
- B. **Pumps shall be intended for wet pit installation and shall be supplied with a discharge base and elbow assembly to support the pump. Each pump unit shall be fitted with a guide rail base assembly, suitably long for lifting the pump to the top of the wetwell. The working load rating of the lifting system shall be a minimum of 50% greater than the pump weight. Each pump motor shall be equipped with adequate length of power and control cable sized in accordance with NEC and CSA standards**
- C. **The pumps castings shall be constructed of class 25 cast iron. The motor housing shall be oil filled to dissipate heat. Air filled motors shall not be considered equal since they do not properly dissipate heat from the motor. All mating parts shall be machined and sealed with a Buna-N O-ring. All fasteners exposed to the liquid shall be stainless steel.**
- D. **The motor shall be protected on the top side with sealed cord entry plate with molded pins to conduct electricity eliminating the ability of water to enter internally through the cord. The motor shall be protected on the lower side with a dual seal arrangement.**
- E. **The upper and lower bearing shall be capable of handling all radial thrust loads. The lower bearing shall have the additional ability to handle the downward axial thrust produced by the impeller and cutters by design of angular contact roller races. The pump housing shall be of the concentric design thereby equalizing the pressure forces inside the housing which will extend the service life of the seals and bearings. Additionally, there shall be no cutwater in the housing volute in order to discourage the entrapment of flowing debris.**

- F. **The pump shall be furnished with stainless steel handle having a nitrile grip**

2.3 PUMP COMPONENTS

- A. **Grinder Mechanism: The cutter and plate shall consist of 440 stainless steel with a Rockwell C hardness of 55-60. The stationary cutter plate shall have specially designed orifices through it, which enable the slurry to flow through the pump housing at an equalized pressure and velocity. The stationary cutter shall consist of V shapes to maximize cutting action and arc shape exclusion slots to outwardly eject debris from under the rotary cutter. The rotary cutter shall have (4) blades and be designed with a recessed area behind the cutting edge to prevent the accumulation and binding of any material between rotary cutter and the stationary cutter. The cutting system must incorporate close tolerances for optimum performance. Ring or radial cutters, or those that grind on the outside circumference of shall not be considered equal.**
- B. **Mechanical Seals: The pump shall have a dual seal arrangement consisting of a lower and upper seal to protect the motor from the pumping liquid. The lower seal shall be a FKM fluoroelastomer OR Buna N molded double lip seal, designed to exclude foreign material away from the main upper seal. The upper seal shall be a unitized silicon carbide hard face seal with stainless steel housings and spring equal to Crane Type T-6a. The motor plate / housing interface shall be sealed with a Buna-N o-ring.**
- C. **Bearings & Shaft: An upper radial and lower thrust bearing shall be required. The upper bearing shall be a single ball / race type bearing. The lower bearing shall be an angular contact heavy duty ball / race type bearing, designed to handle axial grinder pump thrust loads. Both bearings shall be permanently lubricated by the oil, which fills the motor housing. The bearing system shall be designed to enable proper cutter alignment from shut off head to maximum load at 10' of TDH. The motor shaft shall be made of 300 or 400 series stainless steel and have a minimum diameter of .670".**
- D. **Impeller: The impeller shall be an investment cast stainless steel impeller, with pump out vanes on the back shroud to keep debris away from the seal area. It shall be keyed and bolted to the motor shaft.**

2.4 GUIDE RAIL BASE ASSEMBLY

- A. General: There shall be no need for personnel to enter the wet well to remove or reinstall the pumps. In a wet pit installation, the discharge base & elbow assembly shall be permanently installed in the wet well and connected to the discharge piping. In order to prevent binding or separation of the pump from the guide rail system, the pumps shall connect to the guide rail base automatically and firmly, guided by one 2 inch guide pipe extending from the base elbow to the top of the station. Systems using guide cable in lieu of rigid guide bars or pipes shall not be considered acceptable. The sliding guide bracket shall be a separate part of the pumping unit.
1. A field replaceable Nitrile (Buna-N) rubber profile gasket or o-ring shall accomplish positive sealing of the pump flange/guide rail bracket to the discharge elbow. Base assemblies which rely solely on metal to metal contact between the pump flange and discharge base elbow as a means of sealing are inherently leak prone, and shall not be considered equal. No portion of the pump shall bear directly on the floor of the sump. The guide rail system shall be available in an optional non-sparking version, approved by Factory Mutual for use in NEC Class 1, Division 1, Group C&D hazardous locations.

2.5 CONTROLS

- A. The pumps shall be controlled with an IP Series NEMA 4X outdoor duplex control panel with *float switch relays*, adjustable set-points, data logging, and a high-water alarm.
- B. Marking: All control panels shall be labeled as follows:

1. Mfgs name, address, and contact phone numbers.
 2. Panel ratings in horsepower, voltage and amperage.
 3. Field wiring guide for installers.
 4. Individual component identification.
 5. Internal wiring numbers.
- C. The panel shall include:
1. LED display showing system information including level in inches, mode, pump's elapsed time, events (cycles), alarm counter.
 2. Pump circuit breakers.
 3. Control circuit breakers.
 4. Alarm circuit fuse.
 5. Control circuit fuse.
 6. I.E.C. rated motor starters with 3-pole ambient compensated bimetal overload relays.
 7. Pump hand-off-auto switches.
 8. Alarm test switches.
 9. Pump run lights.
 10. Alternator relay (solid state).
 11. Override relay.
 12. Control transformer with primary fusing.
 13. Intrinsically safe relays for float switch connections.
 14. Terminal blocks,
 15. Two (2) ground lugs.
 16. All necessary wiring and brackets.
 17. Separate Manual Disconnect for each pump.
 18. **Float switch** control system for duplex pumps and alarm system.
 19. Elapsed time meter for each pump.
 20. High level alarm light and horn and contact closure for auto dialer.
 21. Test and silence switches for alarm.
 22. Seal failure light for each pump and contact closure for auto dialer.
 23. Control disconnect.
 24. Surge protection.
- D. The control panel shall be fitted with a red alarm light mounted on top of the enclosure and audio alarm horn (83-85-db).
1. The alarm shall have a bright glow and flash during high water conditions. The alarm light and horn shall go out and stop sounding when the water level drops.
- E. All internal wiring shall be neat and color coded. Each wire shall be a different color or stripe (except for ground), and all incoming wires shall terminate into a box clamp type terminal block. All wires shall be 14 GA. Type TEW rated for 105 degrees Celsius.
- F. A schematic diagram (showing wire color) shall be permanently fastened to the inside of the enclosure. An installation and service manual shall also be included with each control panel.
- G. The control panel shall be U.L. listed and labeled to UL 698A as an assembly.
- H. A cycle counter shall be provided for each pump to show the number of cycles (starts) of the pump. The counter shall be energized by an auxiliary contact from the motor starter or contactor and be wired in parallel with the pump run light. The counter shall have a maximum reading of 999,999 cycles (starts). The counter shall be non-resettable.
- I. The control panel shall contain a full inner door. The inner door shall be hinged and contain all lights, switches and overload resets. All circuit breakers shall also be mounted through the inner door.

- J. A delay timer shall be supplied in the control panel. The timer shall delay the starting of the pump when called for. The delay timer shall be adjustable from 0-60 seconds.
- K. The control panel shall contain a phase monitor/relay. The monitor/relay shall protect pump motor(s) against phase loss, under voltage, and phase reversal conditions. When incorrect phase sequence or phase loss occurs or if the three phase voltages fall below the drop out voltages (field adjustable), the monitor/relay shall drop out the pump(s) and signal the panel alarm. The pump(s) and alarm shall return to normal after the condition(s) are corrected.
- L. An E.T.M. shall be provided for each pump to record the actual running time of the motor. The E.T.M. shall be energized by an auxiliary contact from the motor starter or contactor and be wired in parallel with the pump run light. The E.T.M. shall have a maximum reading of 99,999.99 hours. The E.T.M. shall be non-resettable.
- M. A set of dry contacts shall be provided for the remote monitoring of a panel function. Functions shall include high water, low water, seal failure, overtemperature, overload, and pump running conditions. The dry contacts shall close upon the detection of said condition. Contacts shall be rated for 3 amps.
- N. A 115 volt, 15 amp duplex ground fault interrupting receptacle shall be mounted in or adjacent to the control panel. The receptacle shall be protected by a 15 amp circuit breaker. The receptacle shall have a NEMA 5-15R configuration and be powered from the control circuit transformer.
- O. A lightning arrestor (1 PH) shall be supplied in the control panel. The arrestor shall protect the equipment from overvoltages caused by lightning discharges. The arrestor shall be rated at 650 volts RMS L-G.
- P. Pump on, off and alarm levels shall be controlled by mercury tube float switches integral to the package pump system. Switches shall consist of a mercury tube switch sealed in a corrosion-resistant polypropylene housing with a minimum of 18 gauge, 2-wire, SJOW/A jacketed cable. The cable shall be of sufficient length to reach the junction box with no splices. The level controls shall be suspended from a stainless steel bracket so that adjustment or replacement may be done without use of any tools. Level controls shall be UL/CSA listed.

2.6 AUTOMATIC ALARM MONITOR DIALER

- A. **Alarm Monitor: Provide automatic alarm dialer and necessary switches, contacts, relays, etc. and associated wiring required to monitor and report the alarm conditions as noted herein. Monitor shall be capable of reporting at least 6 different alarm conditions and shall be equipped with a battery back-up and remote antenna. Monitor shall utilize cellular pathway communication.**
- B. **Monitor/Dialer shall be ELK C1M1, NetworX NX-6, or approved equal.**
- C. **Contractor shall coordinate with the Owner to establish a cellular service and install all necessary infrastructure for the cellular pathway to serve the new dialer. Dialer and compatible cellular communicator shall be provided in a watertight enclosure.**
 - 1. **High water alarm (Fault #1).**
 - 2. **Loss of primary power (Fault #2).**
 - 3. **Pump seal failure (Fault #3).**

2.7 CONTROL SEQUENCE

- A. General: Float switches shall be set at the elevations as indicated on the drawings.
- B. Normal Operation: On rising liquid level in the wet well, a float switch (lead pump on) shall initiate operation of the lead pump. The pump shall continue to operate until the liquid level falls to the elevation where a float switch (pump off) shall stop the pump.

- C. Lag Pump and Alarm: Should the liquid level in the wet well continue to rise with the lead pump operating, a third float switch (lag pump on) shall initiate operation of the lag pump and shall activate the alarm light and horn and automatic dialer system.

2.8 WET WELL

- A. Pump station shall be provided as a package unit within a 48" diameter fiberglass basin. The wetwell shall include the following:
 - 1. Concrete ballast ring poured around integral anti-floatation collar.
 - 2. Factory pre-assembled schedule 80 PVC discharge piping with gate valves and check valves.
 - 3. 4-in inlet hub with rubber pipe seal.
 - 4. Factory pre-assembled galvanized guide rail system.
 - 5. Stainless steel pump lift-out chain.
 - 6. Aluminum cover with ¼" aluminum diamond plate access hatch and galvanized steel vent pipe.
 - 7. All stainless steel pre-mounted supports brackets.
 - 8. Pre-mounted, NEMA 4X junction box for electrical connections.

2.9 FORCE MAIN PIPING

- A. Polyvinyl Chloride Pipe (PVC) 2-in to 3-in: SDR-21, iron pipe size (IPS), ASTM D-2241, ASTM D-1784.
 - 1. Pressure Rating: 200-psi minimum.
 - 2. Fittings: PVC fittings conforming to pipe requirements, pressure rated to exceed pipe class.
 - 3. Joints: ASTM D-3139 PVC with ASTM F-477 flexible elastomeric seals for the pipe.

2.10 IDENTIFICATION

- A. Metallic-Lined Plastic Underground Warning Tapes: Polyethylene plastic tape with metallic core, 6 inches wide by 4 mils thick, solid blue in color with continuously printed caption in black letters "SEWER FORCE MAIN."
- B. Copper Tracer Wire: #12 gauge solid (bare) copper and continuous to the greatest extent possible. The tracer wire shall be securely bonded together at all wire joints with an approved industrial crimp connector to provide electrical continuity.

2.11 FORCE MAIN TAPPING SADDLE AND VALVE

- A. **Saddle: AWWA C800, double or triple-stud, stainless steel service saddle with ASTM D 200, NSF 61 certified nitrile butadiene rubber gaskets. Saddle shall be manufactured for the type of pipe being tapped. All parts and hardware shall be stainless steel. Romac 306 Service Saddle or approved equal.**
- B. **Gate Valve: AWWA C509 or C515; iron body, bronze or ductile iron. 1. Elastomeric Polydisulfide (EPDM) encapsulated wedge 2. 3. 4. 5. 6. Stem: Non-rising bronze stem. Operating Nut: 2-inch Square; open counterclockwise unless otherwise indicated. Ends: Mechanical joint end connections. Coating: AWWA C550; interior/exterior. Maximum Working Pressure: 250 psig**
- C. **Check Valve: Brass.**

PART 3 - EXECUTION

3.1 GENERAL

- A. Installation shall be performed in accordance with the manufacturer's written instructions and other applicable Division 33 specification sections.

3.2 EARTHWORK

- A. Excavation, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

3.3 EXAMINATION

- A. Contractor shall off-load equipment at installation site using equipment of sufficient size and design to prevent injury or damage. Immediately after off-loading, contractor shall inspect complete pump and appurtenances for shipping damage or missing parts. Any damage or discrepancy shall be noted in written claim with shipper prior to accepting delivery. Validate all pump serial numbers and parts lists with shipping documentation. Notify the manufacturer's representative of any unacceptable conditions noted with shipper.

3.4 EQUIPMENT INSTALLATION

- A. Install, level, align, and lubricate pump(s) as indicated on project drawings. Installation must be in accordance with written instructions supplied by the manufacturer at time of delivery.
- B. Suction pipe connections are vacuum tight. Fasteners at all pipe connections must be tight. Install pipe with supports and thrust blocks to prevent strain and vibration on pump piping. Install and secure all service lines (level control, air release valve or pump drain lines) as required in wet well.
- C. Check motor and control data plates for compatibility to site voltage. Install and test grounding prior to connecting line voltage to control panel.
- D. Prior to applying electrical power to any motors or control equipment, check all wiring for tight connection. Verify that protective devices (fuses and circuit breakers) conform to project design documents. Manually operate circuit breakers and switches to ensure operation without binding. Open all circuit breakers and disconnects before connecting utility power. Verify line voltage, phase sequence and ground before actual start-up.
- E. After all anchor bolts, piping and control connections are installed, completely fill the grout dam in the pump base with non-shrink grout.

3.5 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. General Locations and Arrangements: Drawings indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated except where deviations to layout are approved on coordination drawings.
- B. Install components having pressure rating equal to or greater than system operating pressure.
- C. Install piping free of sags and bends.

3.6 PIPING INSTALLATION

- A. Bury piping at minimum depth of 4 feet below finished subgrade.
- B. Tunneling: Install pipe under streets or other obstructions that cannot be disturbed by tunneling, jacking, or a combination of both.
- C. Shoring or bracing of pits, trenches and other excavations shall be in accordance with the requirements of NCDOT and OSHA.
- D. The subgrade at the bottom of the trench shall be shaped to secure uniform support throughout the length of the pipe. A space shall be excavated under the bell of each pipe to provide space to relieve bearing pressure on the bell and provide room to adequately make the joint.

- E. Open ends of pipe shall be plugged with a standard plug or cap at all times when pipe laying is not in progress. Trench water shall not be permitted to enter pipe.
- F. Backfill material shall be free from stones greater than 2-inches in diameter, construction material debris, frozen material, organic matter, or unstable material. Backfill materials shall be placed in loose lifts of 8-inches or less in depth. All backfill shall be compacted to not less than 95% of the standard Proctor maximum dry density except the final foot beneath pavement or slab areas where this requirement shall be increased to 98% of the standard Proctor maximum dry density.
- G. Install continuous plastic underground warning tape and copper tracer wire during back-filling of trench for underground force main piping.

3.7 FIELD QUALITY CONTROL

- A. Pump Operational Test: A representative from the pump manufacturer shall be present at the operational test to review proper operation of the equipment. The Contractor shall provide all materials, labor and equipment needed to verify the entire pump station is operating as designed and intended.
- A. Wet Well Test: Wet well shall be tested for leakage once set in place. Perform either vacuum, air pressure, or hydrostatic tests. Contractor shall furnish all required equipment, water, and labor required for testing. All testing shall be performed in the presence of the Architect.
 - 1. Vacuum Test: A vacuum of 10-in of mercury (Hg) shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to 9-in Hg. If pressure drops in less than 120-sec the wet well will have failed the test and necessary repairs shall be made. Re-testing shall proceed until a satisfactory test is obtained.
 - 2. Air Pressure Test: The wet well shall be pressurized to 5-psi and allowed to stabilize. After stabilization, the pressure shall be decreased to 4-psi and the time for the pressure to drop to 3-psi shall be measured. If the pressure drops in less than 120-sec the wet well will have failed the test. Necessary repairs shall be made and re-testing shall proceed until a satisfactory test is obtained. Smoke may be utilized to assist in locating leaks.
 - 3. Hydrostatic Test: The wet well shall be filled to within 12-in of the top and allowed to soak for 24-hrs. The wet well shall be re-filled and the water level recorded. The water shall remain in the wet well for 24-hrs. and the water level recorded. If the water level falls ½-in or more in 24-hrs. the wet well will have failed the test. Necessary repairs shall be made and re-testing shall proceed until a satisfactory test is obtained.
- C. Pump Station Testing:
 - 1. Following installation, each pump in the pump station shall be subjected to a drawdown test or other similar testing procedure to confirm that the pump is operating at or near the required design operating points.
 - 2. On-Site Testing shall consist of all manual and automatic operating functions under various operating conditions, including full load conditions. The equipment shall also be tested under adverse or emergency conditions. All alarms and remote signals shall also be tested. All defective equipment or malfunctioning systems shall be replaced or corrected, and the full system placed in a fully operational condition.
 - 3. Field test of the pump station's electrical and instrumentation/control systems shall be performed. The basic functions which shall be tested for operation as intended by the pump station design shall include, but shall not be limited to, the following:
 - a. Pump operational functions
 - b. Level-sensing equipment.
 - c. Alarm system.
 - d. Auto-dialer system.
 - e. Emergency power system.

4. Perform vacuum test of wetwell according to ASTM C 1244.
5. Results of all tests shall be documented and submitted to the Engineer.

D. Force Main Piping Hydrostatic Testing:

1. A section of line that is to be hydrostatically tested, shall be slowly filled with water at a rate which will allow complete evacuation of air from the line.
2. Fill the line slowly to avoid undue impacts associated with surge and to allow air to evacuate the pipeline. After all air has been expelled from the force main, the line shall be tested to a pressure of 150 psi as measured at the lowest elevation of the line for a duration of 2 hours. The testing period shall not commence until all air has been evacuated and the pressure has stabilized. The pressure gauge used in the hydrostatic test shall be calibrated in increments of 10-psi or less. The pressure gauge shall be liquid-filled and indexed for an operating range of 300-psi or less with a minimum dial size of 3-1/2 inches. At the end of the test period, the leakage shall be measured with an accurate water meter.
3. Any measured leakage not within the allowable limits shall require repair of the force main and additional testing until the standards are met. For pipe sizes other than those shown, the Contractor shall test within the allowable leakage amounts as specified by AWWA C600-99. All visible leaks shall be repaired regardless of the amount of leakage.

Test Pressure = 150-psi min.	
Pipe Size (in)	Allowable Leakage (per 1000 ft of pipe)
2	0.17 gal/hour
3	0.25 gal/hour

END OF SECTION

APPENDIX B
2018 BUILDING CODE SUMMARY
FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2 FAMILY DWELLINGS AND TOWNHOUSES)

NAME OF PROJECT: Onslow County Bear Creek Fire Station
ADDRESS: 138 Old Sand Ridge Rd, Hubert, NC ZIP CODE: 28539
OWNER/AUTHORIZED AGENT: Christina Russell PHONE #: 910-455-1750
E-MAIL: christina_russell@onslowcountync.gov
OWNED BY: ☒ CITY/COUNTY ☐ PRIVATE ☐ STATE
CODE ENFORCEMENT JURISDICTION: ☐ CITY ☒ COUNTY ☐ STATE
NAME OF JURISDICTION: Onslow County

CONTACT: JIMMY EDWARDS, ARCHITECT

DESIGNER	FIRM	NAME	LIC. #	PHONE #	EMAIL
ARCHITECTURAL	Davis Kane Architects	Jimmy Edwards	13823	(919) 833-3737	jedwards@davis Kane.com
CIVIL	CLH Design	Steven Miller	022625	(919) 319-6716	smiller@clhdesignpa.com
LANDSCAPE	CLH Design	Zak Pierce	1699	(919) 319-6716	zpierce@clhdesignpa.com
ELECTRICAL	Cheatham and Associates	Mark Ciarrocca	17593	(910) 452-4210	mciarrocca@cheathampa.com
FIRE ALARM	Cheatham and Associates	Mark Ciarrocca	17593	(910) 452-4210	mciarrocca@cheathampa.com
PLUMBING	Cheatham and Associates	Casey Gilman	043164	(910) 452-4210	klynch@cheathampa.com
MECHANICAL	Cheatham and Associates	Kenneth Lynch	17655	(910) 452-4210	klynch@cheathampa.com
SPRINKLER / STANDPIPE	Cheatham and Associates	Casey Gilman	043164	(910) 452-4210	cgilman@cheathampa.com
STUCTURAL	Lynch Mykins	Scott Francis	044996	(757) 293-8549	sfrancis@lynchmykins.com
RETAINING WALLS >5' HIGH	-	-	-	-	-
OTHER	-	-	-	-	-
OTHER	-	-	-	-	-

YEAR EDITION OF CODE:

2018 NC BUILDING CODE: ☒ NEW BUILDING ☐ SHELL / CORE ☐ 1ST TIME INTERIOR COMPLETIONS
☐ ADDITION ☐ PHASED CONSTRUCTION - SHELL CORE
2018 NC EXISTING BUILDING CODE: ☐ PRESCRIPTIVE ☐ ALTERATION LEVEL I ☐ HISTORIC PROPERTY
(CHECK ALL THAT APPLY) ☐ REPAIR ☐ ALTERATION LEVEL II ☐ CHANGE OF USE
☐ CHAPTER 14 ☐ ALTERATION LEVEL III

CONSTRUCTED (DATE): CURRENT OCCUPANCY(S) (CH. 3):
RENOVATED (DATE): PROPOSED OCCUPANCY(S) (CH. 3): B, R-2, S-2
RISK CATEGORY (table 1604.5) Current: ☐ I ☐ II ☐ III ☐ IV
Proposed: ☐ I ☐ II ☐ III ☒ IV

BASIC BUILDING DATA:

CONSTRUCTION TYPE: ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
(CHECK ALL THAT APPLY) ☐ I-B ☐ II-B ☐ III-B ☒ V-B
SPRINKLERS: ☐ NO ☐ PARTIAL ☒ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
STANDPIPES: ☒ NO ☐ CLASS - I ☐ CLASS - II ☐ CLASS - III ☐ WET ☐ DRY
PRIMARY FIRE DISTRICT: ☒ NO ☐ YES
FLOOD HAZARD AREA: ☒ NO ☐ YES
SPECIAL INSPECTIONS REQUIRED: ☐ NO ☒ YES
GROSS BUILDING AREA:
FLOOR EXISTING (SQ FT) NEW (SQ FT) SUB-TOTAL
3RD FLOOR - - -
2ND FLOOR - - -
EQUIPMENT PLATFORM - 461 461
1ST FLOOR - 13,979 13,979
TOTAL: - 14,440 14,440

ALLOWABLE AREA

PRIMARY OCCUPANCY CLASSIFICATION(S):
ASSEMBLY: ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
BUSINESS: ☒
EDUCATIONAL: ☐
FACTORY: ☐ F-1 MODERATE ☐ F-2 LOW
HAZARDOUS: ☐ H-1 DETONATE ☐ H-2 DEFLAGATE ☐ H-3 COMBUST ☐ H-4 HEALTH ☐ H-5 HPM
INSTITUTIONAL: ☐ I-1 ☐ I-2 ☐ I-3 ☐ I-4
I-1 CONDITION ☐ 1 ☐ 2
I-2 CONDITION ☐ 1 ☐ 2
I-3 CONDITION ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
MERCHANTILE: ☐
RESIDENTIAL: ☐ R-1 ☒ R-2 ☐ R-3 ☐ R-4
STORAGE: ☐ S-1 MODERATE ☒ S-2 LOW ☐ HIGH-PILED ☐ ENCLOSED ☐ OPEN
☐ PARKING GARAGE ☐ REPAIR GARAGE
UTILITY AND MISC: ☐

ACCESSORY OCCUPANCY CLASSIFICATION(S):
INCIDENTAL USES (TABLE 509):
THIS SEPARATION IS NOT EXEMPT AS A NON-SEPARATED USE (SEE EXCEPTIONS).
SPECIAL USES (CHAPTER 4 - LIST CODE SECTIONS):
SPECIAL PROVISIONS (CHAPTER 5 - LIST CODE SECTIONS):
MIXED OCCUPANCY: YES (508.3) SEPARATION: NO EXCEPTION: -

ACTUAL AREA OF OCCUPANCY A + ACTUAL AREA OF OCCUPANCY B ≤ 1 ALLOWABLE AREA OF OCCUPANCY A ALLOWABLE AREA OF OCCUPANCY B					
STORY NO.	DESCRIPTION AND USE	(A) BUILDING AREA PER STORY (ACTUAL)	(B) TABLE 506.2 ¹ AREA	(C) AREA FOR FRONTAGE INCREASE ^{1,2}	(D) ALLOWABLE AREA PER STORY OR UNLIMITED ²
1	OFFICE / B	4085	36,000	-	36,000
1	DORMITORY / R-2	721	28,000	-	28,000
1	APPARATUS BAY / S-2	9441	54,000	-	54,000

- ¹ - Frontage area increases from Section 506.2 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = (F)
b. Total Building Perimeter = (P)
c. Ratio (F/P) = (F/P)
d. Minimum Width of Public Way = (W)
e. Percentage of frontage increase If = 100(F/P - 0.25) x W/30 = (%)
² - Unlimited area applicable under conditions of Section 507.
³ - Maximum Building Area = total number of stories in the building x D (506.2)
⁴ - The maximum area of open parking garages must comply with 406.5.4. The maximum area of traffic control towers must comply with Table 412.3.1.
⁵ - Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE
BUILDING HEIGHT IN FEET	60'-0"	34'-8"	-
BUILDING HEIGHT IN STORIES	3	1	-

¹ Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPAR. DISTANCE (FEET)	RATING REQ.	RATING PROVIDED (W/ *Reduction)	DETAIL # AND SHEET	DESIGN # FOR RATED ASSEMBLY	DESIGN # FOR RATED PENETRATION	DESIGN # FOR RATED JOINTS
STRUCTURAL FRAME (INCLUDING COLUMNS, GIRDERS, TRUSSES)	-	0	0	-	-	-	-
BEARING WALLS	-	-	-	-	-	-	-
EXTERIOR NORTH	>30'	0	0	-	-	-	-
EXTERIOR EAST	>30'	0	0	-	-	-	-
EXTERIOR WEST	>30'	0	0	-	-	-	-
EXTERIOR SOUTH	>30'	0	0	-	-	-	-
INTERIOR	-	0	0	-	-	-	-
NONBEARING WALLS AND PARTITIONS	-	-	-	-	-	-	-
EXTERIOR NORTH	>30'	0	0	-	-	-	-
EXTERIOR EAST	>30'	0	0	-	-	-	-
EXTERIOR WEST	>30'	0	0	-	-	-	-
EXTERIOR SOUTH	>30'	0	0	-	-	-	-
INTERIOR WALLS AND PARTITIONS	-	0	0	-	-	-	-
FLOOR CONSTRUCTION (INCLUDING SUPPORTING BEAMS AND JOISTS)	-	0	0	-	-	-	-
FLOOR CEILING ASSEMBLY	-	0	0	-	-	-	-
COLUMNS SUPPORTING FLOORS	-	-	-	-	-	-	-
ROOF CONSTRUCTION (INCLUDING SUPPORTING BEAMS AND JOISTS)	-	0	0	-	-	-	-
ROOF CEILING ASSEMBLY	-	0	0	-	-	-	-
COLUMNS SUPPORTING ROOF	-	0	0	-	-	-	-
SHAFT ENCLOSURES - EXIT	-	-	-	-	-	-	-
SHAFT ENCLOSURES - OTHER	-	-	-	-	-	-	-
CORRIDOR SEPARATION	1/2	1/2 HR	G005	U407	WL1001, WL5001, W-J-7109, W-J-7110	HW-D-0489 BW-S-0001	HW-D-0489
OCCUPANCY / FIRE BARRIER SEPARATION**	2	2 HR	G005	U905	W-J-7109, W-J-7110	HW-D-0489	HW-D-0489
PARTY / FIRE WALL SEPARATION	-	-	-	-	-	-	-
SMOKE BARRIER SEPARATION	0	0	-	-	-	-	-
SMOKE PARTITION	0	0	-	-	-	-	-
TENANT / DWELLING UNIT / SLEEPING UNIT SEPARATION	1/2	1/2 HR	G005	U407	WL1001, WL5001	HW-D-0489 BW-S-0001	HW-D-0489
INCIDENTAL USE SEPARATION	-	-	-	-	-	-	-

*Indicate section number permitting reduction.
**Required at Electrical 125 if Bi-Directional Amplifier is required.

PERCENT OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
NORTH - 111'-0"	UP, S	NO LIMIT	-
EAST - 65'-0"	UP, S	NO LIMIT	-
SOUTH - 20'-6"	UP, S	NO LIMIT	-
WEST - 256'-0"	UP, S	NO LIMIT	-

LIFE SAFETY SYSTEM REQUIREMENTS

EMERGENCY LIGHTING: ☐ NO ☒ YES
EXIT SIGNS: ☐ NO ☒ YES
FIRE ALARM: ☐ NO ☒ YES
SMOKE DETECTION SYSTEMS: ☐ NO ☒ YES
CARBON MONOXIDE DETECTION: ☐ NO ☒ YES

LIFE SAFETY PLAN REQUIREMENTS

LIFE SAFETY PLAN SHEET: G004 - LIFE SAFETY PLANS
☒ FIRE AND / OR SMOKE RATED WALL LOCATIONS (CHAPTER 7)
☐ ASSUMED AND REAL PROPERTY LINE LOCATIONS (IF NOT ON THE SITE PLAN)
☒ EXTERIOR WALL OPENING AREA WITH RESPECT TO DISTANCE TO ASSUMED PROPERTY LINES (705.8)
☒ OCCUPANCY USE FOR EACH AREA AS IT RELATES TO OCCUPANT LOAD CALCULATION (TABLE 1004.1.2)
☒ OCCUPANT LOADS FOR EACH AREA
☒ EXIT ACCESS TRAVEL DISTANCES (1017)
☒ COMMON PATH OF TRAVEL DISTANCES (1016.2.1 & 1006.3.2(1))
☒ DEAD END LENGTHS (1020.4)
☒ CLEAR EXIT WIDTHS FOR EACH EXIT DOOR
☒ MAXIMUM CALCULATED OCCUPANT LOAD CAPACITY EACH EXIT DOOR CAN ACCOMODATE BASED ON EGRESS WIDTH (1005.3)
☒ ACTUAL OCCUPANT LOAD FOR EACH EXIT DOOR
☐ A SEPARATE SCHEMATIC PLAN INDICATING WHERE FIRE RATED FLOOR / CEILING AND / OR ROOF STRUCTURE IS PROVIDED FOR PURPOSES OF OCCUPANCY SEPARATION
☒ LOCATION OF DOORS WITH PANIC HARDWARE (1010.1.10)
☐ LOCATION OF DOORS WITH DELAYED EGRESS LOCKS AND THE AMOUNT OF DELAY (1010.1.9.7)
☐ LOCATION OF DOORS WITH ELECTROMAGNETIC EGRESS LOCKS (1010.1.9.9)
☐ LOCATION OF DOORS EQUIPPED WITH HOLD-OPEN DEVICES
☐ LOCATION OF EMERGENCY ESCAPE WINDOWS (1030)
☒ THE SQUARE FOOTAGE OF EACH FIRE AREA (202)
☐ THE SQUARE FOOTAGE OF EACH SMOKE COMPARTMENT FOR OCCUPANCY CLASSIFICATION I-2 (407.4)
☐ NOTE ANY CODE EXCEPTION OR TABLE NOTES THAT MAY HAVE BEEN UTILIZED REGARDING THE ITEMS ABOVE.

ACCESSIBLE DWELLING UNITS (SECTION 1107)

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED
-	-	-	-	-	-	-	-

ACCESSIBLE PARKING (SECTION 1106)

LOT OR AREA PARKING	TOTAL # OF PARKING SPACES REQUIRED	TOTAL # OF PARKING SPACES PROVIDED	REGULAR WITH 5' ACCESSIBLE ISLE	TOTAL # OF PARKING SPACES VAN SPACE WITH		TOTAL ACCESSIBLE PROVIDED
				11' ACCESSIBLE AISLE	8' ACCESSIBLE AISLE	
-	30	34	-	-	2	2
-	-	-	-	-	-	-
TOTAL	30	34	-	-	2	2

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1)

USE	WATER CLOSETS		URINALS	LAVATORIES		SHOWERS / TUBS	DRINKING FOUNTAINS	
	MALE	FEMALE		MALE	FEMALE		REGULAR	ACCESSIBLE
SPACE/ EXISTING	-	-	-	-	-	-	-	-
NEW	5	-	3	2	4	1	1	1
REQUIRED	4	-	2	2	2	1	1	1

*PER 2018 NCBC 2902.2.1, SEPERATE FACILITIES ARE NOT REQUIRED FOR DWELLING AND SLEEPING UNITS.

SPECIAL APPROVALS

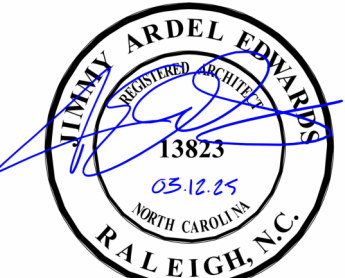
SPECIAL APPROVAL REQUIRED: ☐ NO ☒ YES
☒ LOCAL JURISDICTION ☐ OSC ☐ DHHS
☐ DEPARTMENT OF INSURANCE ☐ DPI ☒ OTHER: NC BUILDING CODE 2018, 1705.12.6
DESCRIPTION: ONSLOW COUNTY



PROJECT INFORMATION

ONSLOW COUNTY BEAR CREEK FIRE STATION
ONSLOW COUNTY
BID NO. 102-25C
138 OLD SAND RIDGE RD, HUBERT, NC 28539

SEALS



DKA JOB NUMBER

2324

REVISIONS

1	ADD 01	04/01/25

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PA: JIMMY ARDEL EDWARDS
PM: ALEXANDRE PENEGRE
Drawn By: AP
Plot Date: 4/1/2025 4:57:03 PM

DATE ISSUED

BID DOCUMENTS
03/12/2025

SHEET TITLE
CODE SUMMARY

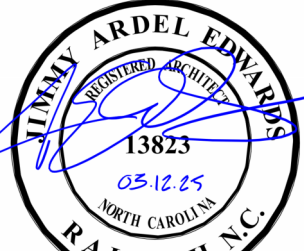
G002

PROJECT INFORMATION

ONSLOW COUNTY BEAR
CREEK FIRE STATION
ONSLOW COUNTY
BID NO. 102-25C

138 OLD SAND RIDGE RD, HUBERT, NC 28539

SEALS



DKA JOB NUMBER

2324

REVISIONS

1	ADD 01	04/01/25

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PA: JIMMY ARDEL EDWARDS
PM: ALEXANDRE PENEGRE
Drawn By: AP
Plot Date: 4/1/2025 4:57:03 PM

DATE ISSUED

BID DOCUMENTS

03/12/2025

SHEET TITLE

UL DETAILS

G005

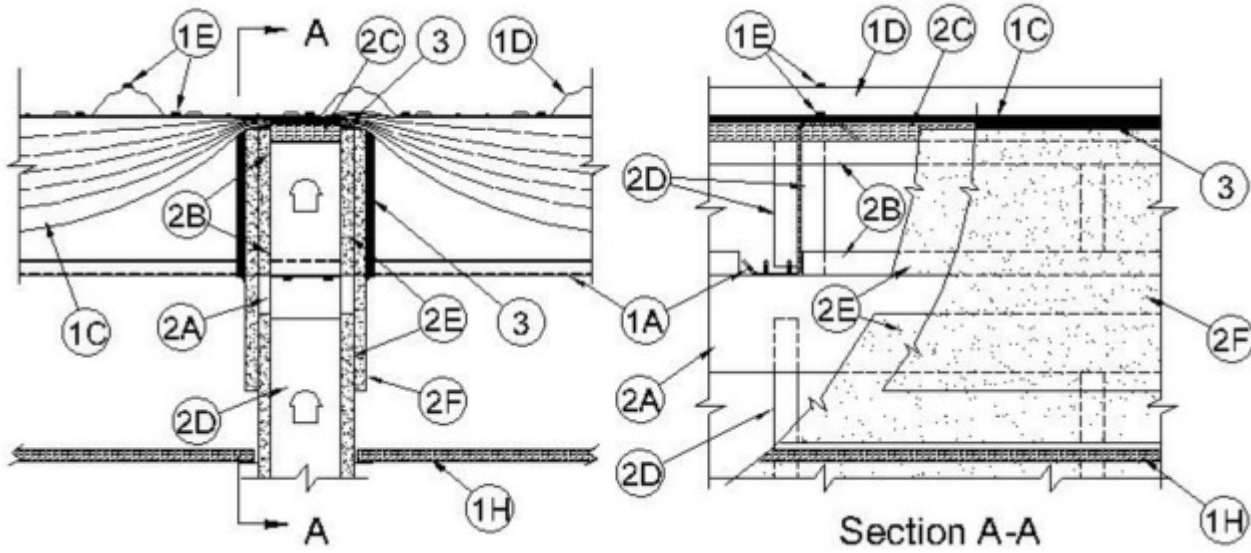
RATED ASSEMBLIES GENERAL NOTES:

- UL CERTIFIED RATED ASSEMBLIES ARE REPRINTED FROM THE ONLINE CERTIFICATIONS DIRECTORY WITH PERMISSION FROM UNDERWRITERS LABORATORIES, INC.
- FIRE PROTECTION MATERIALS DENOTED IN THE FIRE PROTECTION DETAILS PROVIDED HEREIN SHALL NOT BE CONSTRUED AS PROPRIETARY. EQUIVALENT FIRE PROTECTION SYSTEMS MAY BE UTILIZED IF SUBMITTED BY THE CONTRACTOR FOLLOWING REQUIREMENTS SET FORTH IN THE GENERAL CONDITIONS.
- ANY SUBSTITUTIONS OF MATERIALS USED IN RATED ASSEMBLIES ARE SUBJECT TO APPROVAL BY AUTHORITIES HAVING JURISDICTION.

System No. HW-D-0489
February 11, 2008

Assembly Rating — 1 Hr
Nominal Joint Width — 2 in.

Class II Movement Capabilities — 100% Compression and Extension



1. **Roof-Ceiling Assembly** — The fire rated roof-ceiling assembly shall be constructed of the materials and in the manner described in the individual P200 or P500 Series Roof-Ceiling Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Purlin** — Min 16 ga coated steel. Max spacing as specified in the individual **Roof-Ceiling Design**.

B. **Lateral Bracing** — (Not Shown) - As required.

C. **Batts and Blankets** - Insulation — Any faced compressible glass-fiber blanket insulation having a min 6 in. (152 mm) thickness before compression and a min density of 0.6 pcf (9.6 kg/m³). Insulation draped over purlins prior to installation of panel clips (Item 1F) and/or metal roof deck panels (Item 1D). Side edges of the batts shall be butted or overlapped a max of 3 in. (76 mm). See **Batts and Blankets** (BZJZ) category in the UL Fire Resistance Directory or Batts and Blankets (BKNV) category in the UL Building Materials Directory for names of manufacturers.

D. **Metal Roof Deck Panels** — Min 26 ga coated steel. Panels continuous over two or more spans. Roof panel end laps, if required, centered over purlins with min 3 in. (76 mm) panel overlap as specified in the individual **Roof-Ceiling Design**. A line of tube sealant or tape sealant may be used at panel end and side laps. See **Metal Roof Deck Panels** (TJVP) category in the UL Roofing Materials and Systems Directory for names of manufacturers.

E. **Fasteners** — Fasteners used for panel-to-purlin and panel-to-panel connections to be self-tapping, hex-head, plated steel or stainless steel screws with either an integral or a separate steel washer fitted with a compressible sealing washer. Fastener type, length, pilot hole diam and spacing to be as specified in the individual **Roof-Ceiling Design**.

F. **Roof Deck Fasteners** - **Panel Clips** — (Not Shown) - Panel clips used for panel-to-purlin connections to be secured to purlin through insulation as specified in the individual **Roof-Ceiling Design**. See **Roof Deck Fasteners** (TJSX) category in the UL Roofing Materials and Systems Directory for names of manufacturers.

G. **Thermal Spacer Blocks** — (Not Shown) - Expanded polystyrene strips cut to fit between panel clips (Item 1F) as specified in the individual **Roof-Ceiling Design**. Thermal spacer blocks, when used, are to be installed between insulation (Item 1C) and metal roof deck panels (Item 1D) over purlins.

H. **Ceiling Membrane** — **The Steel Framing Members*, Acoustical Material*, Gypsum Board*** and other ceiling membrane components shall be as specified in the individual **Roof-Ceiling Design**.

2. **Wall Assembly** — The 1 h fire-rated gypsum board/steel stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series **Wall and Partition Design** in the UL Fire Resistance Directory and shall include the following construction features:

A. **Ceiling Deflection Channel** — U-shaped channel formed from min 16 ga steel sized to accommodate steel studs (Item 2D) and provided with 5 in. (127 mm) flanges. Deflection channel installed perpendicular to purlins and secured to bottom flange of purlins with min No. 14 self-tapping, hex-head, plated steel or stainless steel screws.

B. **Steel Floor and Ceiling Runners** — Floor runner of the wall assembly and the floor and ceiling runners of the cripple wall above the wall assembly shall consist of min 1-1/4 in. (32 mm) deep min 25 ga galv steel channels sized to accommodate steel studs (Item 2D). Floor runner of cripple wall aligned with and screw-attached to top of ceiling deflection channel. Ceiling runner of cripple wall installed to compress insulation (Item 1C) to min thickness of 3/8 in. (10 mm) by wedging lengths of stud (Item 2D) between the runners. Steel studs of cripple wall attached to each side of purlin web and to floor and ceiling runners with steel screws.

C. **Batts and Blankets** - **Packing Material** — Unfaced compressible mineral wool batt insulation having a nom 2 in. (51 mm) thickness before compression and a nom density of 4 pcf (64 kg/m³). Strips of nom 2 in. (51 mm) thick batt cut to width of cripple wall ceiling runner and compressed min 50 percent in thickness between cripple wall ceiling runner and insulation (Item 1C). Compression of mineral wool batt packing material to result in compression of insulation (Item 1C) to nominal 3/8 in. (10 mm) thickness. See **Batts and Blankets** (BZJZ) category in the UL Fire Resistance Directory or Batts and Blankets (BKNV) category in the UL Building Materials Directory for names of manufacturers.

D. **Studs** — Steel studs to be min 3-1/2 in. (89 mm) wide. Studs cut max 2 in. (51 mm) less in length than assembly height beneath purlins with bottom nesting in and resting on the floor runner and with top nesting in ceiling deflection channel without attachment. Stud spacing not to exceed 24 in. (610 mm) O.C. Studs of cripple wall cut to length as required to compress packing material (Item 2C) and insulation (Item 1C) to min thicknesses of 1 in. (25 mm) and 3/8 in. (10 mm), respectively. Studs spaced max 24 in. (610 mm) OC.

E. **Gypsum Board** — Min 5/8 in. (16 mm) thick gypsum board sheets installed on each side of wall. Wall to be constructed as specified in the individual U400 or V400 Series Design in the UL Fire Resistance Directory except that a max 2 in. wide gap shall be maintained between the gypsum board of the wall assembly below the purlin and the gypsum board of the cripple wall. Top edge of gypsum board of wall assembly to be max 2 in. (51 mm) below top of ceiling deflection channel. Bottom edge of gypsum board of cripple wall to be flush with top of ceiling deflection channel. Screws securing gypsum board to steel studs of wall assembly to be located 2-1/4 in. to 2-1/2 in. (57 to 64 mm) below flange of ceiling deflection channel. Screws securing gypsum board of cripple wall to be driven into studs and runners of cripple wall. No screws are to be driven into flanges of ceiling deflection channel.

F. **Gypsum Board** — Min 5/8 in. (16 mm) thick "rip strip" of gypsum board installed to cover first layer of gypsum board on cripple wall and to lap min 3 in. (76 mm) onto gypsum board of wall assembly on each side of wall. The "rip strip" of gypsum board is to be the same material used for the wall assembly and is to be secured to the studs and runners of the cripple wall. No screws are to be driven into flanges of ceiling deflection channel. Joints of "rip strip" to be offset from joints of gypsum board on wall assembly.

Max separation between top of wall assembly gypsum board and bottom of cripple wall gypsum board (at time of installation of joint system) is 2 in. (51 mm). The joint system is designed to accommodate a max 100 percent compression or extension from its installed width.

3. **Fill, Void or Cavity Material** — **Caulk** — Min 5/8 in. (16 mm) thickness of fill material installed to fill any gap between top of cripple wall gypsum board and insulation (Item 1C) on each side of the wall. Additional caulk installed to fill annular space between purlin and gypsum board "rip strip" (Item 2F) on both sides of wall. Additional nom 1/2 in. (13 mm) diam bead of caulk to be applied around perimeter of purlin at its interface with the "rip strip" on each side of the wall.

3M COMPANY 3M FIRE PROTECTION PRODUCTS — CP 25WB+ caulk

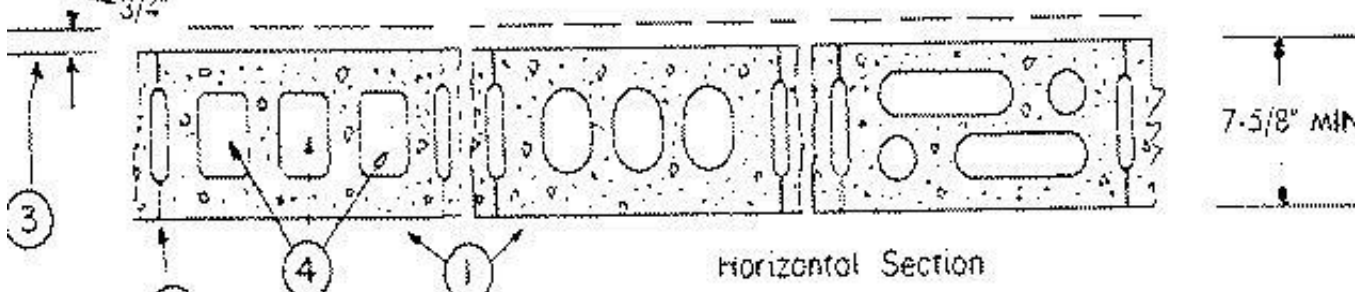
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Design No. U905
April 14, 2023

Bearing Wall Rating — 2 HR
Nonbearing Wall Rating — 2 HR

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



1. **Concrete Blocks*** — Various designs. Classification D-2 (2 hr). See **Concrete Blocks** category for list of eligible manufacturers.

2. **Mortar** — Blocks laid in full bed of mortar, nom. 3/8 in. thick, of not less than 2-1/4 and not more than 3-1/2 parts of clean sharp sand to 1 part Portland cement (proportioned by volume) and not more than 50 percent hydrated lime (by cement volume). Vertical joints staggered.

3. **Portland Cement Stucco or Gypsum Plaster** — Add 1/2 hr to classification if used. Where combustible members are framed in wall, plaster or stucco must be applied on the face opposite framing to achieve a max. Classification of 1-1/2 hr. Attached to concrete blocks (Item 1).

4. **Loose Masonry Fill** — If all core spaces are filled with loose dry expanded slag, expanded clay or shale (Rotary Kiln Process), water repellent vermiculite masonry fill insulation, or silicone treated perlite loose fill insulation add 2 hr to classification.

5. **Foamed Plastic*** — (Optional-Not Shown) — 1-1/2 in. thick max. 4 ft wide sheathing attached to concrete blocks (Item 1). **ATLAS ROOFING CORP** — EnergyShield Pro Wall Insulation, EnergyShield Pro 2 Wall Insulation, EnergyShield CGF Pro, EnergyShield Ply Pro, EnergyShield® CGF, EnergyShield® PanelCast, EnergyShield® and "EnergyShield® XR

DUPONT DE NEMOURS, INC. — Types Thermax Sheathing, Thermax Light Duty Insulation, Thermax Heavy Duty Insulation, Thermax Metal Building Board, Thermax White Finish Insulation, Thermax ci Exterior Insulation, Thermax XARMOR ci Exterior Insulation, Thermax Ht Insulation, Thermax Plus Liner Panel, Thermax Heavy Duty Plus (HDP), TUFF-R™ ci Insulation, Thermax Butler Stylwall Insulation Board and Thermax Morton Heavy Duty Insulation Board

FIRESTONE BUILDING PRODUCTS CO L L C — "Enverge™ Ci Foil Exterior Wall Insulation" and "Enverge™ Ci Glass Exterior Wall Insulation"

HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — Types "Xci-Class A", "Xci Foil (Class A)", "Xci 286"

RMAX, A BUSINESS UNIT OF SIKA CORPORATION — Types "TSX-8500", "ECOMAXci FR", "TSX-8510", "ECOMAX ci FR White", "ECOMAXci", "ECOMAXci FR Air Barrier", "Thermasheath-XP", "Thermasheath", "Durasheath"

JOHNS MANVILLE — Type "AP Foil-Faced Foam Sheathing"

5A. **Building Units*** — As an alternate to Items 5, min. 1-in thick polyisocyanurate composite foamed plastic insulation boards, nom. 48 by 48 or 96 in.

ATLAS ROOFING CORP — EnergyShield® Ply

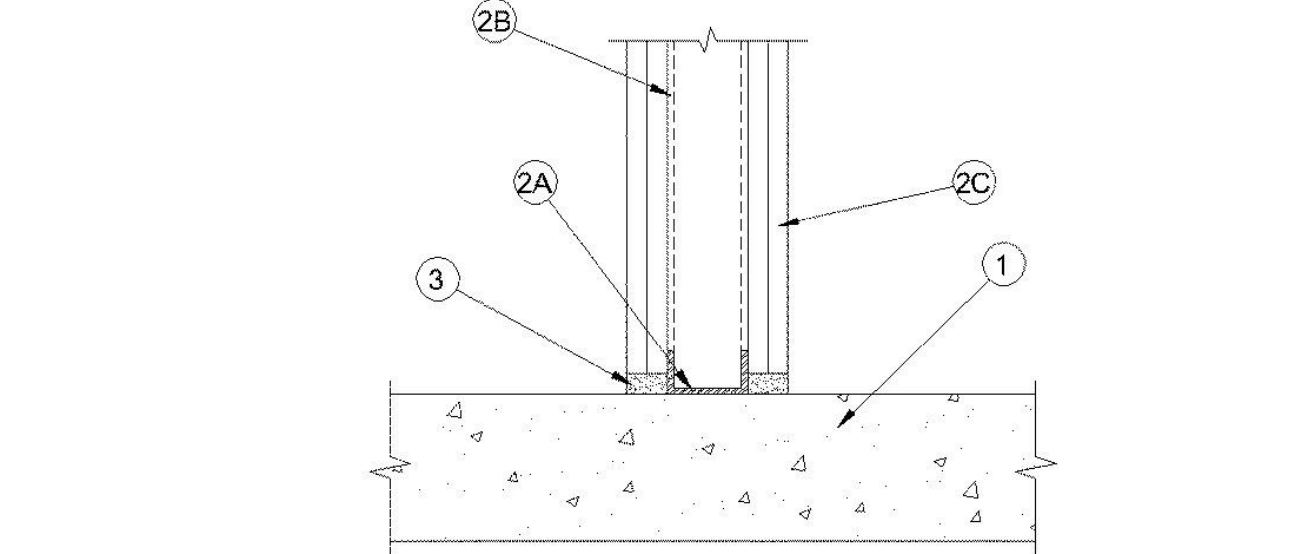
HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC — "Xci NB", "Xci Ply"

RMAX, A BUSINESS UNIT OF SIKA CORPORATION — "Thermasheath-SF", "ECOBASeG", "ThermaBase-CI", "ECOMAXci FR Ply", "ECOMAXci Ply"

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

System No. BW-S-0001
January 26, 2015

ANSI/ UL2079	CAN/ ULC S115
Assembly Ratings — 1 and 2 Hr (See Item 2)	F Ratings — 1 and 2 Hr (See Item 2)
Nominal Joint Width - 3/4 in.	FT Ratings — 1 and 2 Hr (See Item 2)
L Rating at Ambient — Less than 1 CFM/Lin Ft	FH Ratings — 1 and 2 Hr (See Item 2)
L Rating at 400° F — Less than 1 CFM/Lin Ft	FTH Ratings — 1 and 2 Hr (See Item 2)
Nominal Joint Width - 3/4 In.	
L Rating at Ambient — Less than 1 CFM/Lin Ft	
L Rating at 400° F — Less than 1 CFM/Lin Ft	



1. **Floor Assembly** — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) structural concrete. Floor may also be constructed of any 6 in. (152 mm) thick UL Classified hollow-core **Precast Concrete Units**. See **Precast Concrete Units** category in the Fire Resistance Directory for names of manufactures.

2. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/steel stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory. In addition, the wall may incorporate a head-of-wall joint system constructed as specified in the HW Series Joint Systems in the UL Fire Resistance Directory. The wall shall include the following construction features:

A. **Steel Floor Runner** — Floor runners of wall assembly shall consist of min No. 25 gauge galv steel channels sized to accommodate steel studs (Item 2B). Floor runners to be provided with min 1-1/4 in. (32 mm) flanges. Runners secured with steel fasteners spaced 12 in. (305 mm) OC.

B. **Studs** — Steel studs to be min 2-1/2 in. (64 mm) wide. Studs cut 1/2 to 3/4 in. (13 to 19 mm) less in length than assembly height with bottom nesting in, resting on and fastened to floor runner with sheet metal screws. Stud spacing not to exceed 24 in. (610 mm) OC.

C. **Gypsum Board** — Gypsum board installed to a min total thickness of 5/8 or 1-1/4 in. (16 or 32 mm) on each side of wall for a 1 or 2 hr rated wall, respectively. Wall to be constructed as specified in the individual U400 or V400 Series Design in the UL Fire Resistance Directory, except that a max 3/4 in. (19 mm) gap shall be maintained between the bottom of gypsum board and top of concrete floor. **The hourly fire rating of the joint system is equal to the hourly fire rating of the wall.**

3. **Fill, Void or Cavity Material** **Sealant** — **Max separation between top of floor and bottom of gypsum board is 3/4 in. (19 mm).** For 1 and 2 hr rated wall assemblies, min 5/8 in. or 1-1/4 in. (16 or 1-1/4 mm) thickness of fill material, respectively, installed on each side of the wall between the bottom of the gypsum board and the top of the concrete floor, flush with each surface of the wall.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP601S Elastomeric Firestop Sealant, CP606 Flexible Firestop Sealant, CFS-S SIL GG, FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

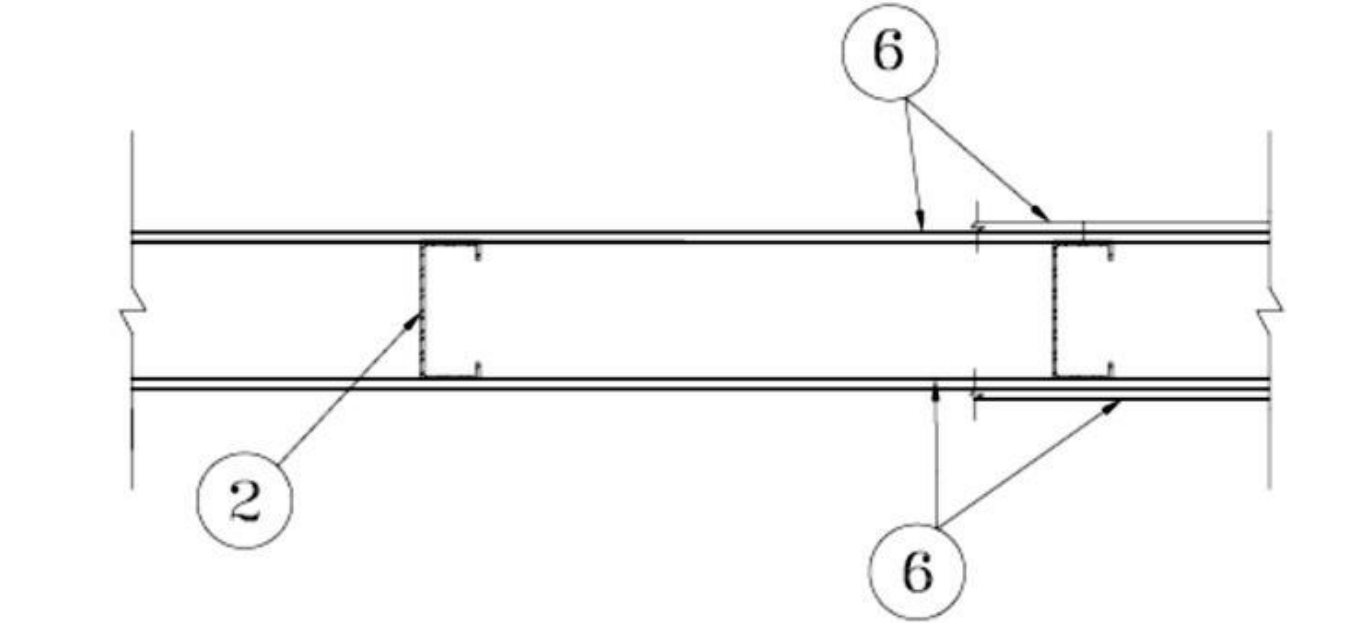
Design No. U407
June 19, 2023

Nonbearing Wall Ratings — 1/2 or 1 HR. (See Items 1, 1A, 2, 2A and 6)
Bearing Wall Rating — 1/2 HR. (See Items 3 and 6)
Finish Rating — (See Item 3)

Loaded Per 2005 NDS Supplement, ASD Method, Wall Braced by Sheathing, 100% of Design Load Applied to Wall.

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



1. **Floor and Ceiling Runners** — (Not shown- For the 1/2 or 1 Hour Nonbearing Wall Ratings) — For use with Item 2 - Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min depth to accommodate stud size, with min 1-1/4 in. long legs, attached to floor and ceiling with fasteners 24 in. OC max.

1A. **Framing Members**— **Floor and Ceiling Runners** — (Not shown, As an alternate to Item 1 - For the 1/2 or 1 Hour Nonbearing Wall Ratings) — For use with Item 2A, channel shaped, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, min depth to accommodate stud size, attached to floor and ceiling with fasteners 24 in. OC. max.

CLARKDIETRICH BUILDING SYSTEMS — CD ProTRAK
DMFCWBS L L C — ProTRAK
MBA METAL FRAMING — ProTRAK
RAM SALES L L C — Ram ProTRAK
STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProTRAK

1B. **Framing Members** - **Floor and Ceiling Runner** — (Not shown, As an alternate to Item 1 - For the 1/2 or 1 Hour Nonbearing Wall Ratings) — For use with Item 2B, proprietary channel shaped runners, min depth to accommodate stud size, attached to floor and ceiling with fasteners 24 in. OC. max.

CEMCO, LLC — Viper25™ Track
MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™ Track
IMPERIAL MANUFACTURING GROUP INC — Viper25™ Track

1C. **Framing Members**— **Floor and Ceiling Runners** — (Not shown, As an alternate to Item 1 - For the 1/2 or 1 Hour Nonbearing Wall Ratings) — For use with Item 2C, channel shaped, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, min depth to accommodate stud size, attached to floor and ceiling with fasteners 24 in. OC. max.

TELLING INDUSTRIES L L C — TRUE-TRACK™

1D. **Framing Members**— **Floor and Ceiling Runners** — (Not shown, As an alternate to Item 1 - For the 1/2 or 1 Hour Nonbearing Wall Ratings) — For use with Item 2E, channel shaped, fabricated from min. 0.018 in. (min bare metal thickness) galvanized steel, min depth to accommodate stud size, attached to floor and ceiling with fasteners 24 in. OC. max.

RESCUE METAL FRAMING, L L C — AlphaTRAK

2. **Steel Studs** — (For the 1/2 or 1 Hour Nonbearing Wall Ratings) Channel shaped, fabricated from min 25 MSG corrosion-protected steel, min. 3-5/8 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

2A. **Framing Members**— **Steel Studs** — (Not shown, As an alternate to Item 2- For the 1/2 or 1 Hour Nonbearing Wall Ratings) — channel shaped studs, min. 3-5/8 in. deep, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

CLARKDIETRICH BUILDING SYSTEMS — CD ProSTUD
DMFCWBS L L C — ProSTUD
MBA METAL FRAMING — ProSTUD
RAM SALES L L C — Ram ProSTUD
STEEL STRUCTURAL PRODUCTS L L C — Tri-S ProSTUD

2B. **Framing Members** - **Steel Studs** — (Not shown, As an alternate to Item 2- For the 1/2 or 1 Hour Nonbearing Wall Ratings) - Proprietary channel shaped studs, 3-5/8 in. deep spaced a max of 24 in. OC. Studs to be cut 3/4 in less than the assembly height

CEMCO, LLC — Viper25™
MARINO/WARE, DIV OF WARE INDUSTRIES INC — Viper25™
IMPERIAL MANUFACTURING GROUP INC — Viper25™

2C. **Framing Members**— **Steel Studs** — (Not shown, As an alternate to Item 2- For the 1/2 or 1 Hour Nonbearing Wall Ratings) — channel shaped studs, min. 3-5/8 in. deep, fabricated from min. 0.015 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

TELLING INDUSTRIES L L C — TRUE-STUD™

2D. **Framing Members** - **Steel Studs** — (As an alternate to Item 2- For the 1/2 or 1 Hour Nonbearing Wall Ratings) - For use with Item 1 (3-5/8 in. wide track), channel shaped studs, fabricated from min 25 MSG corrosion-protected steel, 1-1/4 in. wide by 3-5/8 in. deep, spaced a max of 24 in. OC. Studs to be cut 3/8 to 3/4 in. less than assembly height.

MARINO/WARE, DIV OF WARE INDUSTRIES INC — StudRite™

2E. **Framing Members**— **Steel Studs** — (Not shown, As an alternate to Item 2- For the 1/2 or 1 Hour Nonbearing Wall Ratings) — channel shaped studs, min. 3-5/8 in. deep, fabricated from min. 0.018 in. (min bare metal thickness) galvanized steel, spaced a max of 24 in. OC. Studs to be cut 3/4 in. less than assembly height.

RESCUE METAL FRAMING, L L C — AlphaSTUD

3. **Wood Studs** — (Not shown, As an alternate to Items 1 and 2- For the 1/2 Bearing Wall Rating) - Nom 2 by 4 in. spaced 16 in. OC max, effectively firestopped. When wood studs are used, Finish Rating is 16 Min.

4. **Batts and Blankets** — (Optional, not shown) — Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. See **Batts and Blankets** (BKNV or BZJZ) Categories for names of Classified companies.

5. **Furring Channels** — (Optional, not shown, for single or double layer systems) — Resilient furring channels fabricated from min 25 MSG corrosion-protected steel, spaced vertically a max of 24 in. OC. Flange portion attached to each intersecting stud with 1/2 in. long Type S-12 steel screws for steel studs and 1 in. long Type S screws for wood studs.

6. **Gypsum Board*** — 5/8 in. thick paper surfaced, with beveled, square, or tapered edges, applied either horizontally or vertically. Vertical joints in adjacent layers (multilayer systems) staggered one stud cavity. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered. Horizontal edge joints and horizontal butt joints in adjacent layers need not be staggered.

1/2 Hour Bearing Rating On Wood Studs - Single layer secured with 1-5/8 in. long Type S steel screws spaced 12 in. OC at the perimeter and in the field.

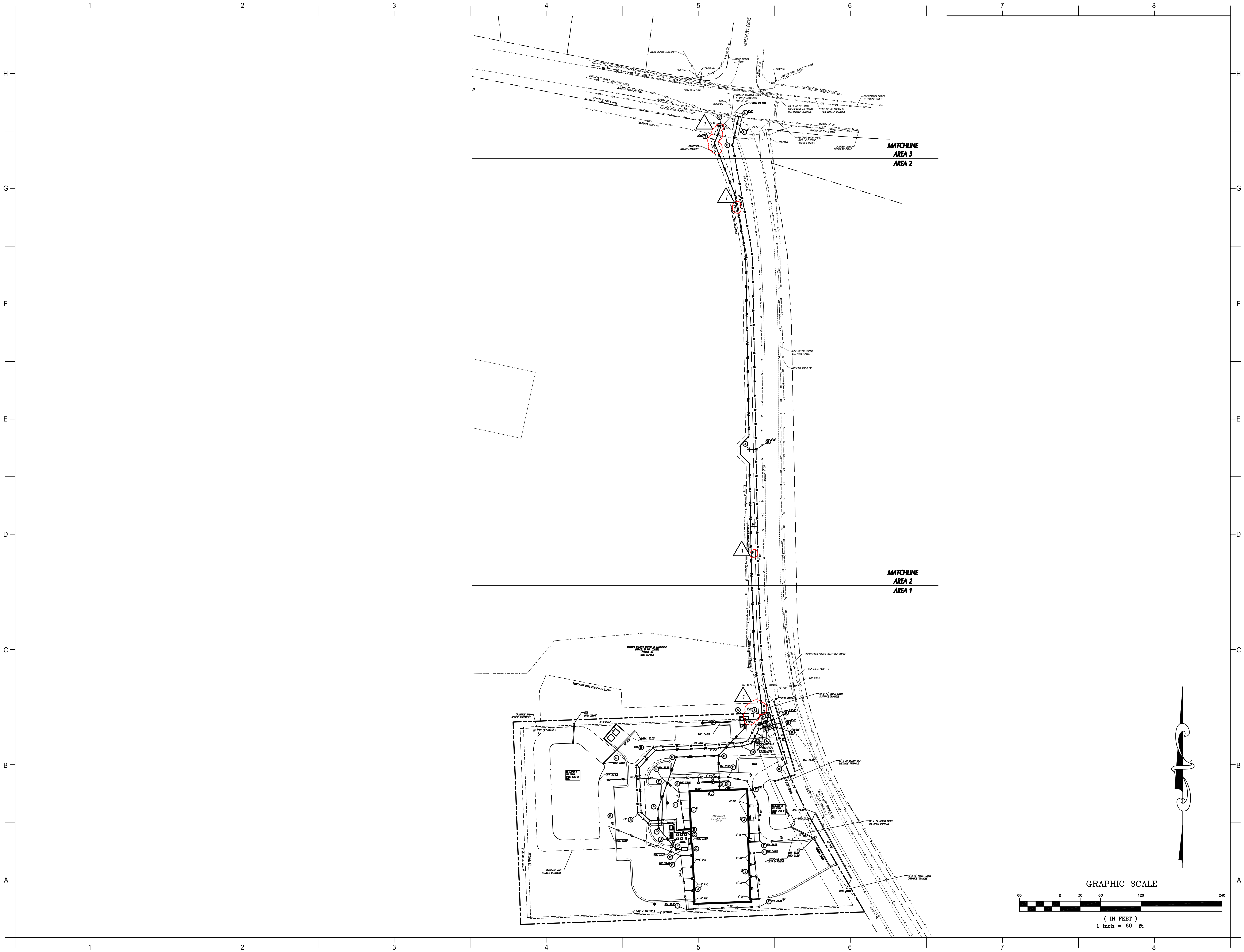
1/2 Hour Nonbearing Rating On Steel Studs - Single layer secured with 1 in. long Type S steel screws spaced 8 in. OC at the perimeter and 8 in. OC in the field.

1 Hour Nonbearing Rating On Steel Studs - Base layer boards secured with 1 in. long Type S steel screws spaced 16 in. OC at the perimeter and 16 in. OC in the field. Face layer boards secured with 1-5/8 in. long Type S steel screws spaced 16 in. OC at the perimeter and 16 in. OC in the field. When joints are aligned, screws are offset 8 in. between layers.

CGC INC — 5/8 in. thick Type FC30
UNITED STATES GYPSUM CO — 5/8 in. thick Type FC30
USG MEXICO S A DE C V — 5/8 in. thick Type FC30

7. **Joint Tape and Compound** — Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads of outer layers. Paper tape, nom 2 in. wide, embedded in first layer of compound over all joints of outer layer panels. Paper tape and joint compound may be omitted when gypsum panels are supplied with a square edge.


* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.





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Phone: (919) 319-8718
Fax: (919) 319-8716
Lic: C-109
PE: C-1595

PROJECT INFORMATION

ONSLOW COUNTY BEAR
CREEK FIRE STATION
ONSLOW COUNTY

OLD SAND RIDGE RD, HUBERT, NC 28539

SEALS

DKA JOB NUMBER
2324

REVISIONS	
1	04/01/25 ADDENDUM #1

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Drawn By: SL/SH
Plot Date: 03/12/2025

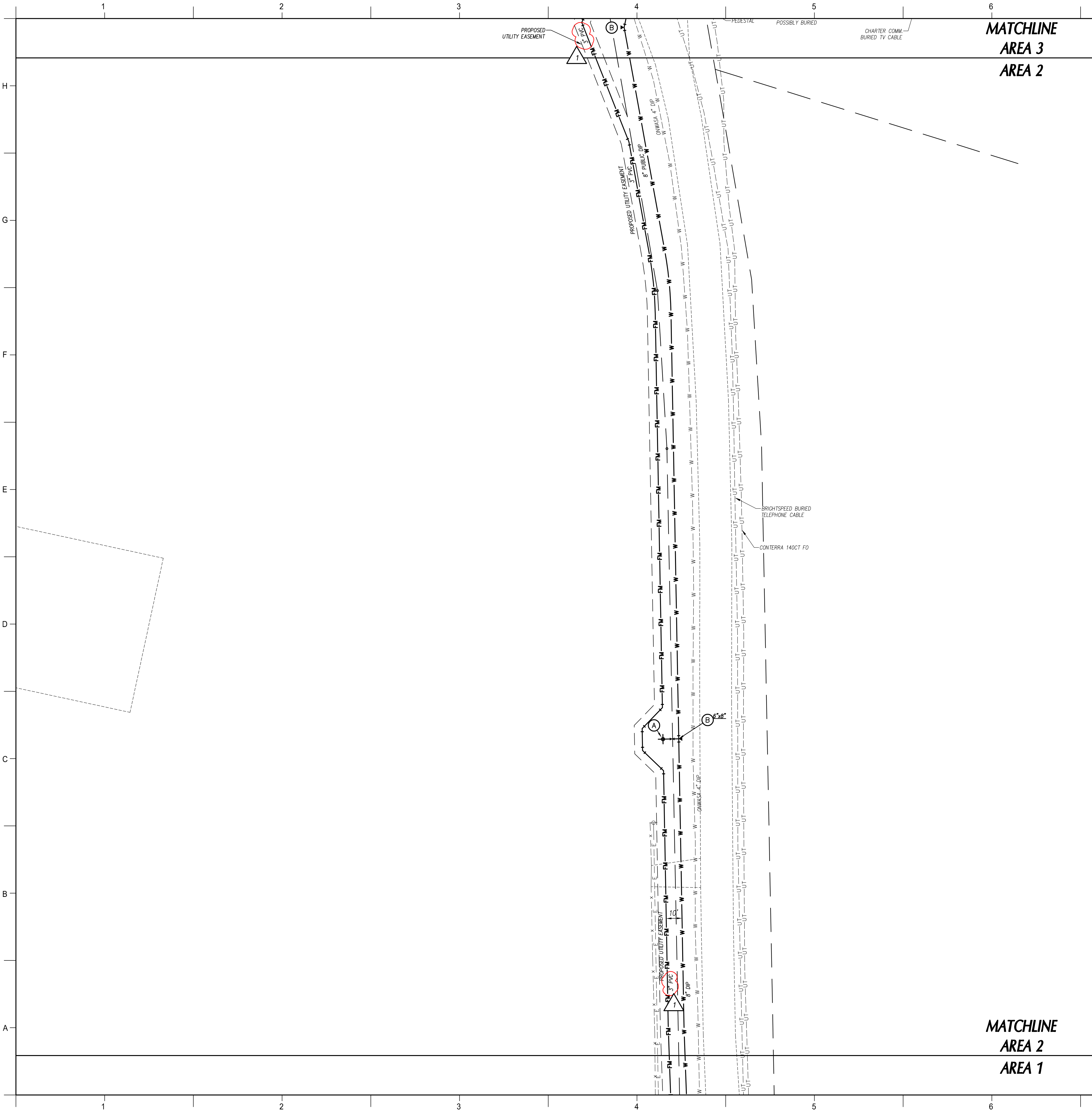
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03/12/2025

SHEET TITLE
OVERALL UTILITY PLAN

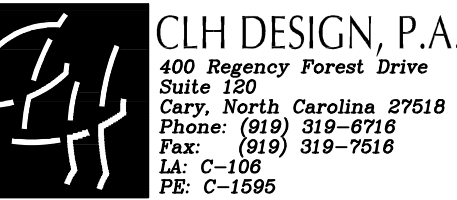
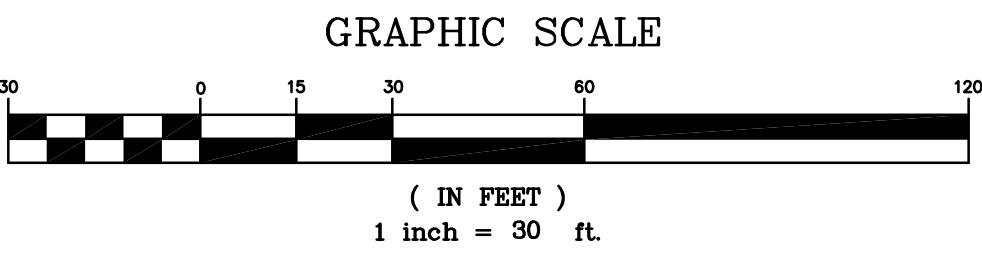
C500



UTILITY LEGEND	
EXISTING	PROPOSED
CHILLED WATER	-----CW-----
ELECTRICAL (OVERHEAD)	----- E -----
ELECTRICAL (UNDERGROUND)	-----UE-----
FOUNDATION DRAIN	-----FD-----
GAS	----- G -----
SANITARY SEWER	-----SS-----
TELEPHONE (OVERHEAD)	----- T -----
TELEPHONE (UNDERGROUND)	-----UT-----
WATER	----- W -----
ROOF DRAIN	-----RD-----
FIRE PROTECTION	-----FP-----
STORM DRAIN	=====
TREE PROTECTION FENCING, SEE EROSION CONTROL PLANS	
LIGHT POLE	☆ LP
UTILITY POLE	⚡ PP
MANHOLE	○ MH
CLEAN OUT	⊙ CO
DROP INLET,CATCH BASIN	□ DI, CB
FIRE HYDRANT	⊕ FH
WATER VALVE	⊙ WV
POST INDICATOR VALVE (PIV)	⊕ PIV
FIRE DEPARTMENT CONNECTION (FDC)	⊕ FDC
THRUST BLOCKING	⊕ TB
SANITARY SEWER STRUCTURE IDENTIFICATION	1

- GENERAL NOTES-UTILITY
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL ~~XXXX~~ AND NCDOT STANDARDS, SPECIFICATIONS AND DETAILS.
 - INSTALL WATERMANS WITH A COVER OF NO LESS THAN 3'-FT.
 - INSTALL SEWER MAINS WITH A COVER OF NO LESS THAN 3'-FT TO FINISH GRADE IN NON-TRAFFIC AREAS, 4'-FT TO FINISH GRADE IN TRAFFIC AREAS.
 - INSTALL ALL UTILITIES TO PROVIDE REQUIRED CLEARANCES AS INDICATED IN THE SPECIFICATIONS.
 - WATERLINES AND SEWER MAINS SHALL BE INSTALLED WITH A MINIMUM HORIZONTAL CLEARANCE OF 10'-FT.
 - SEWER MAINS SHALL BE INSTALLED WITH A MINIMUM VERTICAL CLEARANCE OF 24-IN TO STORM DRAINAGE PIPES.
 - COORDINATE AND SCHEDULE INSTALLATION OF ALL UTILITIES WITH OTHER PRIME CONTRACTORS, UTILITY COMPANIES AND OTHER TRADES INCLUDING BUT NOT LIMITED TO: NATURAL GAS, ELECTRICITY, TELEPHONE AND CATV.
 - VERIFY EXISTING CONDITIONS AND CONNECTIONS TO EXISTING UTILITIES PRIOR TO CONSTRUCTION. NOTIFY ARCHITECT IF ANY DISCREPANCIES ARE DISCOVERED.
 - CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGES DURING CONSTRUCTION AND SHALL MAKE REPAIRS AT NO EXPENSE TO THE OWNER.
 - ALL CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE NCSBC AND OSHA REQUIREMENTS.
 - THE CONTRACTOR SHALL PROVIDE AN AS-BUILT SURVEY OF ALL UTILITY AND STORM DRAINAGE IMPROVEMENTS FOLLOWING CONSTRUCTION.
 - CONTRACTOR SHALL PHASE DEMOLITION AND NEW CONSTRUCTION TO ENSURE UNINTERRUPTED ACCESS AND UTILITY SERVICE TO ADJACENT FACILITIES. COORDINATE SHORT-TERM, OFF-HOUR, TEMPORARY SHUT-DOWNS WITH THE OWNER.
 - SEE GENERAL NOTES ON EXISTING CONDITIONS AND DEMOLITION PLAN FOR REQUIREMENTS FOR REMOVAL AND PATCHING OF PAVEMENT FOR UTILITY INSTALLATION.
 - ALL ROOF DRAINS SHALL BE 6" PVC (SCH 40) @ 1.04% MIN. SLOPE UNLESS INDICATED OTHERWISE. USE DUCTILE IRON WHEN COVER IS LESS THAN 24-IN.
 - ALL SANITARY SEWER SERVICES SHALL BE 4" PVC (SCH 40) @ 0.04% MIN. SLOPE UNLESS INDICATED OTHERWISE. USE DUCTILE IRON WHEN COVER IS LESS THAN 24-IN.
 - ALL CONDENSATE LINES SHALL BE CONNECTED TO STORM DRAINAGE SYSTEM.
 - NO WORK SHALL BE PERFORMED ON RIGHT-OF-WAYS OR ADJACENT PROPERTIES UNTIL THE OWNER NOTIFIES CONTRACTOR IN WRITING OF PROCUREMENT OF APPROPRIATE PERMITS, EASEMENTS, AGREEMENTS, OR RIGHTS-OF-WAY.

- UTILITY KEY NOTES
- (A) FIRE HYDRANT ASSEMBLY WITH GATE VALVE, SEE DETAIL SHEET C901.
 - (B) THRUST BLOCKING, TYP, SEE DETAIL SHEET C901.
 - (C) 6-IN x 2-IN FORCE MAIN SERVICE SADDLE TAP WITH GATE VALVE AND CHECK VALVE ASSEMBLY PER ONWASA REQUIREMENTS.
 - (D) EXTEND UTILITY TO WITHIN 5'-0" OF BUILDING WALL OR AS INDICATED ON PLUMBING PLANS. REFER TO PLUMBING PLANS FOR LOCATION AND INVERTS.
 - (E) EXTEND WATER MAIN TO 12-IN ABOVE FINISH FLOOR FOR FIRE PROTECTION/PLUMBING CONNECTION, SEE DETAIL SHEET C902. REFER TO FIRE PROTECTION/PLUMBING PLANS FOR EXACT LOCATION.
 - (F) ROOFDRAIN CLEANOUT, SEE DETAIL SHEET C900.
 - (G) 2" DOMESTIC WATER METER, SEE DETAIL SHEET C902.
 - (H) GATE VALVE AND VALVE BOX, SEE DETAIL SHEET C901.
 - (J) DOWNSPOUT CONNECTION, SEE ARCHITECTURE PLANS.
 - (K) 2-IN BLOW-OFF ASSEMBLY, SEE DETAIL SHEET C902.
 - (L) STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY, SEE DETAIL SHEET C902 AND SPECIFICATIONS.
 - (M) FIRE DEPARTMENT CONNECTION, SEE DETAIL SHEET C902.
 - (N) 2-IN ZURN-MILKINS MODEL 975XL2 REDUCED PRESSURE BACKFLOW ASSEMBLY (RPA) WITHIN HEATED ENCLOSURE. SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.
 - (O) OIL/WATER SEPARATOR BY PG, SEE PME PLANS.
 - (P) NEW SANITARY SEWER CLEANOUT, TYP, SEE DETAIL SHEET C900.
 - (Q) 6-IN ZURN-MILKINS MODEL 4750A REDUCED PRESSURE BACKFLOW DETECTOR ASSEMBLY (RPDA) WITHIN HEATED ENCLOSURE. SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.
 - (R) 25' TALL LIGHT POLE, SEE DRAWING NUMBER C010 SITE ELECTRICAL.
 - (S) PRIVATE PUMP STATION, SEE DETAIL SHEET C903.
 - (T) INCREASER/REDUCER.
 - (U) IN-LINE DRAIN, SEE DETAIL SHEET C900.



PROJECT INFORMATION

ONSLOW COUNTY BEAR CREEK FIRE STATION

ONSLOW COUNTY
OLD SAND RIDGE RD. HUBERT, NC 28539

SEALS

DKA JOB NUMBER
2324

REVISIONS	
1	04/01/25 ADDENDUM #1

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Drawn By: SL/SH
Plot Date: 03/12/2025

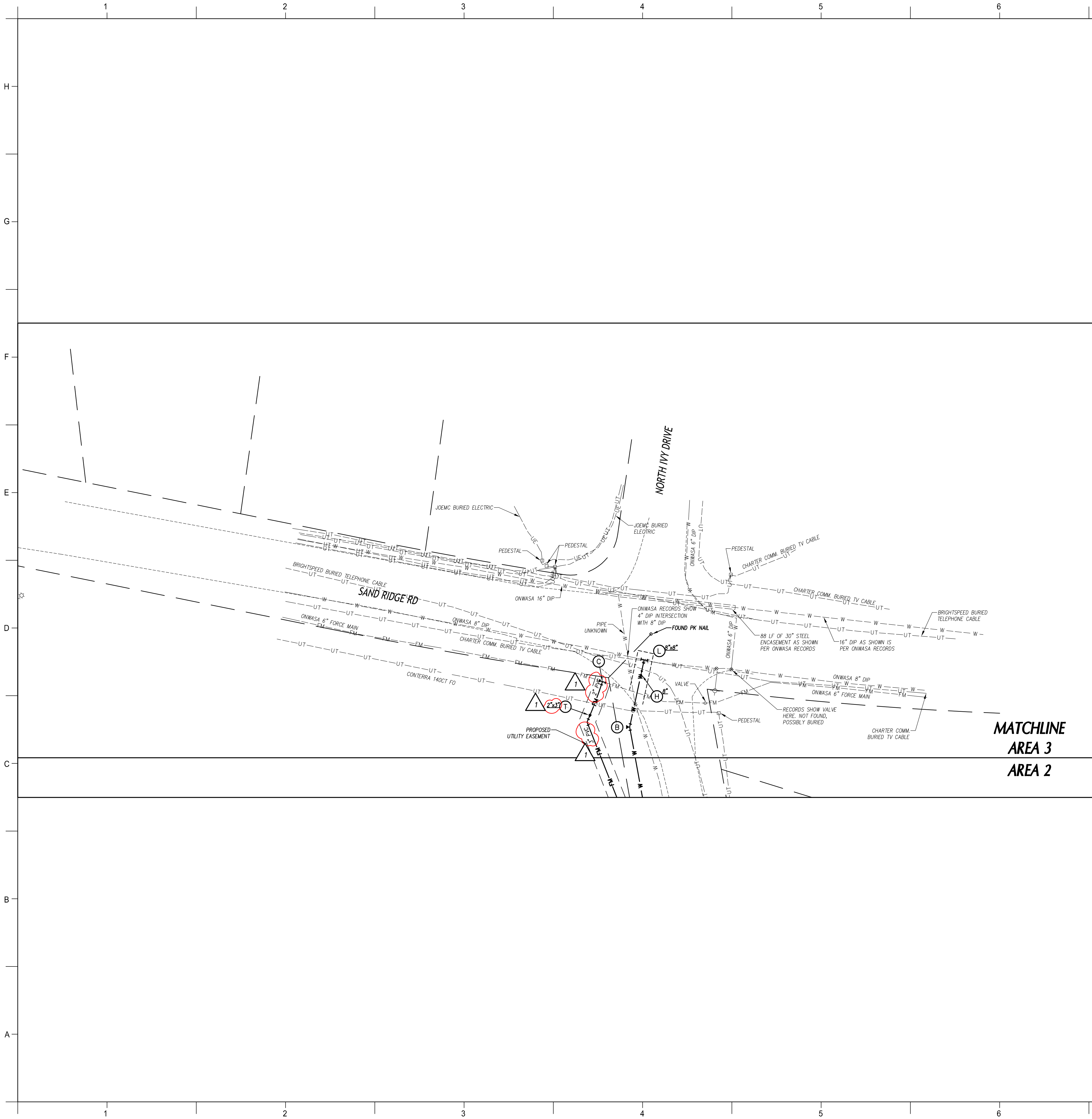
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SHEET TITLE
UTILITY PLAN - AREA 2

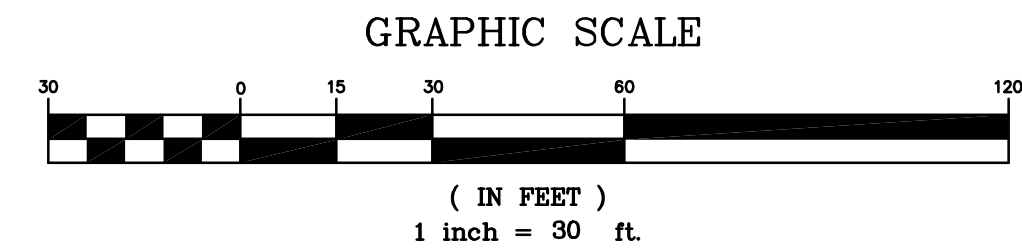
C502



UTILITY LEGEND		
	EXISTING	PROPOSED
CHILLED WATER	-----CW-----	CW
ELECTRICAL (OVERHEAD)	----- E -----	E
ELECTRICAL (UNDERGROUND)	-----UE-----	UE
FOUNDATION DRAIN	-----FD-----	FD
GAS	----- G -----	G
SANITARY SEWER	-----SS-----	SS
TELEPHONE (OVERHEAD)	----- T -----	T
TELEPHONE (UNDERGROUND)	-----UT-----	UT
WATER	----- W -----	W
ROOF DRAIN	-----RD-----	RD
FIRE PROTECTION	-----FP-----	FP
STORM DRAIN	=====	
TREE PROTECTION FENCING, SEE EROSION CONTROL PLANS		
LIGHT POLE	☆ LP	★
UTILITY POLE	PP	
MANHOLE	○ MH	●
CLEAN OUT	◎ CO	◉
DROP INLET,CATCH BASIN	□ DI, CB	■
FIRE HYDRANT	⊕ FH	⊕
WATER VALVE	⊙ WV	⊕
POST INDICATOR VALVE (PIV)		⊕
FIRE DEPARTMENT CONNECTION (FDC)		⊕
THRUST BLOCKING		⊕
SANITARY SEWER STRUCTURE IDENTIFICATION		1

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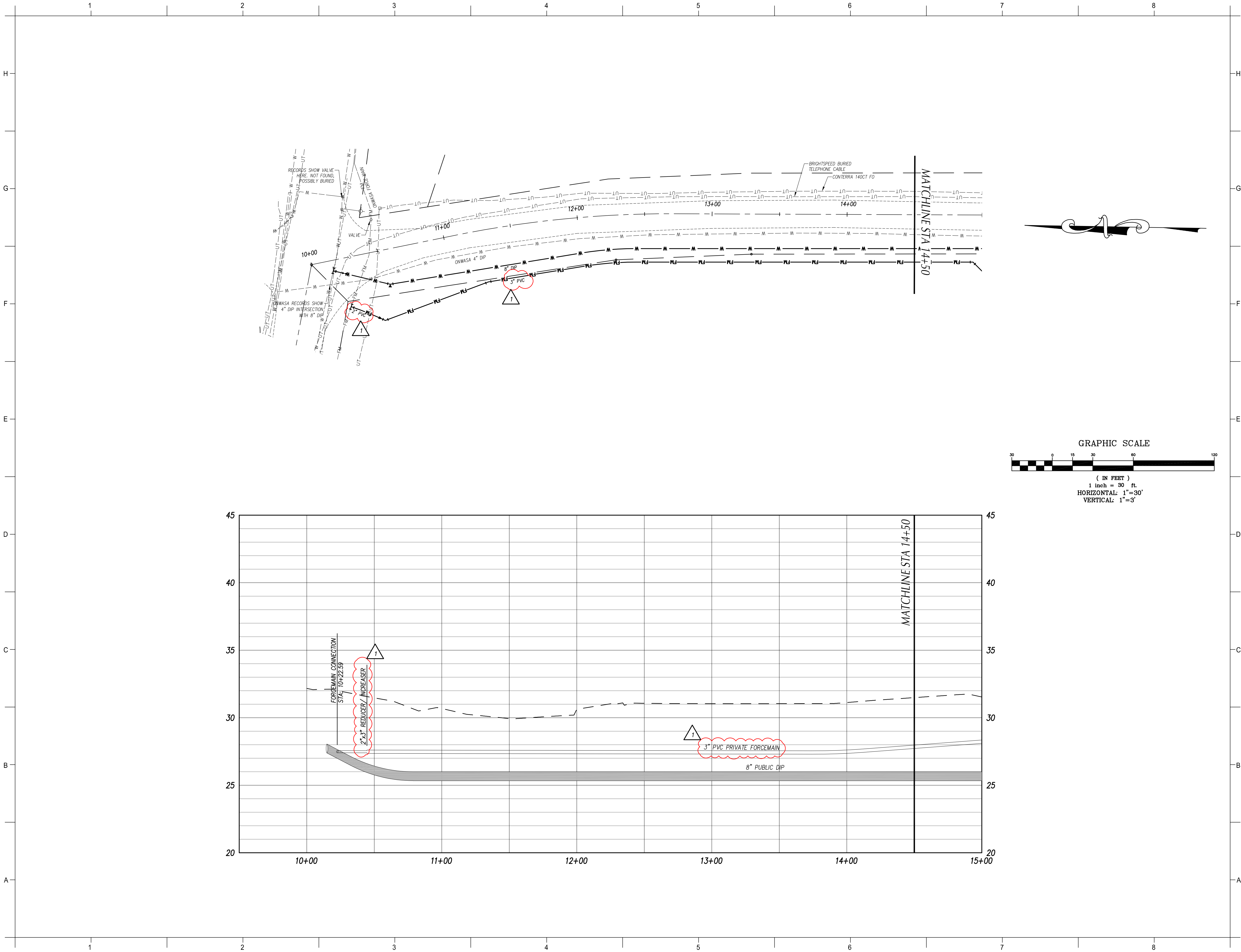
- UTILITY KEY NOTES
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 - (B) THRUST BLOCKING, TYP, SEE DETAIL SHEET C901.
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 - (E) EXTEND WATER MAIN TO 12-IN ABOVE FINISH FLOOR FOR FIRE PROTECTION/PLUMBING CONNECTION, SEE DETAIL SHEET C902. REFER TO TO FIRE PROTECTION/PLUMBING PLANS FOR EXACT LOCATION.
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 - (G) 2" DOMESTIC WATER METER, SEE DETAIL SHEET C902.
 - (H) GATE VALVE AND VALVE BOX, SEE DETAIL SHEET C901.
 - (J) DOWNSPOUT CONNECTION, SEE ARCHITECTURE PLANS.
 - (K) 2-IN BLOW-OFF ASSEMBLY, SEE DETAIL SHEET C902.
 - (L) STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY, SEE DETAIL SHEET C902 AND SPECIFICATIONS.
 - (M) FIRE DEPARTMENT CONNECTION, SEE DETAIL SHEET C902.
 - (N) 2-IN ZURN-MILKINS MODEL 975XL2 REDUCED PRESSURE BACKFLOW ASSEMBLY (RPA) WITHIN HEATED ENCLOSURE. SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.
 - (O) OIL/WATER SEPARATOR BY PG, SEE PME PLANS.
 - (P) NEW SANITARY SEWER CLEANOUT, TYP, SEE DETAIL SHEET C900.
 - (Q) 6-IN ZURN-MILKINS MODEL 475DA REDUCED PRESSURE BACKFLOW DETECTOR ASSEMBLY (RPDA) WITHIN HEATED ENCLOSURE. SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.
 - (R) 25' TALL LIGHT POLE, SEE DRAWING NUMBER C010 SITE ELECTRICAL.
 - (S) PRIVATE PUMP STATION, SEE DETAIL SHEET C903.
 - (T) INCREASER/REDUCER.
 - (U) IN-LINE DRAIN, SEE DETAIL SHEET C900.



REVISIONS	
1	04/01/25 ADDENDUM #1

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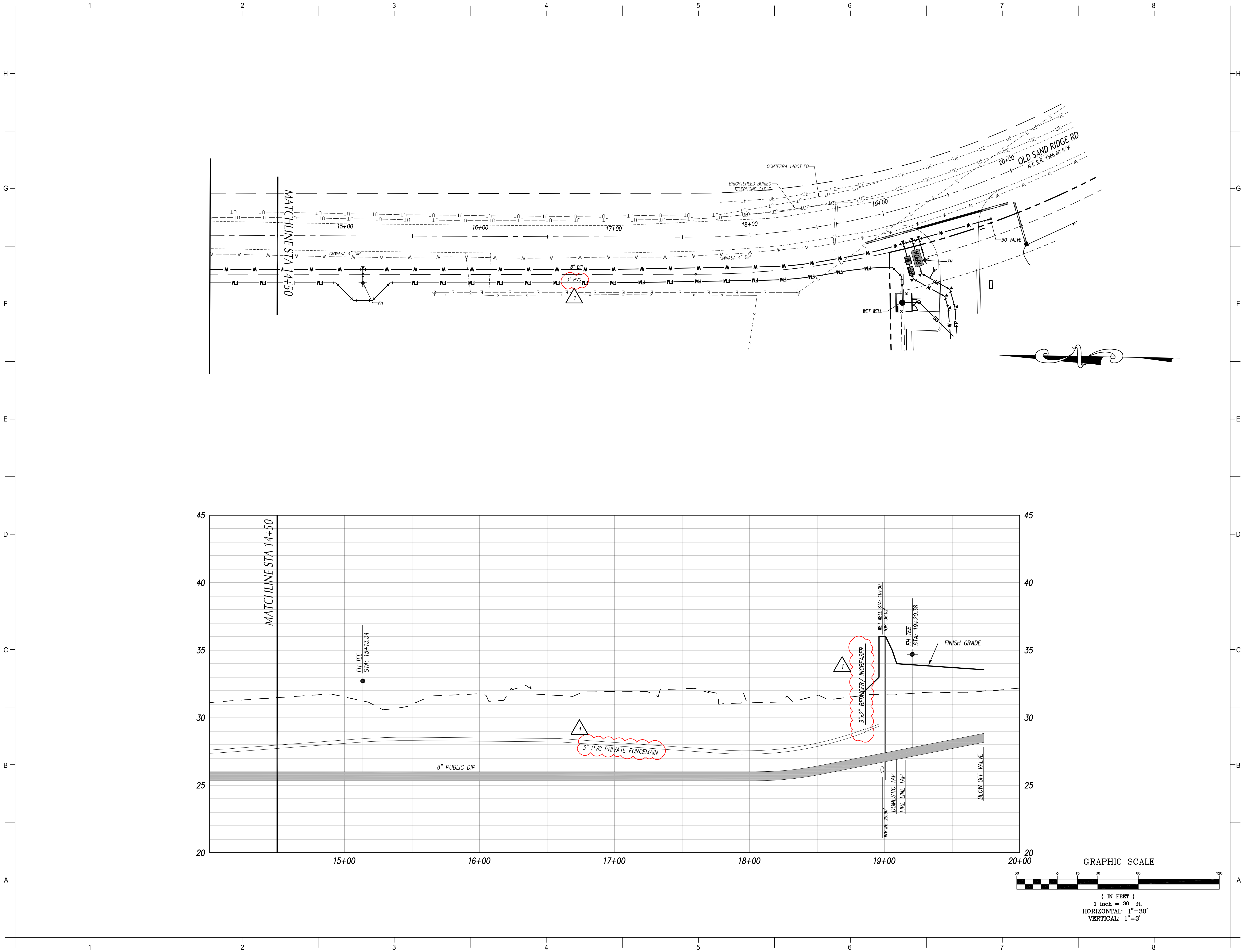
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1	04/01/25 ADDENDUM #1

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Drawn By: SL/SH
Plot Date: 03/12/2025



PROJECT INFORMATION

ONSLOW COUNTY BEAR
CREEK FIRE STATION
ONSLOW COUNTY

OLD SAND RIDGE RD, HUBERT, NC 28539

SEALS

DKA JOB NUMBER
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REVISIONS	
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Plot Date: 03/12/2025

DATE ISSUED

BID DOCUMENTS

03/12/2025

SHEET TITLE
FORCEMAIN &
WATERLINE
PLAN AND PROFILE

C505

PROJECT INFORMATION

ONSLOW COUNTY BEAR
CREEK FIRE STATION
ONSLOW COUNTY
BID NO. 102-25C

138 OLD SAND RIDGE RD, HUBERT, NC 28539

SEALS



DKA JOB NUMBER
2324

REVISIONS

1	ADD 01	04/01/25
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PA: JIMMY ARDEL EDWARDS
PM: ALEXANDRE PENEGRE
Drawn By: _____ Author
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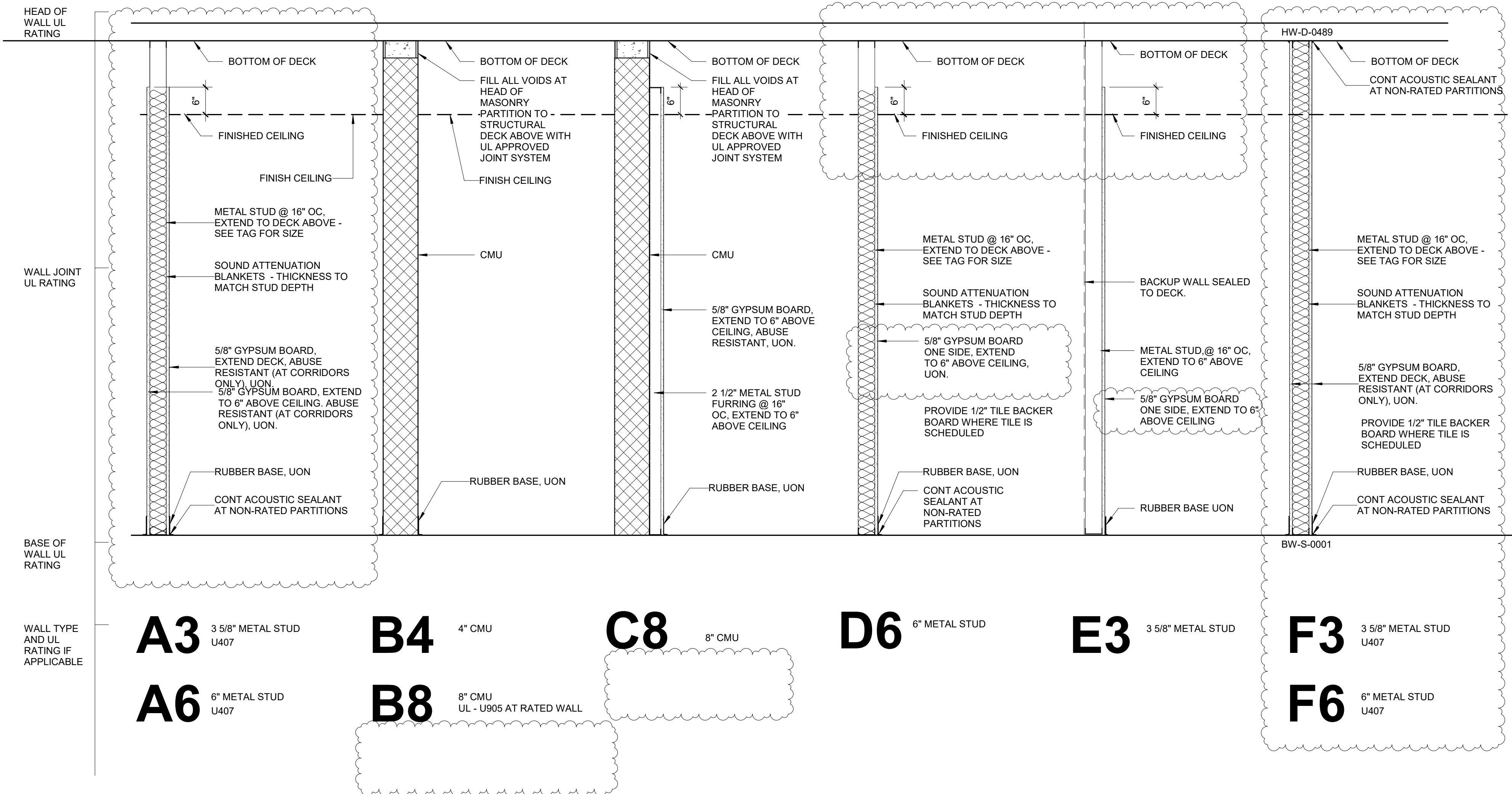
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03/12/2025


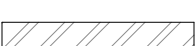

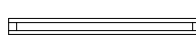


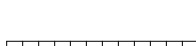
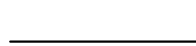

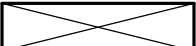

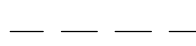
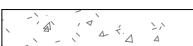
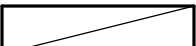
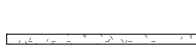
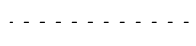
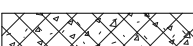

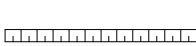
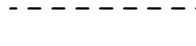


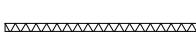
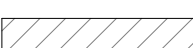





SHEET TITLE
PARTITION WALL
TYPES

A002

INTERIOR PARTITIONS LEGEND



ARCHITECTURAL MATERIALS LEGEND

	EARTH		METAL: TYPE AS NOTED		BATT INSULATION: THERMAL OR ACOUSTICAL, UON		INSULATED GLASS: (DETAIL)
	GRANULAR FILL		METAL: ROLLED SHAPES		RIGID INSULATION: THERMAL, ACOUSTICAL, OR SAFING		ROOF MEMBRANE
	SAND, GROUT AS NOTED		WOOD FRAMING / BLOCKING: CONTINUOUS		GYPSUM WALL BOARD		WATER PROOFING, DAMP PROOFING
	CAST-IN-PLACE CONCRETE		WOOD SHIM		SHEATHING: GYPSUM, OR AS NOTED		TRANSITION MEMBRANE FLASHING
	PRECAST CONCRETE, CAST STONE		FINISHED WOOD SHOWN CUT AND ELEVATION		ACOUSTICAL CEILING TILE		AIR BARRIER
	CONCRETE MASONRY UNIT		PARTICLEBOARD		RESINOUS FLOORING: TERRAZO, TROWEL-ON, UON	NOTE: PATTERNS SHOWN REPRESENT CUT MATERIALS IN PLAN OR SECTION, UNLESS NOTED OTHERWISE ABOVE.	
	BRICK MASONRY		PLYWOOD		TILE: CERAMIC, QUARRY, UON		
	STONE: QUARTZ		SPRAYED FIREPROOFING SHOWN ON ROLLED SHAPE		INSULATED GLASS: (SMALL SCALE)		

FURNITURE, FIXTURES, AND EQUIPMENT LEGEND

NOTE: CONTRACTOR TO COORDINATE ALL FF&E ITEMS WITH OWNER PRIOR TO SCHEDULING DELIVERY AND INSTALLATION

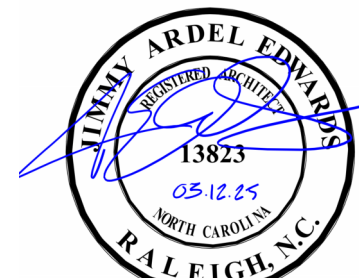
01 SOAP DISPENSER, WALL MOUNTED	13 SURFACE MOUNTED COMBINATION PAPER TOWEL AND WASTE RECEPTACLE	30 FIRE EXTINGUISHER ON HOOK	50 ICE MAKER, OPC
02 PAPER TOWEL DISPENSER / TRASH RECEPTACLE	14 CASCADE SCBA SYSTEM, OPC	31 FIRE EXTINGUISHER IN CABINET	51 DISHWASHER, OPC
03 TOILET PAPER DISPENSER	15 EYE WASH - SEE PLUMBING DRAWINGS	32 TWIN SIZE BED, NIC	52 REFRIGERATOR, OPC
04 ADA INTEGRATED PIPE PROTECTION	16 STAINLESS STEEL RECESSED SHOWER SHELF	33 WALL MOUNTED FLAT SCREEN TV, OPC	53 WASTE/ RECYCLING CONTAINER, OPC
05 ACCESIBLE SHOWER SEAT	17 MOP HOLDER	34 48" X 72" GLASS BOARD, MOUNT BOTTOM OF GLASS/MARKER HOLDER AT 34" AFF	54 RANGE HOOD, SEE MECHANICAL DRAWINGS
06 SHOWER CURTAIN, ROD & HOOKS	18 WASHER EXTRACTOR - SEE PLUMBING DRAWINGS	35 GEAR LOCKER ON CASTER	55 RESIDENTIAL RANGE, OPC
07 TOWEL HOOK	19 HEAVY DUTY TUMBLE DRYER, OPC	36 WALL MOUNTED GEAR LOCKER	56 COFFEE MAKER, NIC
08 24" X 36" MIRROR	20 ADA DUAL HEIGHT DRINKING FOUNTAIN - SEE PLUMBING DRAWINGS	37 DUAL BLACKOUT AND SHEER ROLLING SHADE	
09 18" GRAB BAR	21 SCULLERY SINK, SEE PLUMBING DRAWINGS	38 2" WINDOW BLINDS	
10 24" GRAB BAR	22 WASHER & DRYER, OPC	39 LOCKERS, SEE SPECIFICATIONS	
11 36" GRAB BAR			
12 42" GRAB BAR			

PROJECT INFORMATION

ONSLOW COUNTY BEAR
CREEK FIRE STATION
ONSLOW COUNTY
BID NO. 102-25C

138 OLD SAND RIDGE RD, HUBERT, NC 28539

SEALS



DKA JOB NUMBER

2324

REVISIONS

NO.	DESCRIPTION	DATE
1	ADD 01	04/01/25

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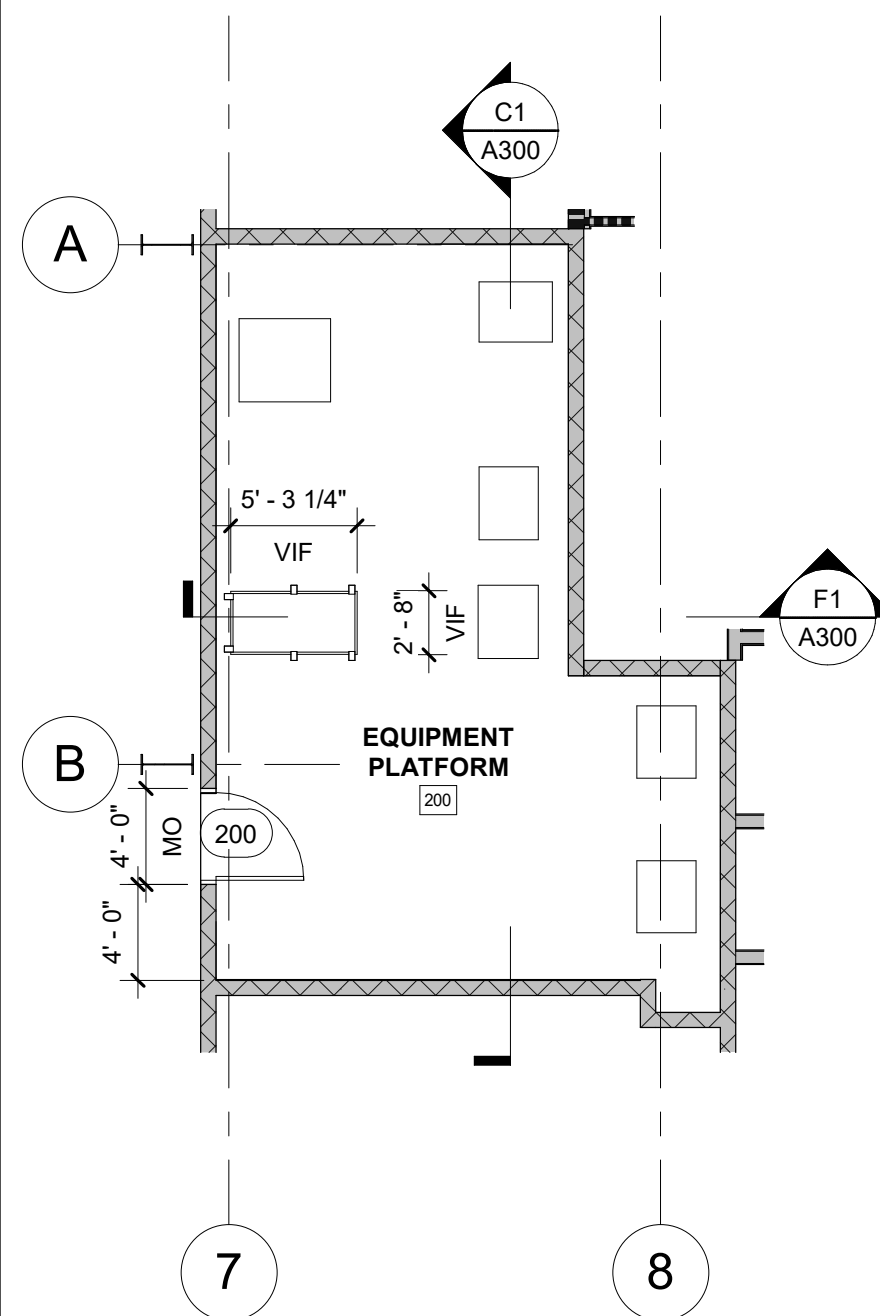
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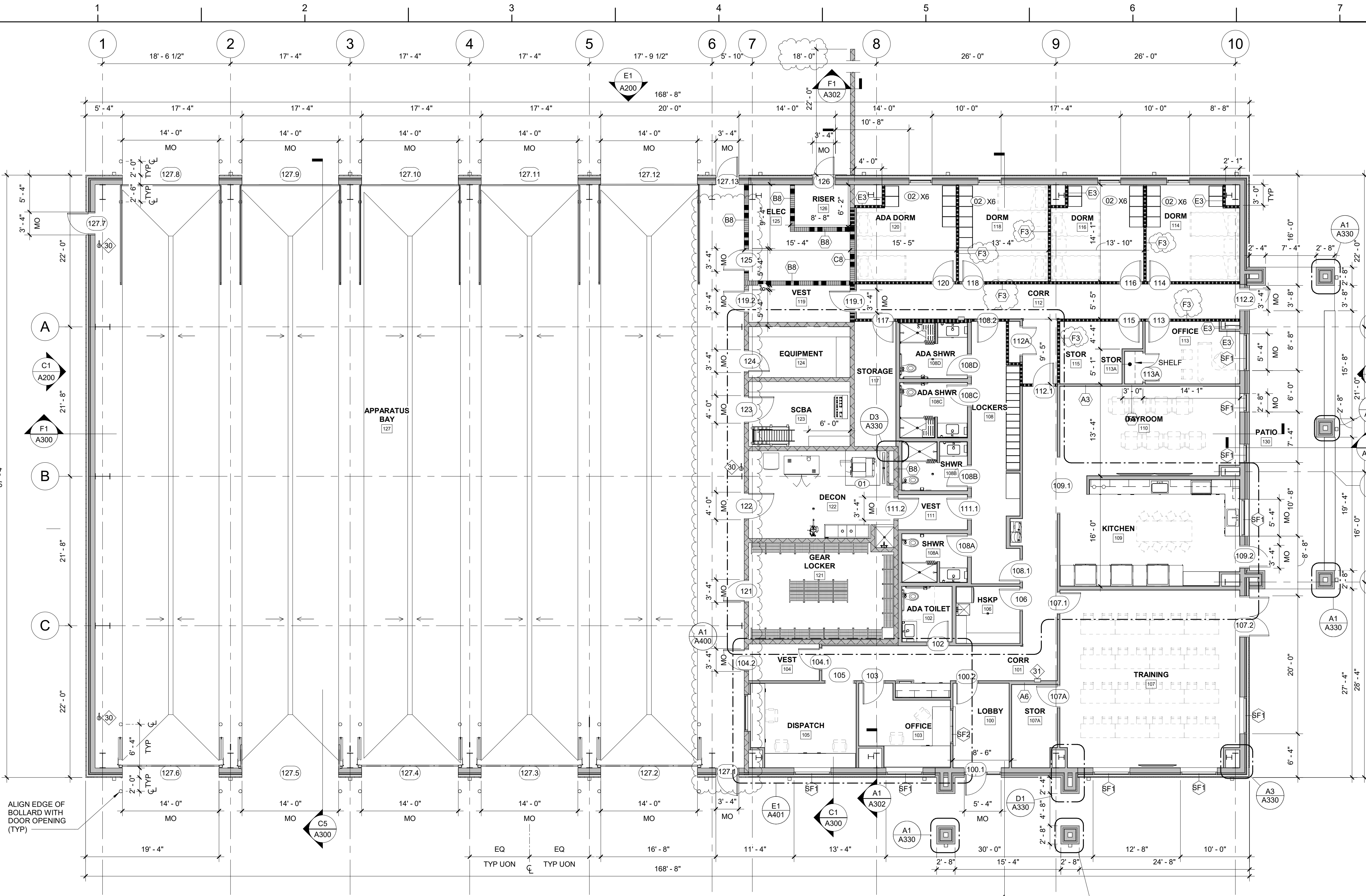
SHEET TITLE
FIRST FLOOR &
EQUIP PLATFORM
FLOOR PLANS

A100

C8 EQUIPMENT PLATFORM
1/8" = 1'-0"



C1 FLOOR PLAN - LEVEL 1
1/8" = 1'-0"



FLOOR PLAN KEY NOTES

NOTE: NOT ALL KEY NOTES BELOW ARE APPLICABLE TO THIS SHEET. KEY NOTES SUPPLEMENT INFORMATION FOUND ELSEWHERE IN THE DRAWINGS. SEE SHEETS A001 & A002 FOR FLOOR PLAN GENERAL NOTES, PARTITION GENERAL NOTES, LEGENDS, AND ADDITIONAL REQUIREMENTS.

01	THICKENED SLAB FOR EXTRACTOR - SEE STRUCTURAL DRAWINGS
02	WARDROBE - SEE DETAIL A7/A401

RATED ASSEMBLIES LEGEND:

NOTES: RATINGS ARE NOT SHOWN THROUGH DOORS FOR CLARITY. SEE A002 FOR PARTITION TYPES. SEE LIFE SAFETY PLANS ON G004 FOR FULL EXTENT OF RATINGS, INCLUDING HORIZONTAL RATINGS. RATINGS ARE CONTINUOUS AROUND OPENINGS AND OPENINGS ARE TO BE PROTECTED IN ACCORDANCE WITH THE NC STATE BUILDING CODE. PROTECT ALL PENETRATIONS.

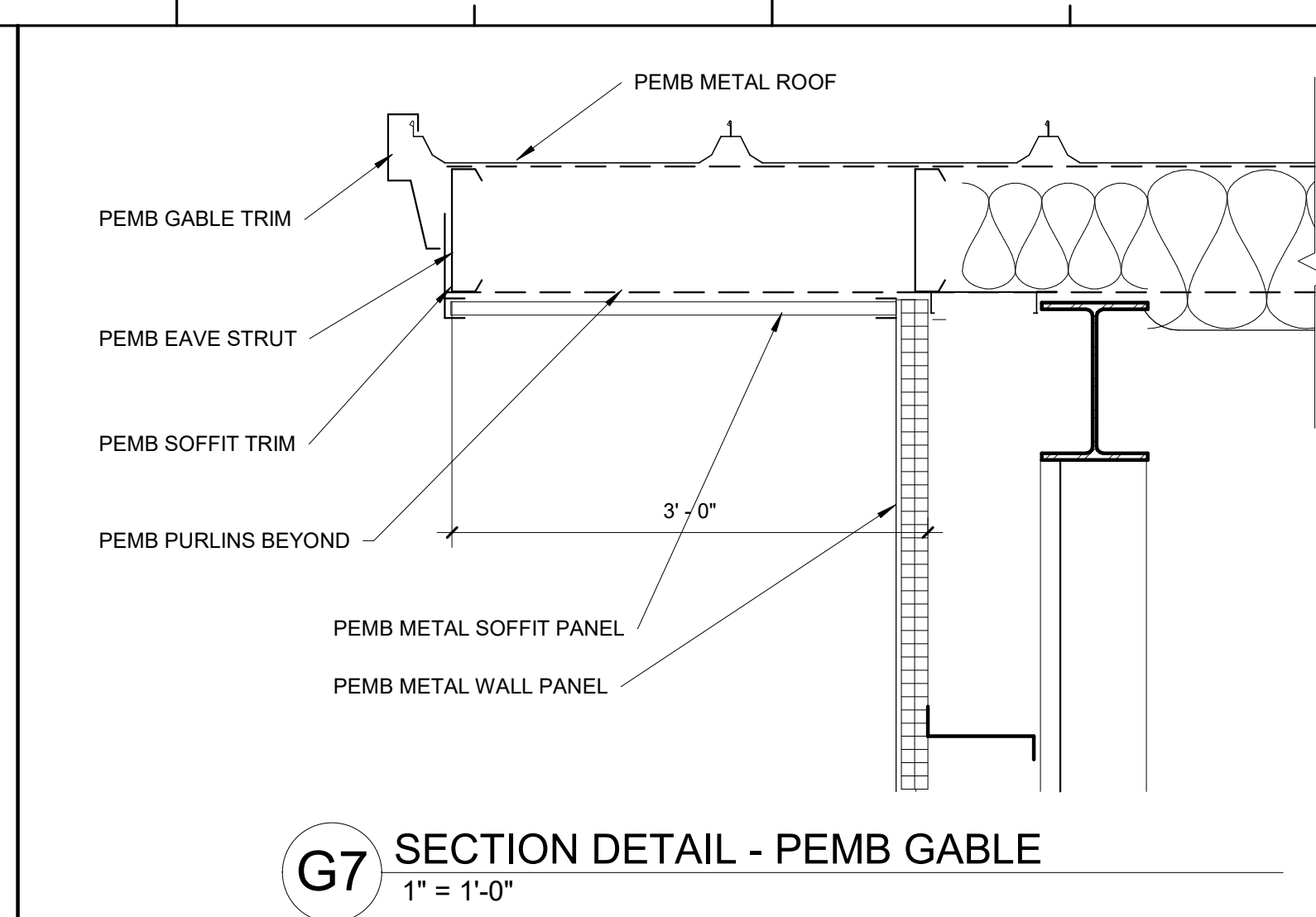
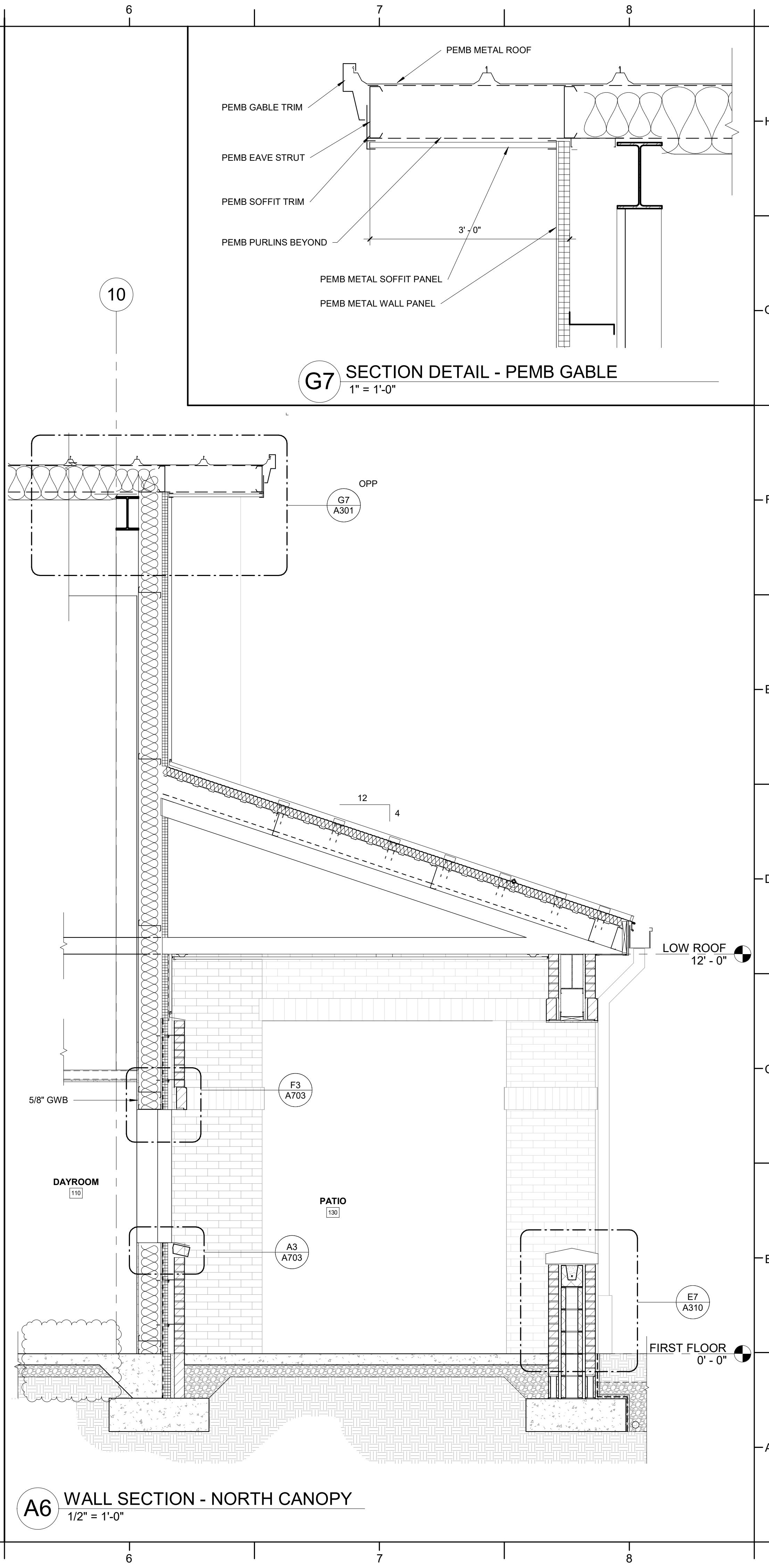
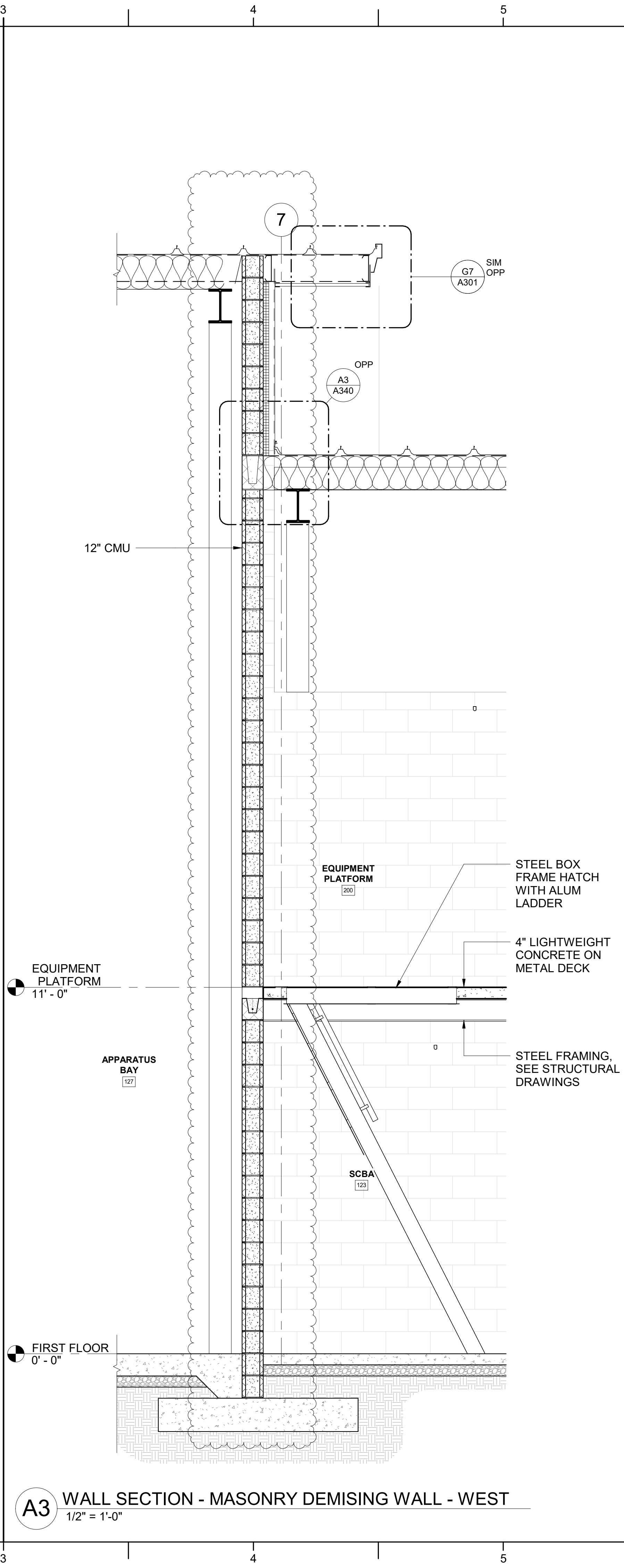
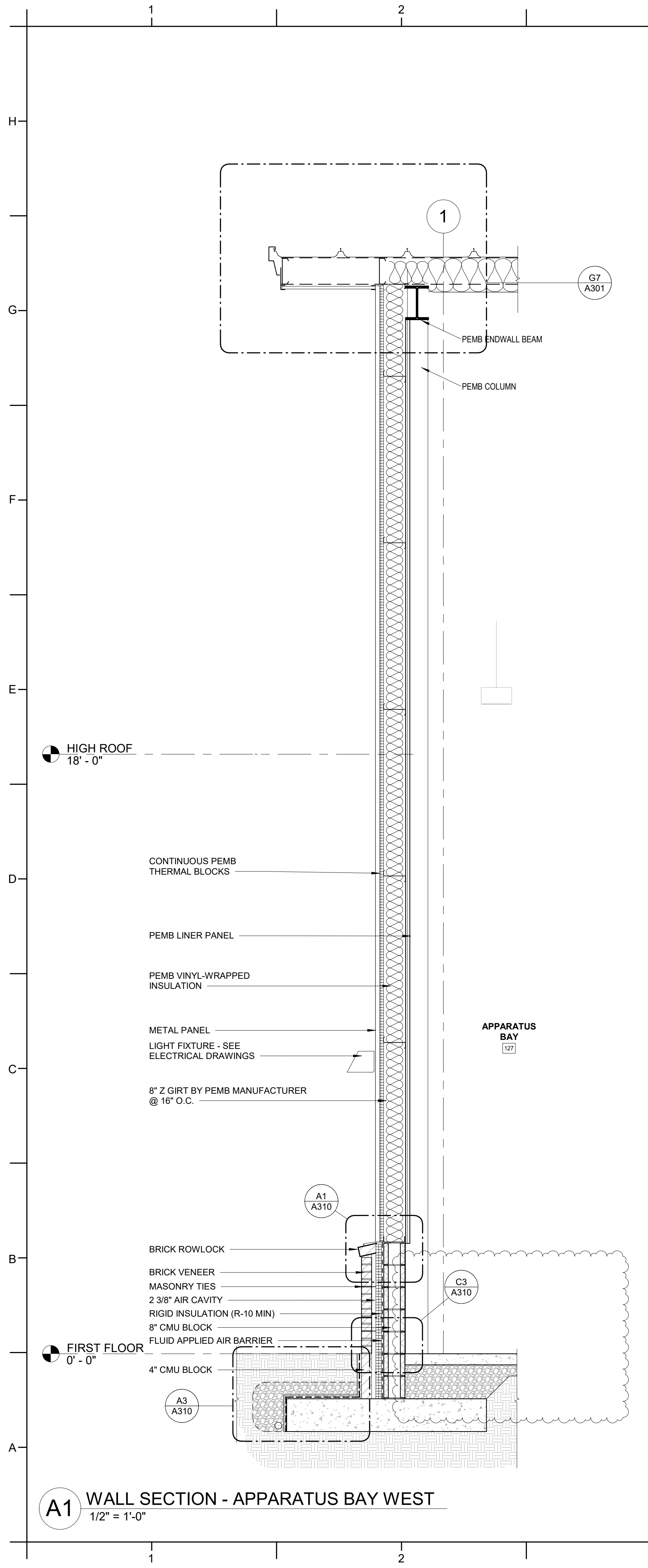
ALL RATED ASSEMBLIES SHALL BE STENCILED WITH RATED WALL WARNING MESSAGE IN RED TO READ AS FOLLOWS: " - HOUR RATED FIRE BARRIER. SEAL ALL PENETRATIONS" WITH APPLICABLE HOUR RATING INSERTED. HOUR RATING TO BE AS NOTED ON PLANS. MESSAGE TO BE 4" MIN HIGH LETTERS, PLACED 12" ABOVE CEILING, SPACED AT 12'-0" OC ON BOTH SIDES OF WALLS AND ON UNDERSIDE OF HORIZONTAL RATED ASSEMBLIES.


SEE T-SHEETS FOR UL RATINGS AND ADDITIONAL INFORMATION.

- 2-HR. FIRE BARRIER
- 1/2-HR FIRE PARTITION

FLOOR PLAN GENERAL NOTES:

- 0'-0" FLOOR ELEVATION ON ARCHITECTURAL DRAWINGS EQUALS 36'-0" ELEVATION AS INDICATED ON CIVIL DRAWINGS.
- DO NOT SCALE DRAWINGS. REFER DIMENSION QUESTIONS TO ARCHITECT FOR INTERPRETATION. SEE SHEET A002 FOR INTERIOR PARTITION LEGEND AND NOTES. SEE WALL SECTIONS FOR EXTERIOR WALLS, TYP.
- ALL HINGE-SIDE DOOR JAMBS IN GYPSUM WALLS TO BE 4" TO THE INSIDE OF ADJACENT PERPENDICULAR WALL, UNLESS DIMENSIONED OTHERWISE.
- ALL HINGE-SIDE JAMBS IN CMU WALLS TO BE 4" TO 8" AT A MASONRY HEAD JOINT TO INSIDE OF ADJACENT PERPENDICULAR WALL, UNLESS DIMENSIONED OTHERWISE.
- ALL DOORS IN ALCOVES TO BE 18" MIN FROM STRIKE SIDE OF DOOR TO INSIDE OF ADJACENT PERPENDICULAR WALL, UNLESS DIMENSIONED OTHERWISE.
- ALL DIMENSIONS TO FACE OF METAL STUD, FACE OF MASONRY, FACE OF CONCRETE, OR COLUMN CENTERLINE, UNLESS OTHERWISE NOTED.
- PROVIDE CONTROL JOINTS IN INTERIOR AND EXTERIOR CMU WALLS EVERY 20' O.C. MAX. UNLESS MAINTAIN 2'-0" MINIMUM FROM JAMBS AT ALL OPENINGS.
- PROVIDE CONTROL JOINTS IN GYPSUM BOARD WALL CONSTRUCTION AS INDICATED. VERIFY FINAL CONTROL JOINT LOCATIONS WHETHER OR NOT INDICATED ON THE DRAWINGS WITH ARCHITECT PRIOR TO STARTING WORK.
- SEE KEY NOTES AND NOTES ON PLANS FOR SPECIFIC NOTES FOR EACH DRAWING AREA.
- SEE PLUMBING, MECHANICAL, ELECTRICAL, FIRE PROTECTION, CIVIL AND STRUCTURAL DRAWINGS FOR RELATED WORK AND ADDITIONAL REQUIREMENTS.
- COORDINATE EQUIPMENT WORK WITH MANUFACTURERS AND SUPPLIERS TO ENSURE PROPER ROUGH-IN CLEARANCES FOR INSTALLATION, USE AND MAINTENANCE.
- ALL OPENINGS IN MASONRY WALLS ARE TO RECEIVE LINTEL OR BOND BEAM. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.
- PROVIDE SEALANT AT JUNCTION OF DIFFERENT MATERIALS UNLESS OTHER MEANS OF SEALING AND CLOSURE IS SPECIFIED.
- INSTALL METAL "F" TRIM IN GWB WALL AT VERTICAL EDGE WHERE GWB WALL MEETS CMU WALL. PROVIDE SEALANT AT JUNCTION OF DIFFERENT MATERIALS UNLESS OTHER MEANS OF SEALING AND CLOSURE IS SPECIFIED.
- PROVIDE THOROUGH FINAL CLEANING THROUGHOUT INTERIOR PRIOR TO OWNER OCCUPANCY. INTERIOR CLEANING TO INCLUDE FLOORS, BASE, WALLS, WALL-MOUNTED EQUIPMENT, FIXTURES, FURNISHINGS, DOORS, WINDOWS, FRAMES, SILLS, CEILINGS, CEILING MOUNTED EQUIPMENT AND FIXTURES.
- THE ANNULAR SPACE OF EACH PENETRATION OF EACH FLOOR ASSEMBLY IS TO BE FILLED WITH MATERIAL THAT IS TESTED FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS.
- VERIFY MOUNTING HEIGHTS OF ACCESSORIES. EQUIPMENT, DOOR HARDWARE, CASEWORK, ETC., AND PROVIDE SOLID BLOCKING BEHIND ITEMS REQUIRING ANCHORAGE. WHERE MOUNTING HEIGHTS ARE NOT INDICATED, MOUNT ITEMS IN ACCORDANCE WITH RECOGNIZED INDUSTRY STANDARDS. COORDINATE LOCATIONS WITH MANUFACTURER OR SUPPLIER AND REFER MOUNTING HEIGHT QUESTIONS TO ARCHITECT FOR INTERPRETATION.
- SEE I-SHEETS FOR INTERIOR FINISHES PLANS, FF&E PLANS, SCHEDULES, AND ADDITIONAL FINISHES.
- ALL PARTITIONS ARE TYPE A3, UNLESS OTHERWISE NOTED.







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PROJECT INFORMATION

ONSLOW COUNTY BEAR CREEK FIRE STATION
ONSLOW COUNTY
BID NO. 102-25C
138 OLD SAND RIDGE RD, HUBERT, NC 28539

SEALS



DKA JOB NUMBER
2324

REVISIONS

1	ADD 01	04/01/25

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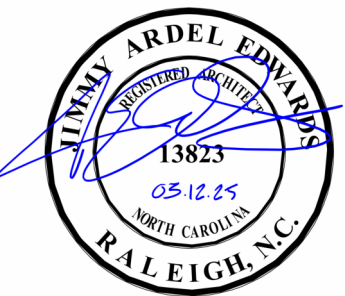
SHEET TITLE
WALL SECTIONS

A301

PROJECT INFORMATION

ONSLOW COUNTY BEAR
CREEK FIRE STATION
ONSLOW COUNTY
BID NO. 102-25C
138 OLD SAND RIDGE RD, HUBERT, NC 28539

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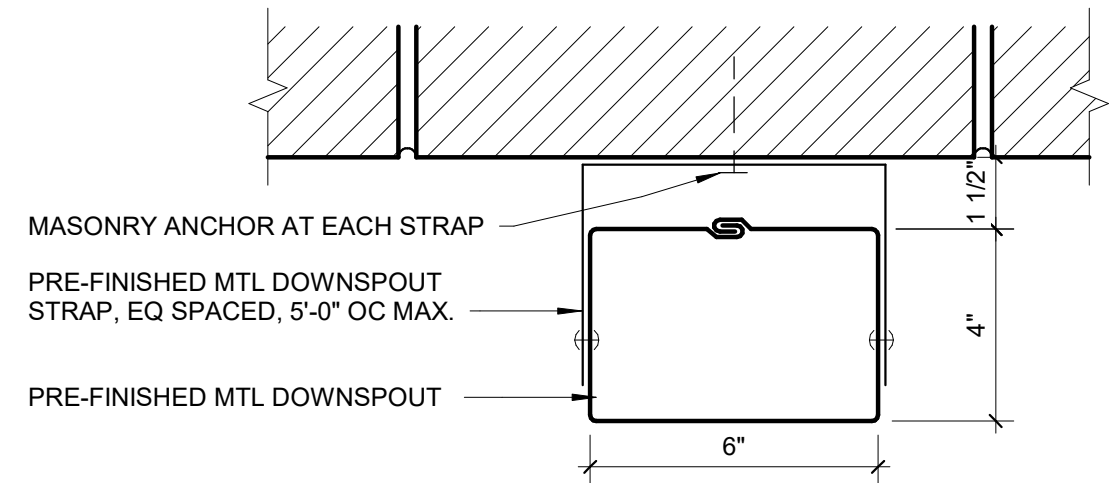
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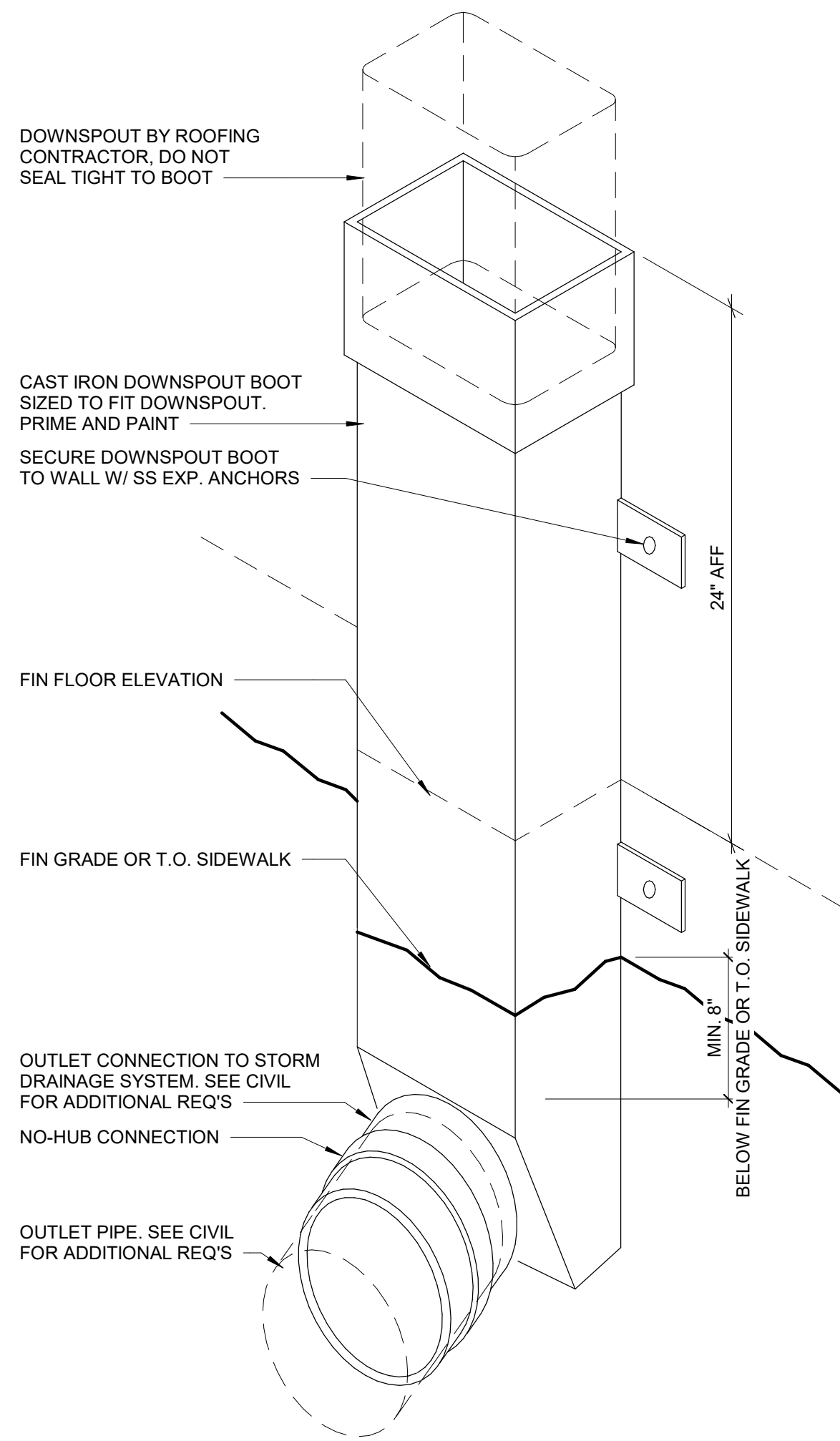
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SHEET TITLE
ROOF DETAILS

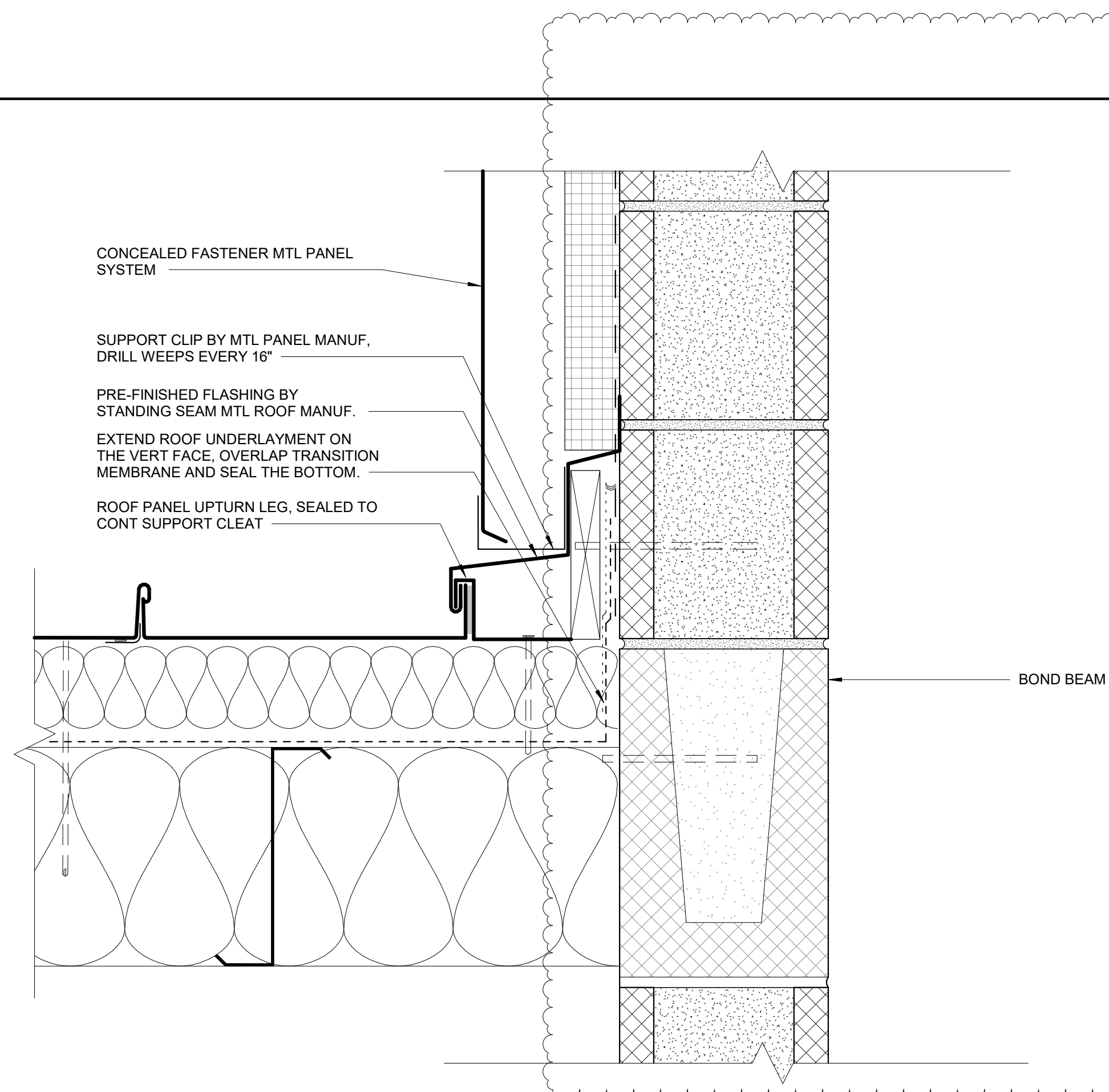
A340



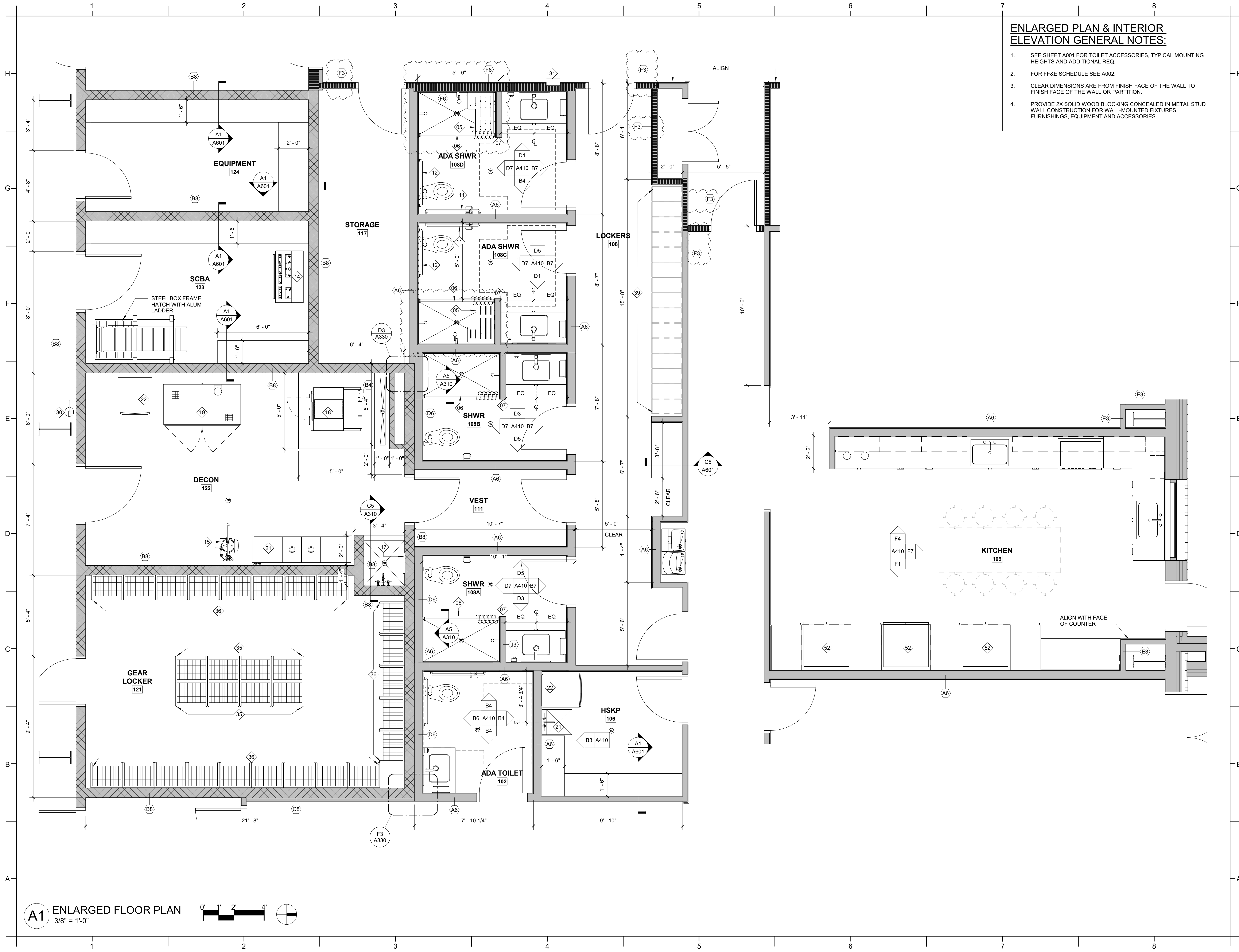
D5 PLAN DETAIL - TYPICAL DOWNSPOUT DETAIL
3" = 1'-0"



A1 TYP DOWNSPOUT BOOT DETAIL
3" = 1'-0"



A3 SECTION DETAIL - ROOF TRANSITION TO CMU WALL
3" = 1'-0"



ENLARGED PLAN & INTERIOR
ELEVATION GENERAL NOTES:

- 1. SEE SHEET A001 FOR TOILET ACCESSORIES, TYPICAL MOUNTING HEIGHTS AND ADDITIONAL REQ.
- 2. FOR FF&E SCHEDULE SEE A002.
- 3. CLEAR DIMENSIONS ARE FROM FINISH FACE OF THE WALL TO FINISH FACE OF THE WALL OR PARTITION.
- 4. PROVIDE 2X SOLID WOOD BLOCKING CONCEALED IN METAL STUD WALL CONSTRUCTION FOR WALL-MOUNTED FIXTURES, FURNISHINGS, EQUIPMENT AND ACCESSORIES.

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PROJECT INFORMATION

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CREEK FIRE STATION
ONSLOW COUNTY
BID NO. 102-25C
138 OLD SAND RIDGE RD, HUBERT, NC 28539

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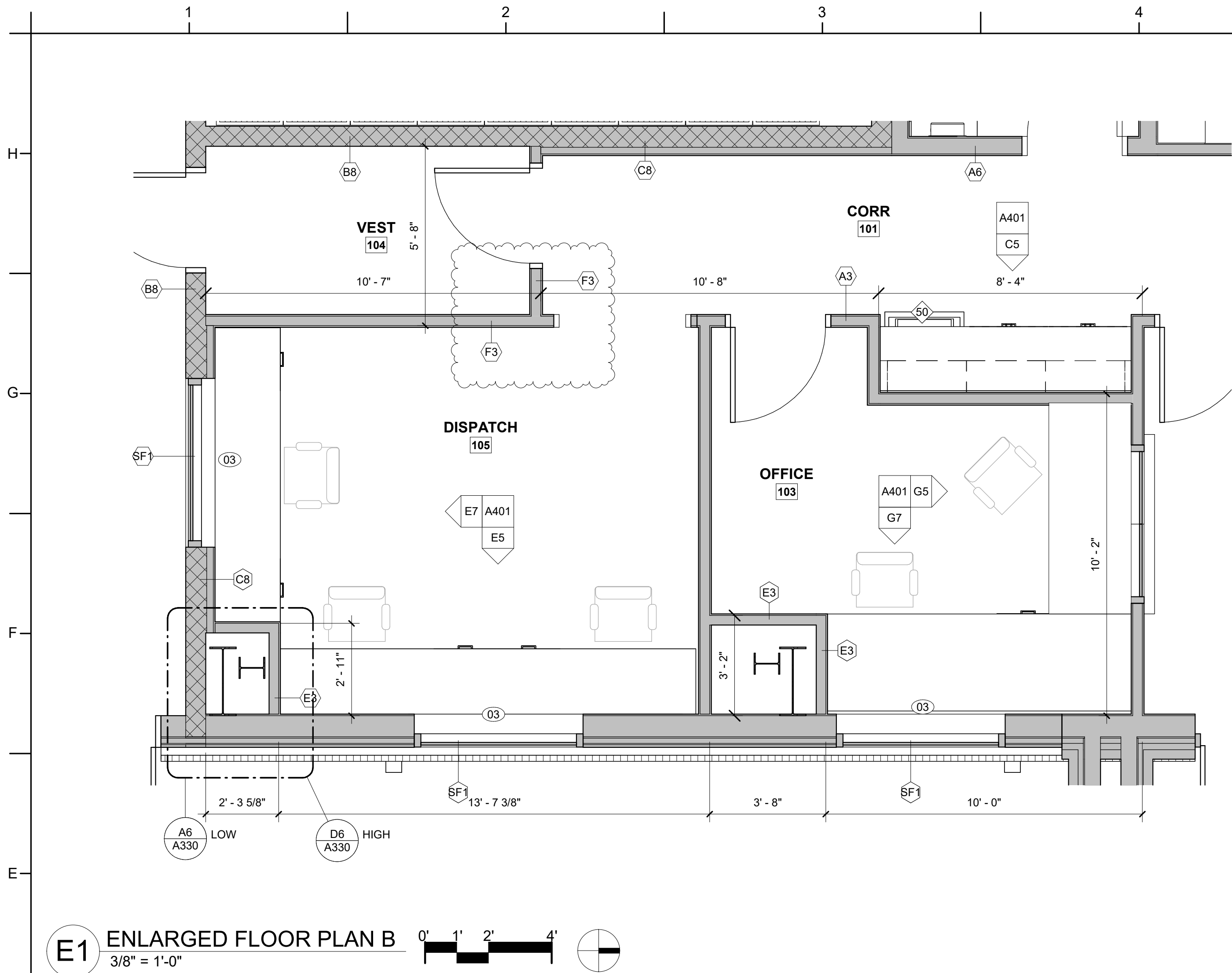
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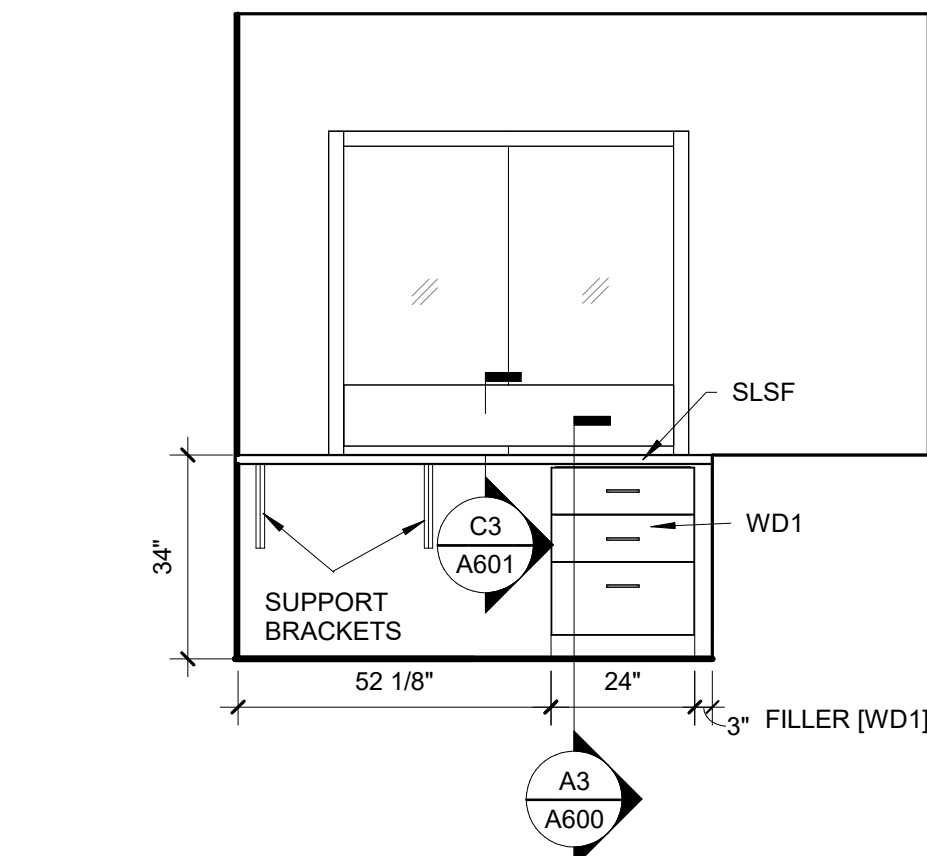
SHEET TITLE
ENLARGED PLANS

A400

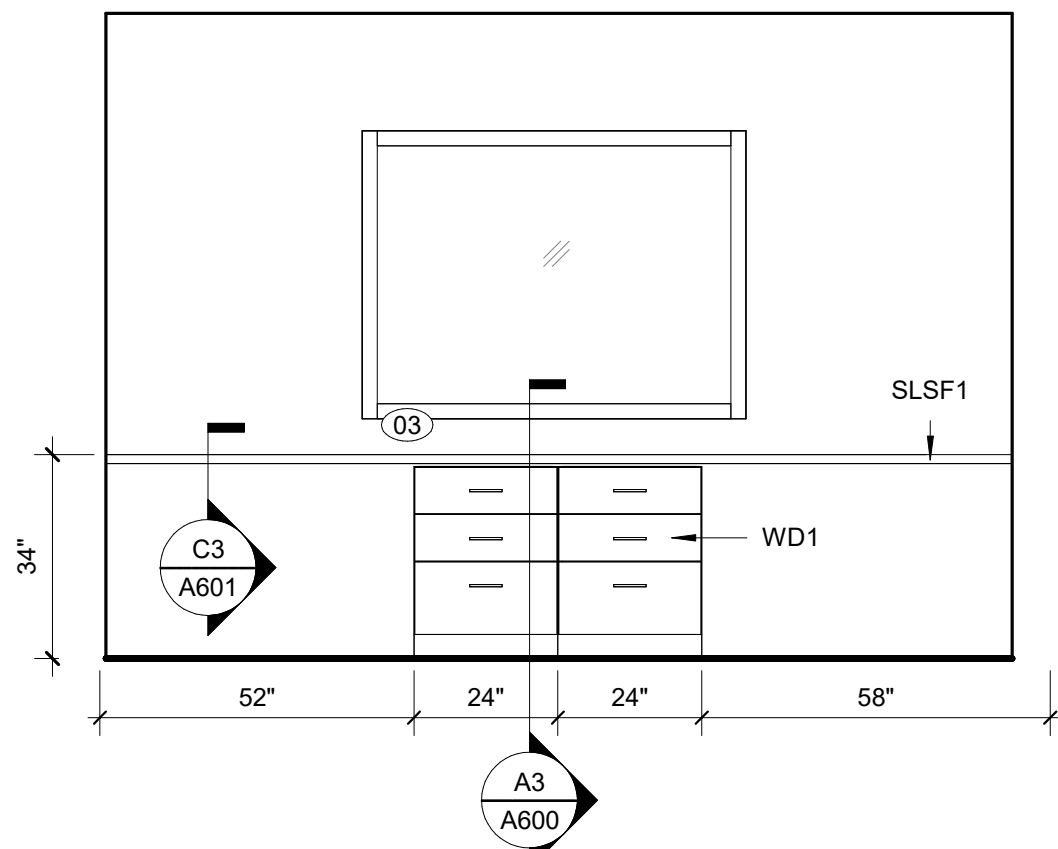
A1 ENLARGED FLOOR PLAN
3/8" = 1'-0"



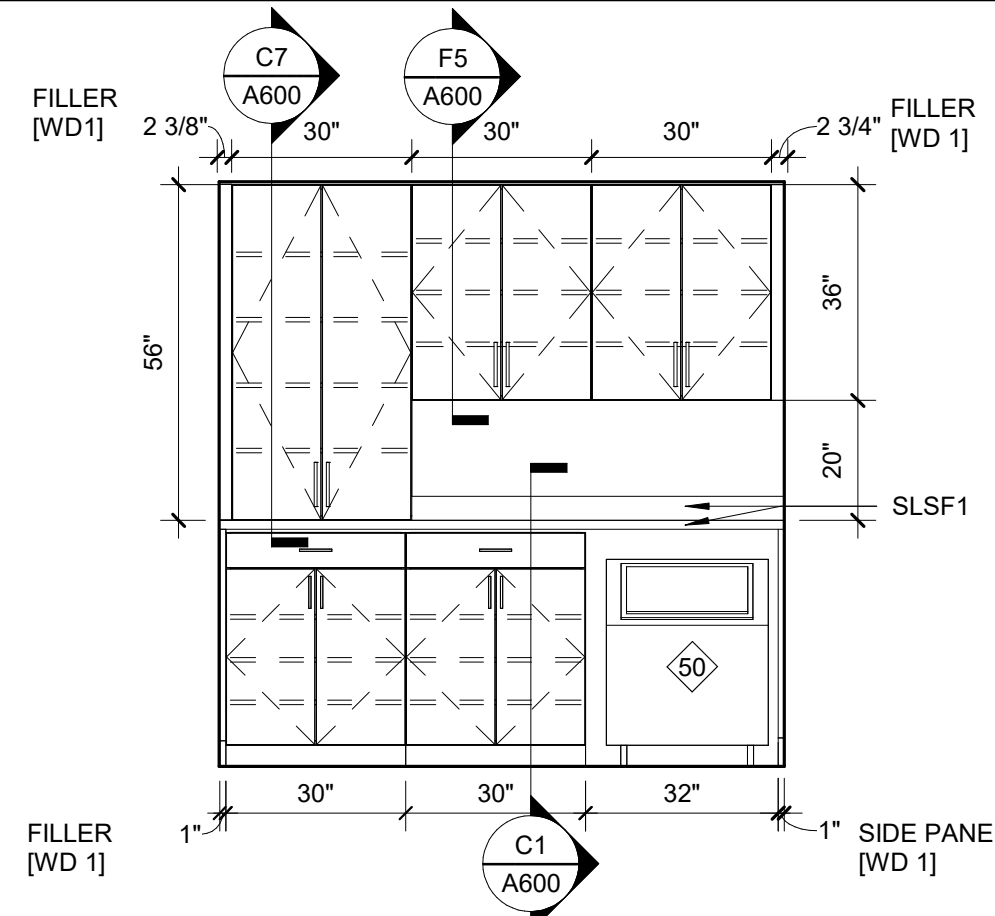
E1 ENLARGED FLOOR PLAN B
3/8" = 1'-0"



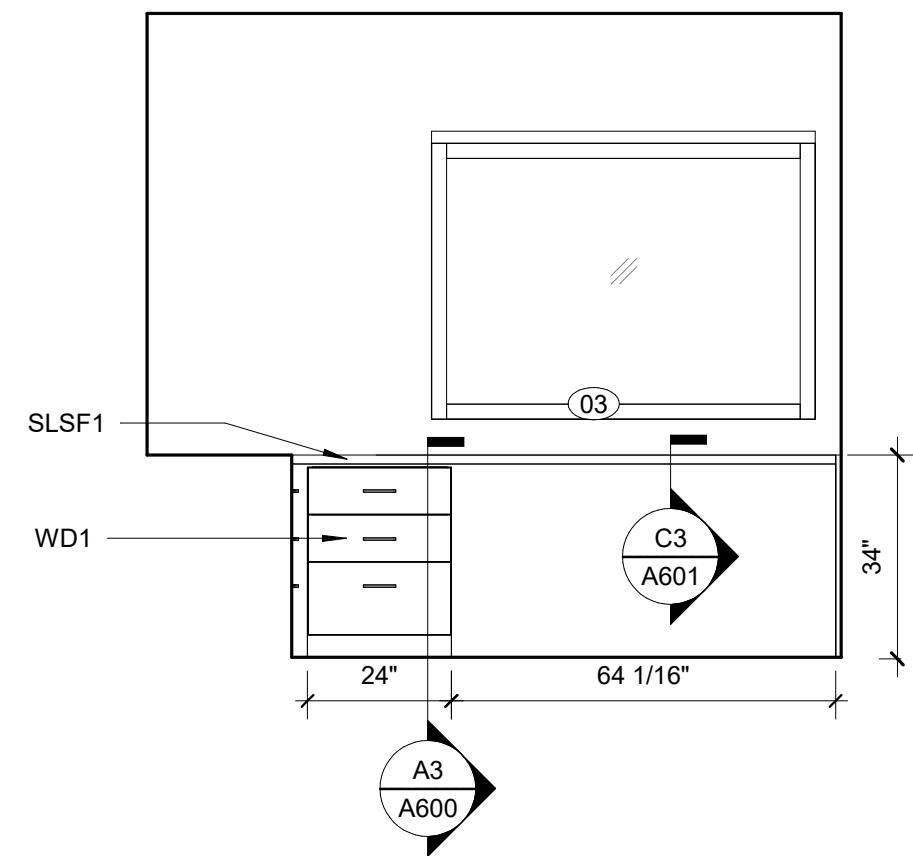
G5 INT.EL. OFFICE 103 EAST
3/8" = 1'-0"



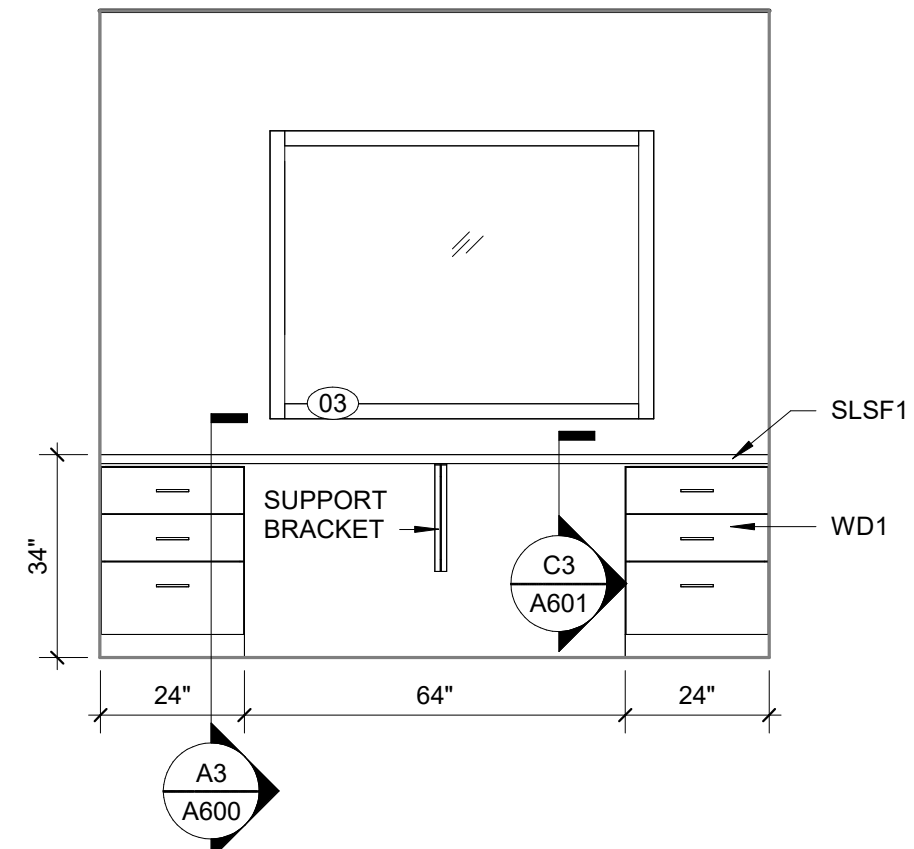
E5 INT.EL. DISPATCH 105 SOUTH
3/8" = 1'-0"



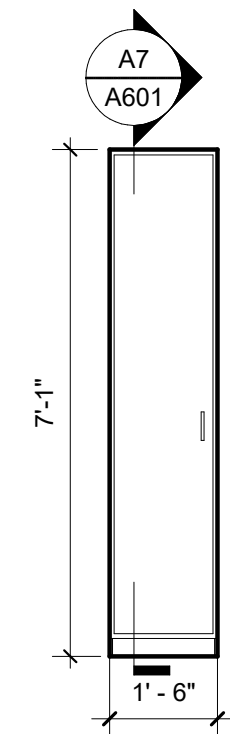
C5 INT.EL. CORR 101 ICE MAKER
3/8" = 1'-0"



G7 INT.EL. OFFICE 103 SOUTH
3/8" = 1'-0"



E7 INT.EL. DISPATCH 105 WEST
3/8" = 1'-0"



A7 INT. EL. - TYP DORM WARDROBE
3/8" = 1'-0"

FINISHES KEY NOTES:

NOTE: NOT ALL OF THE KEY NOTES ARE APPLICABLE TO THIS PLAN.
SEE PLAN FOR KEYED ITEM LOCATIONS. KEY NOTES SUPPLEMENT
INFORMATION FOUND ELSEWHERE IN THE DRAWINGS.

- 01 SINGULAR CORNER GUARDS
- 02 SCHLUTER
- 03 WINDOW SILL

PROJECT INFORMATION

**ONSLOW COUNTY BEAR
CREEK FIRE STATION**
ONSLOW COUNTY
BID NO. 102-25C
138 OLD SAND RIDGE RD, HUBERT, NC 28539

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SHEET TITLE

ENLARGED PLANS
AND ELEVATIONS

A401

DOOR, FRAME AND SIGNAGE SCHEDULE													
DOOR NUMBER	DOOR						FRAME			HARDWARE	FIRE RATING LABEL	SIGN TYPE	COMMENTS
	TYPE	WIDTH	HEIGHT	THICKNESS	MATERIAL	FINISH	TYPE	MATERIAL	FINISH				
100.1	D	3'-0"	7'-0"	1 3/4"	HM	PAINT	III	HM	PAINT	SET 01			
100.2	C	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 05			
102	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 20		D	
103	B	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 16		B	
104.1	B	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 09		B	
104.2	B	3'-0"	7'-0"	1 3/4"	HM	PAINT	II	HM	PAINT	SET 07		B, E	
105	-	4'-0"	7'-0"	-	-	-	I	HM	PAINT	-		B	CASED OPENING
106	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 15		B	
107.1	B	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 16		B	
107.2	D	3'-0"	7'-0"	1 3/4"	HM	PAINT	II	HM	PAINT	SET 04			
107A	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 16			
108.1	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 17		B	
108.2	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 06	20 MIN	B	
108A	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 20		C	
108B	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 20			
108C	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 20		D	
108D	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 20		D	
109.1	-	4'-0"	7'-0"	-	-	-	I	HM	PAINT	-		B	CASED OPENING
109.2	D	3'-0"	7'-0"	1 3/4"	HM	PAINT	II	HM	PAINT	SET 01			
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111.2	B	3'-0"	7'-0"	1 3/4"	HM	PAINT	II	HM	PAINT	SET 09		B, E	
112.1	B	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 06	20 MIN	B	
112.2	D	3'-0"	7'-0"	1 3/4"	HM	PAINT	II	HM	PAINT	SET 01		B, H	
112A	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 21			
113	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 18	20 MIN	B	
113A	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 21			
114	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 14	20 MIN	A	
115	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 08	20 MIN	A	
116	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 14	20 MIN	A	
117	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 08	20 MIN	A	
118	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 14	20 MIN	B	
119.1	B	3'-0"	7'-0"	1 3/4"	HM	PAINT	I	HM	PAINT	SET 06	20 MIN	B	
119.2	B	3'-0"	7'-0"	1 3/4"	HM	PAINT	II	HM	PAINT	SET 07		B, E	
120	A	3'-0"	7'-0"	1 3/4"	WOOD	STAIN	I	HM	PAINT	SET 14	20 MIN	A	
121	B	3'-0"	7'-0"	1 3/4"	HM	PAINT	II	HM	PAINT	SET 11		B	
122	B	3'-8"	7'-0"	1 3/4"	HM	PAINT	II	HM	PAINT	SET 13		B	
123	A	3'-8"	7'-0"	1 3/4"	HM	PAINT	II	HM	PAINT	SET 13		B	
124	A	3'-0"	7'-0"	1 3/4"	HM	PAINT	II	HM	PAINT	SET 12		B	
125	E	3'-0"	7'-0"	1 3/4"	HM	PAINT	II	HM	PAINT	SET 10	90 MIN	B	
126	A	3'-0"	7'-0"	1 3/4"	HM	PAINT	II	HM	PAINT	SET 03		B	

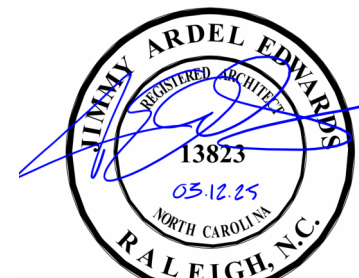
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PROJECT INFORMATION

ONSLOW COUNTY BEAR
CREEK FIRE STATION
ONSLOW COUNTY
BID NO. 102-25C

138 OLD SAND RIDGE RD. HUBERT, NC 28539

SEALS



DKA JOB NUMBER

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REVISIONS

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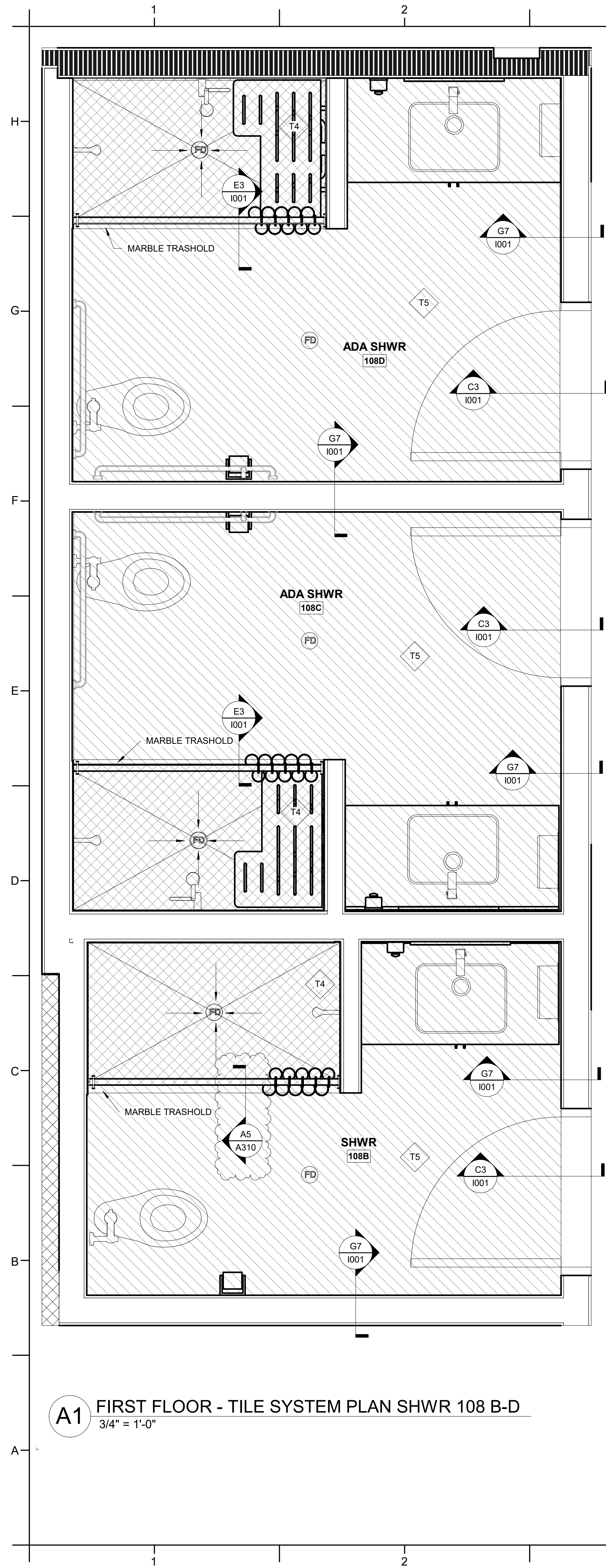
BID DOCUMENTS

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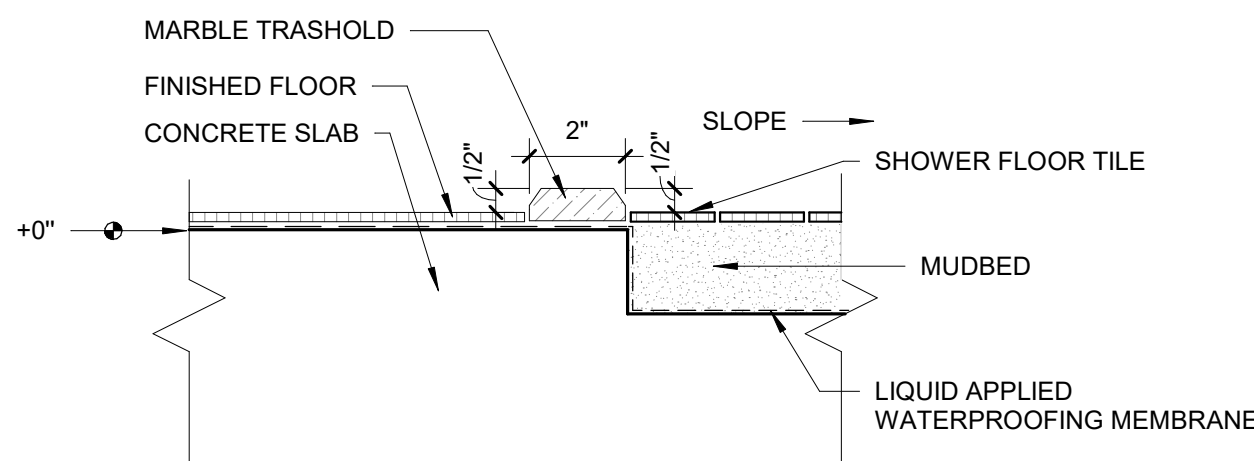
FINISH SCHEDULES
AND DETAILS

1001

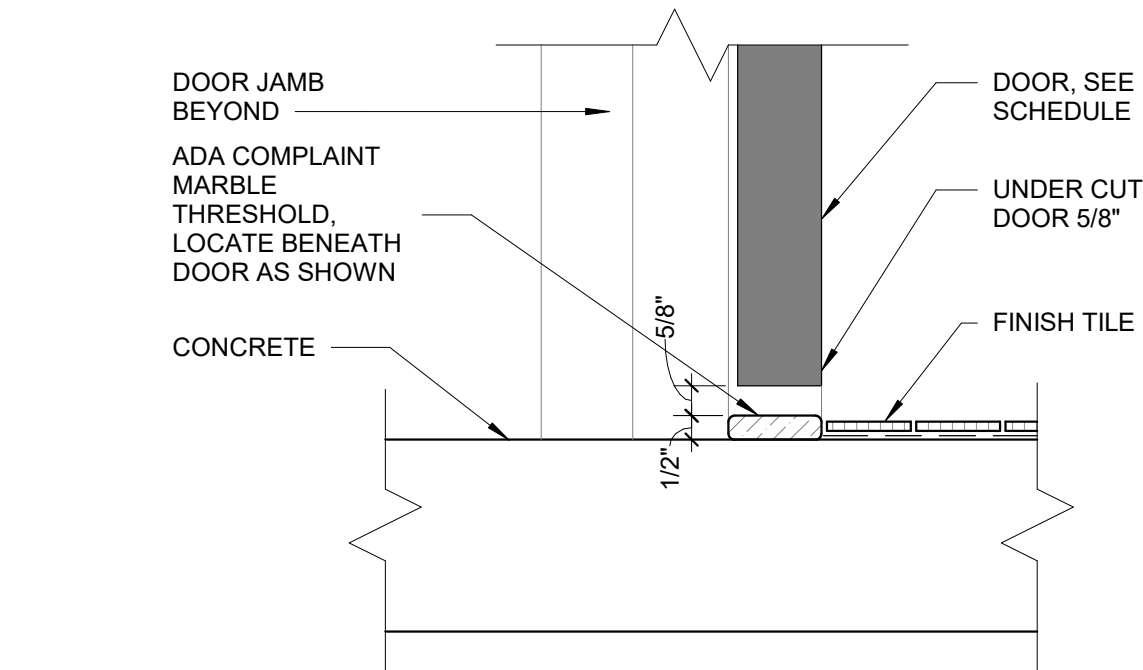


A1 FIRST FLOOR - TILE SYSTEM PLAN SHWR 108 B-D
3/4" = 1'-0"

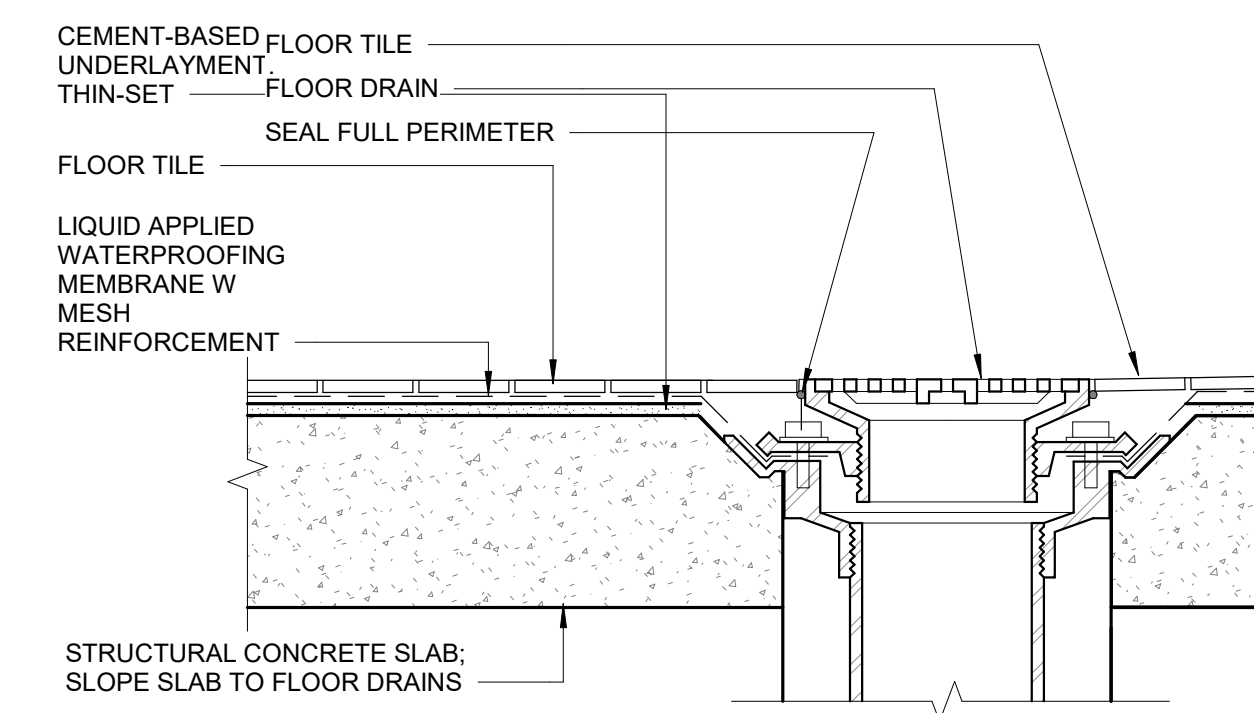
F3 FIRST FLOOR - TILE SYSTEM PLAN SHWR 108A
3/4" = 1'-0"



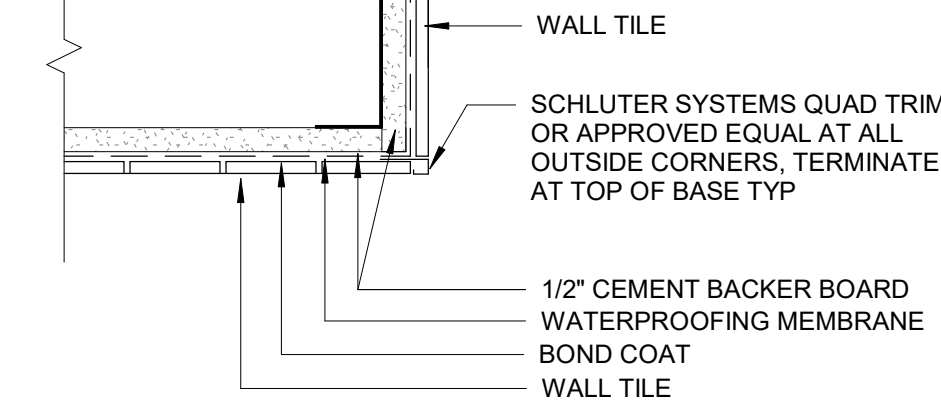
E3 MARBLE THRESHOLD AT RECESSED SLAB
3" = 1'-0"



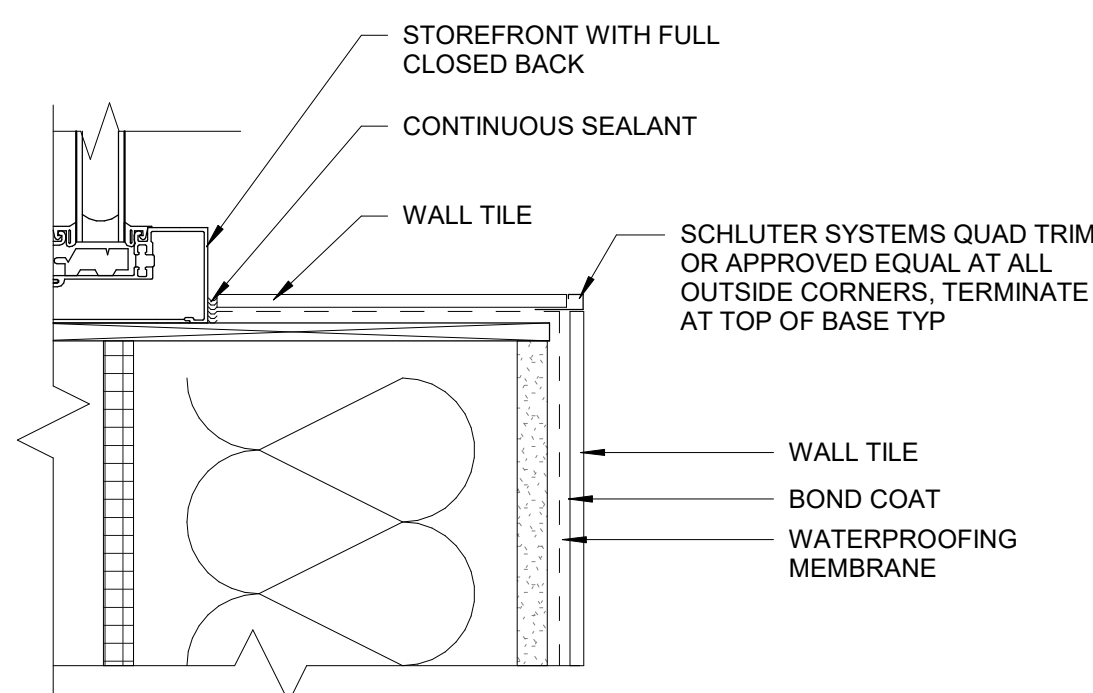
C3 INT DOOR SILL - MARBLE THRESHOLD
3" = 1'-0"



A3 TILE FLOOR SYSTEM 1
3" = 1'-0"



G6 TILE WALL END CAP
3" = 1'-0"

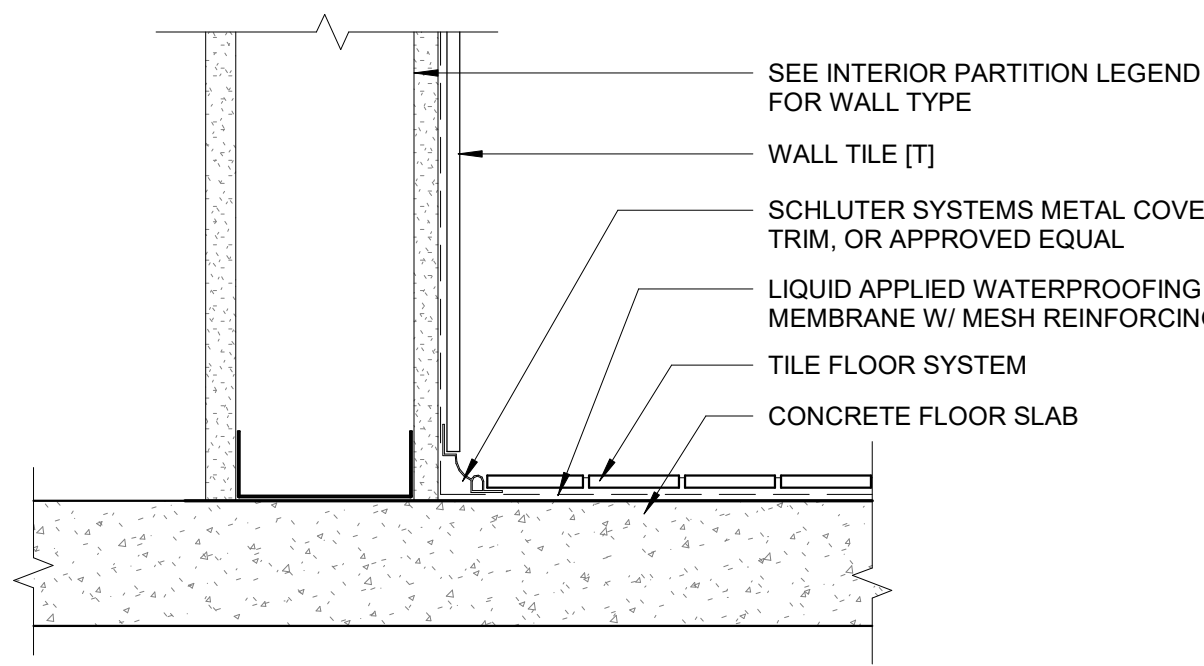


D5 SECTION DETAIL - KITCHEN TILE SILL
3" = 1'-0"

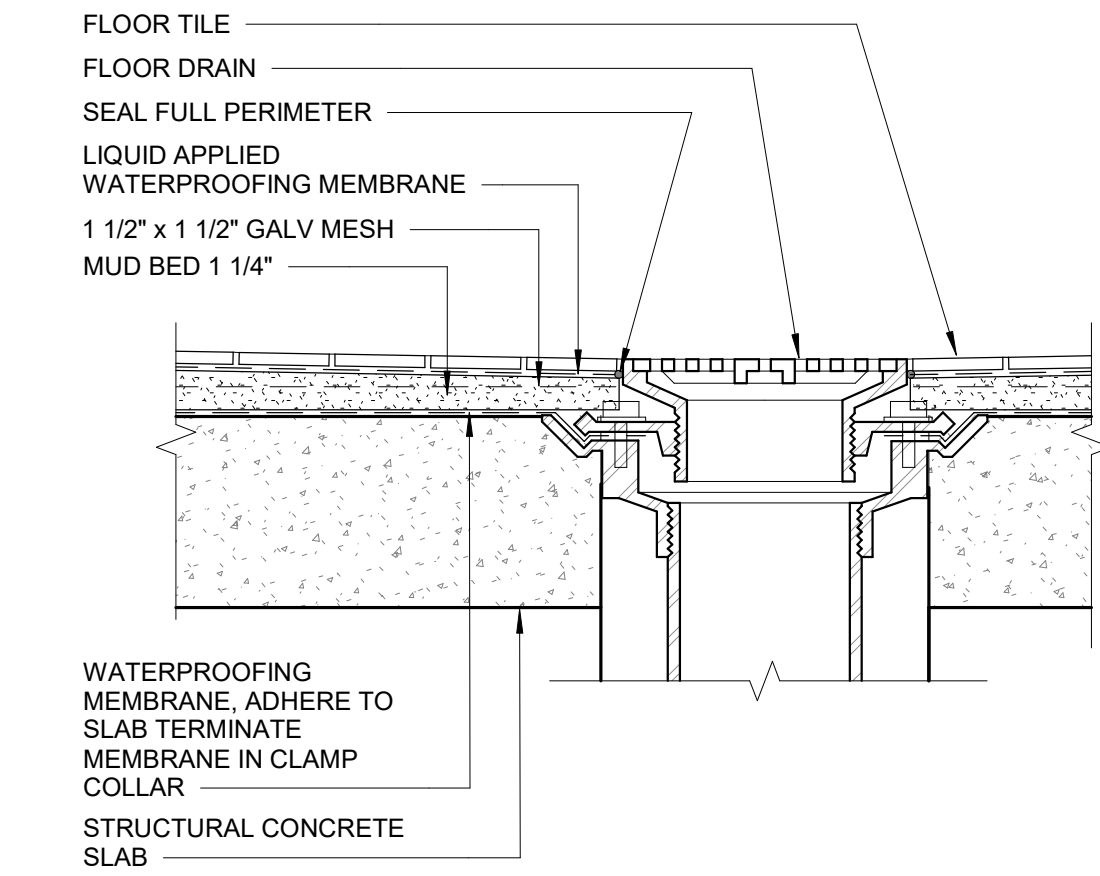
TILE FLOOR SYSTEM PLAN KEY:

- TILE FLOOR SYSTEM 1
- TILE FLOOR SYSTEM 2

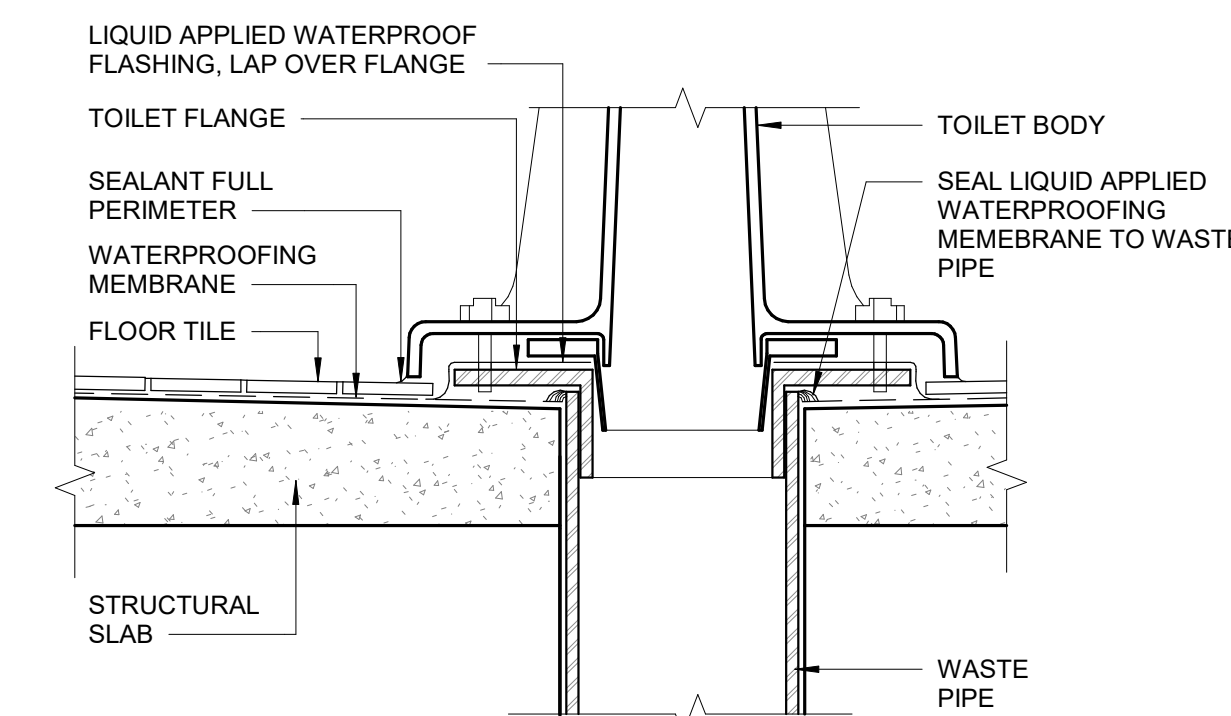
INTERIOR FINISHES LEGEND				
TYPE	DESIGNATION	BASIS OF DESIGN MANUFACTURER	PATTERN/COLOR	NOTES
EPOXY FLOOR	EP1	SEE SPECIFICATION	GRAY	
EPOXY FLOOR	EP2	SEE SPECIFICATION	RED	
PAINT	PNT1	SHERWIN-WILLIAMS	SW 7064	LIGHT GRAY
PAINT	PNT2	SHERWIN-WILLIAMS	SW 9163	DARK GRAY
QUARTZ	QTZ1	LX HOUSYS AMERICA	VIATERA NIMBUS	
QUARRY TILE	QT	DALTILE	6X6 ASHEN GRAY	
RUBBER BASE	RB1	FLEXICO	DARK GRAY	
SOLID SURFACE	SLSF1	WILSONART	NORTHERN MELNGE 9195ML	
SOLID SURFACE	SLSF2	WILSONART	DUSK ICE	WINDOW SILL
STAINED WOOD	WD1	SEE SPECIFICATION	MAPLE	
TILE	T1	DALTILE	COLOR WHEEL LINEAR 4X12 SUEDE GRAY 0182 GLOSSY	GRAY
TILE	T2	DALTILE	COLOR WHEEL LINEAR 4X12 CURRANT SH17 (3) GLOSSY	RED
TILE	T3	DALTILE	COLOR WHEEL LINEAR 4X12 ALMOND X114 (1) GLOSSY	WHITE
TILE	T4	CROSSVILLE	COLOR BOX 2.01 SEE THE MOON 3X3	SHOWER FLOOR MOSAIC 3X3
TILE	T5	CROSSVILLE	COLOR BOX 2.01 SEE THE MOON 12X12	TLT FLOOR
TILE BASE	TB1	DEL TILE	COLOR WHEEL LINEAR 4X12 DESERT GRAY X114 (1) GLOSSY	A34CIMOD 4X12
VINYL FLOORING	LVT1	MILLIKEN	THE MAGIC HOUR HORIZON HZN176-121 ETHERAL	



G7 TLT TILE BASE DETAIL WITH COVE TRIM
3" = 1'-0"



D7 TILE FLOOR SYSTEM 2
3" = 1'-0"



C7 TOILET FLANGE DETAIL AT THIN SET
3" = 1'-0"

WALL FOOTING SCHEDULE				
MARK	SIZE		REINFORCING	
	WIDTH	DEPTH	CONTINUOUS	TRANSVERSE
WF3	3' - 0"	1'-0"	(4) #5 BOT	#5 AT 24" OC
WF4	4' - 0"	1'-0"	(5) #5 BOT	#5 AT 24" OC
WF6	6' - 0"	1'-0"	(7) #5 BOT	#5 AT 12" OC

COLUMN FOOTING SCHEDULE					
MARK	SIZE		REINFORCING		REMARKS
	LENGTH	WIDTH	BOTTOM	TOP	
CF3	3' - 0"	3' - 0"	1'-0" ⁰¹	(4) #5 EW	(4) #5 EW
CF7	7' - 0"	7' - 0"	2'-0"	(8) #7 EW	(8) #7 EW

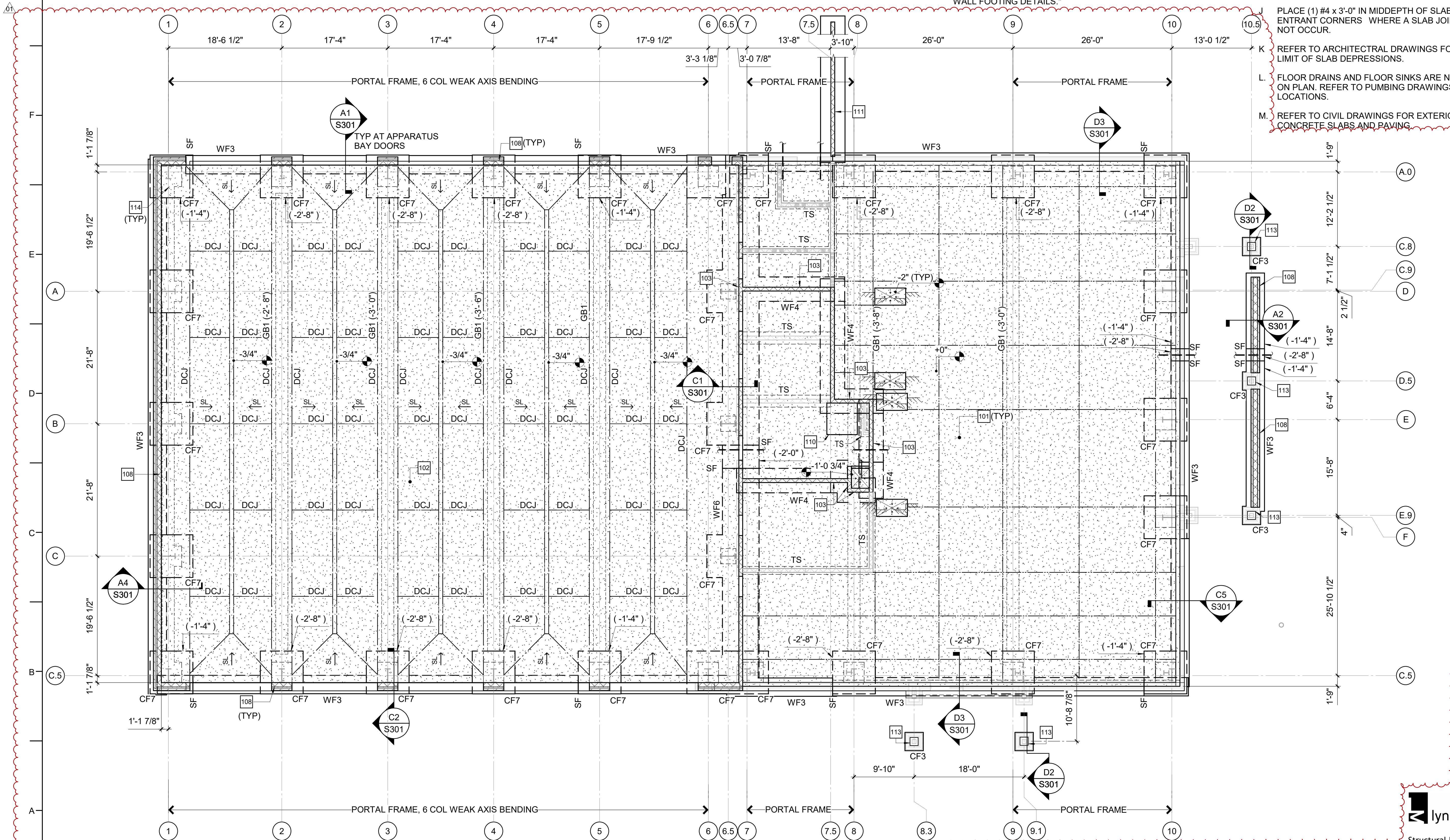
GRADE BEAM SCHEDULE					
MARK	SIZE		REINFORCING		
	WIDTH	DEPTH	BOTTOM	TOP	STIRRUPS
GB1	1'-6"	1'-0"	(3) #5	(3) #5	(2) #5
GB1	1'-6"	1'-0"	(3) #5	(3) #5	(2) #5

KEY NOTES

- 101 4" CONCRETE SLAB-ON-GRADE OVER VAPOR RETARDER AND 6" DEPTH OF POROUS FILL. REINFORCE SLAB WITH 6x6 W2.9xW2.9 WELDED WIRE FABRIC REINFORCING PLACED 1 1/2" CLEAR BELOW TOP OF SLAB. MAINTAIN REINFORCEMENT IN POSITION ON BOLSTERS, CHAIRS OR SPACERS DURING CONCRETE PLACEMENT.
- 102 8" CONCRETE SLAB-ON-GRADE OVER VAPOR RETARDER AND 6" DEPTH OF POROUS FILL. REINFORCE SLAB WITH #4 AT 12" ON CENTER LOCATED 2 1/2" CLEAR BELOW TOP OF SLAB. MAINTAIN REINFORCEMENT IN POSITION ON BOLSTERS, CHAIRS OR SPACERS DURING CONCRETE PLACEMENT.
- 103 8" CMU WITH #5 BARS AT 16" ON CENTER.
- 108 8" CMU KNEEWALL WITH #5 BARS AT 32" ON CENTER.
- 110 EXTRACTOR PAD. REFERENCE B1/S502 FOR DETAILS. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION AND SIZE.
- 111 SCREEN WALL AND FOOTING. REFER TO TYPICAL DETAIL ON S502. REFER TO ARCHITECTURAL DRAWINGS FOR EXTENTS AND LOCATION.
- 113 16"x16" CONCRETE PEDESTAL. REFERENCE A3/S505.
- 114 40"x40" CONCRETE PEDESTAL. REFERENCE A3/S505.

FOUNDATION / SLAB ON GRADE PLAN NOTES

- A. REFERENCE ARCHITECTURAL DRAWINGS FOR DIMENSIONS TO NONBEARING WALLS, WALL CONTROL JOINTS AND OPENINGS.
- B. UNLESS OTHERWISE NOTED, ALL ELEVATIONS ARE BASED ON A FINISHED FIRST FLOOR REFERENCE OF 0'-0". FINISHED FLOOR ELEVATIONS AT EACH LEVEL ARE INDICATED ON SLAB PLANS. REFERENCE ARCHITECTURAL DRAWINGS FOR FINISHED FLOOR MATERIALS.
- C. TOP OF ALL FOOTINGS MUST BE AT ELEVATION -1'-4" UNLESS OTHERWISE NOTED.
- D. NOT ALL UTILITY LOCATIONS ARE SHOWN ON PLAN. THE CONTRACTOR MUST COORDINATE THE LOCATIONS, SIZES, AND INVERTS OF UTILITIES. AT LOCATIONS WHERE UTILITIES PASS BELOW THE TOP OF FOOTING ELEVATION, STEP THE TOP OF FOOTING DOWN ON EACH SIDE PER THE "TYPICAL STEPPED FOOTING DETAIL" AND SLEEVE THE UTILITY THROUGH THE FOUNDATION WALL. THE CONTRACTOR MAY, AT HIS/HER OPTION, SLEEVE THE UTILITY THROUGH THE FOUNDATION PER THE "TYPICAL PIPE SLEEVE AT WALL FOOTING DETAILS."
- F. UNLESS OTHERWISE INDICATED, EXTEND WALL FOOTINGS A MINIMUM OF 6 INCHES BEYOND ENDS OF WALLS.
- G. NOT ALL SITE WALLS ARE SHOWN ON PLAN. CONTRACTOR MUST COORDINATE CIVIL AND LANDSCAPE DRAWINGS FOR SITE WALL INFORMATION.
- H. DIMENSIONS SHOWN ON FOUNDATION PLAN ARE TO COLUMN GRIDLINES AND OUTSIDE FACE OF FOUNDATION WALLS, UNLESS OTHERWISE NOTED.
- I. SLAB-ON-GRADE JOINTS MUST BE SAWED JOINTS OR DOWELED CONSTRUCTION JOINTS, UNLESS OTHERWISE NOTED. CONTRACTOR MUST COORDINATE ALL SLAB JOINTS WITH JOINTS IN BONDED FLOOR FINISHES. REFERENCE ARCHITECTURAL DRAWINGS FOR FLOOR FINISH JOINT LOCATIONS.
- J. PLACE (1) #4 x 3'-0" IN MIDDEPTH OF SLAB AT RE-ENTRANT CORNERS WHERE A SLAB JOINT DOES NOT OCCUR.
- K. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LIMIT OF SLAB DEPRESSIONS.
- L. FLOOR DRAINS AND FLOOR SINKS ARE NOT SHOWN ON PLAN. REFER TO PUMBING DRAWINGS FOR LOCATIONS.
- M. REFER TO CIVIL DRAWINGS FOR EXTERIOR CONCRETE SLABS AND PAVING.



1 FOUNDATION AND SLAB PLAN
1/8" = 1'-0"

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919.782.1833 - lynchmykins.com
LM Project Number: LM23.192

PROJECT INFORMATION

ONSLOW COUNTY BEAR
CREEK FIRE STATION
ONSLOW COUNTY
BID NO. 102-25C
OLD SAND RIDGE RD. HUBERT, NC 28539

SEALS



03/12/2025
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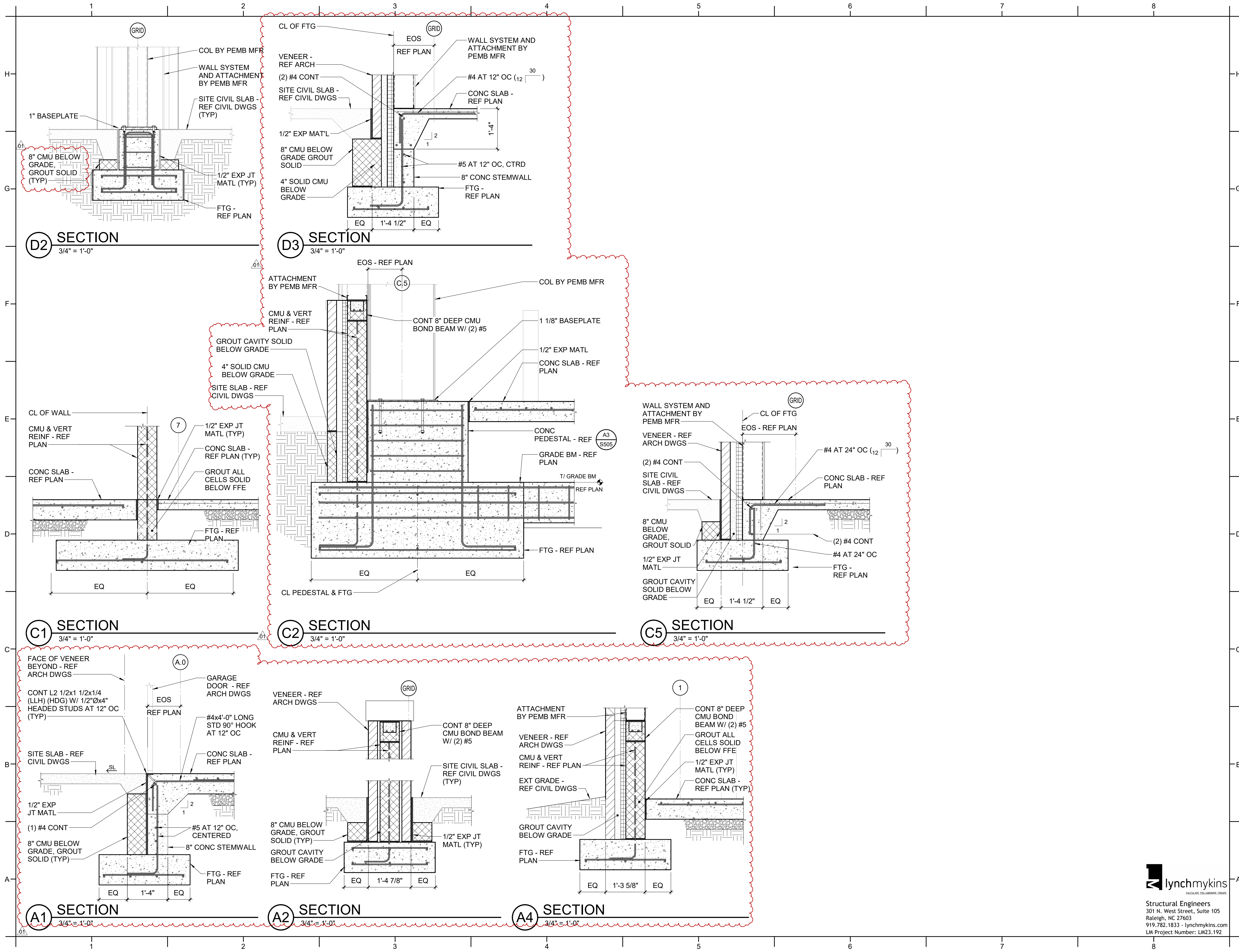
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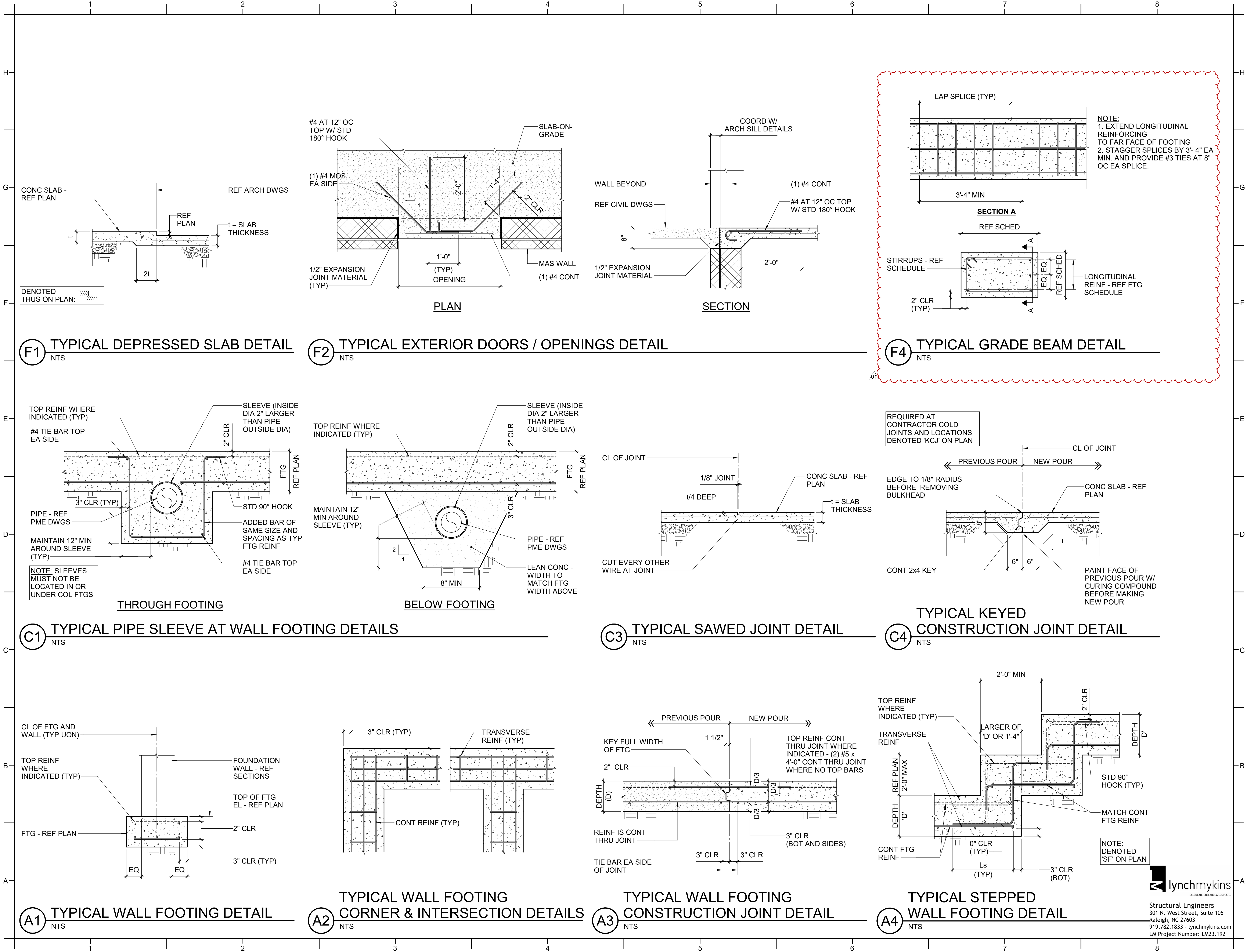
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S301

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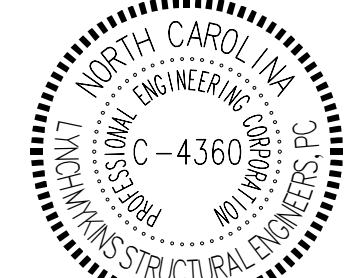




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TYPICAL DETAILS

S505

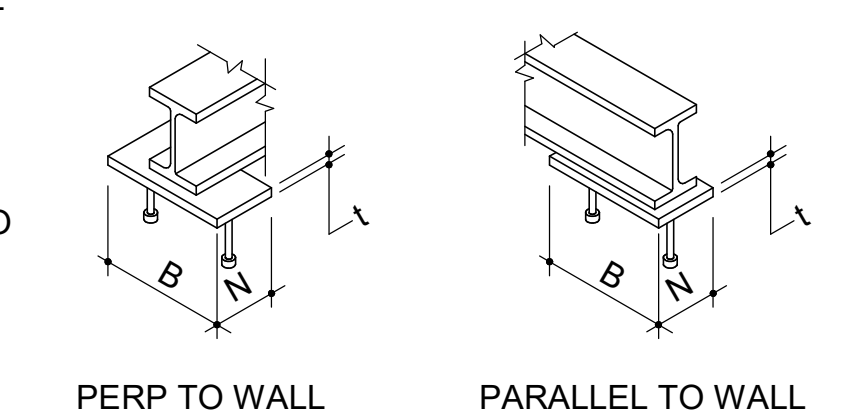
TENSION DEVELOPMENT LENGTH AND LAP SPLICE SCHEDULE									
BAR SIZE	TYPE	CONCRETE COMPRESSIVE STRENGTH (PSI)							
		3000		4000		5000		6000	
		TOP BAR	OTHER	TOP BAR	OTHER	TOP BAR	OTHER	TOP BAR	OTHER
#3	Ld	22	17	19	15	17	13	22	17
	Ls	28	22	24	19	22	17	28	22
#4	Ld	29	22	25	19	22	17	29	22
	Ls	37	29	32	25	29	22	37	29
#5	Ld	36	28	31	24	28	22	36	28
	Ls	47	36	40	31	36	28	47	36
#6	Ld	43	33	37	29	33	26	43	33
	Ls	56	43	48	37	43	33	56	43
#7	Ld	63	48	54	42	49	37	63	48
	Ls	81	63	70	54	63	49	81	63
#8	Ld	72	55	62	48	55	43	72	55
	Ls	93	72	80	62	72	55	93	72

NOTES:
1. ALL VALUES LISTED ARE INCHES.
2. TABLE IS BASE ON VALUES FOR ACI 318-14.
3. VALUES LISTED ARE FOR NORMAL WEIGHT CONCRETE. FOR LIGHTWEIGHT CONCRETE, MULTIPLY LENGTHS BY 1.33.
4. TOP BARS ARE DEFINED AS BARS WITH MORE THAN 12" OF CONCRETE COVER BELOW BAR.
5. WHERE DIFFERENT SIZE BARS ARE SPLICED, PROVIDE THE SPLICE LENGTH ASSOCIATED WITH THE LARGER BARS.

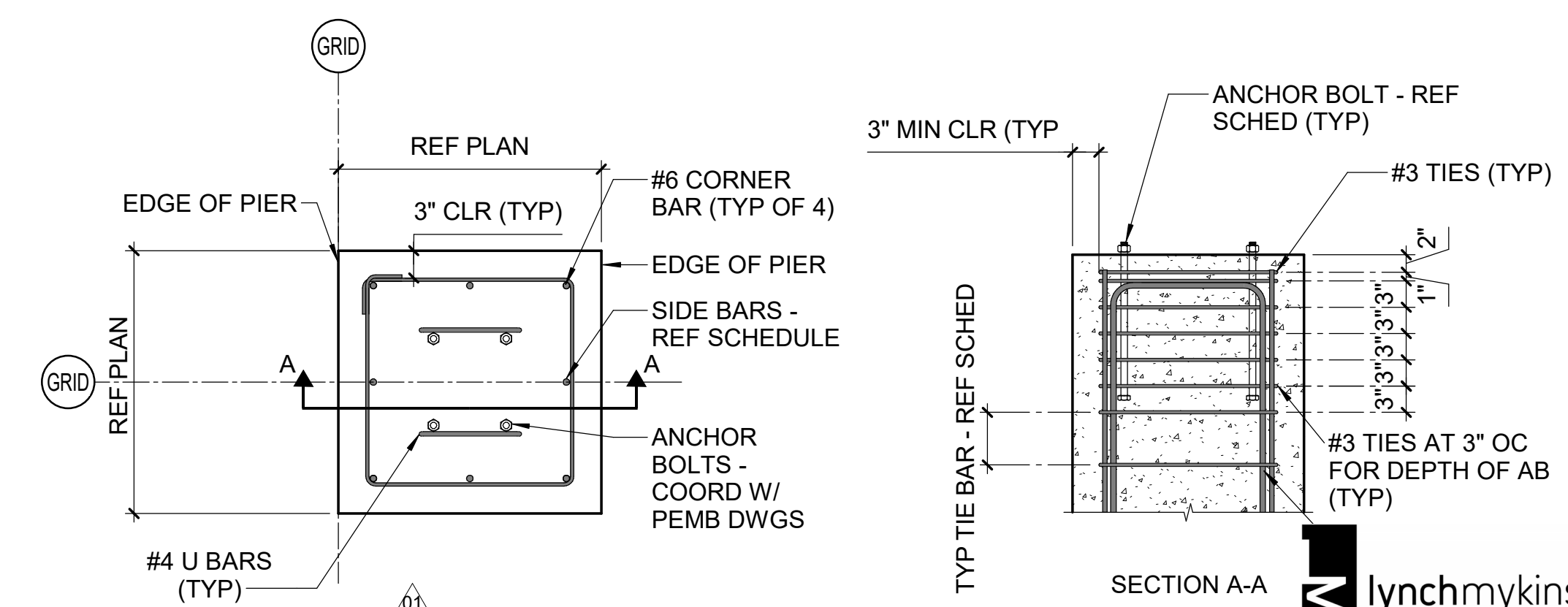
B2 TYPICAL REINFORCING SPLICE SCHEDULES

STEEL BEAM BEARING PLATE SCHEDULE				
MARK	LENGTH (B)	WIDTH (N)	THICKNESS (t)	HEADED STUDS
A	1'-4"	6"	3/4"	(2) 3/4"Ø x 6" LONG

PEDESTAL REINFORCING SCHEDULE			
SIZE	SIDE BARS (EA FACE)	TYPICAL TIE BARS	ANCHOR BOLTS
40"x 40"	(8) #6	#3 AT 6" OC	(4) 1"Ø BOLTS (15" MIN EMBED)
16"x 16"	(2) #6	#3 AT 6" OC	(4) 1"Ø BOLTS (9" MIN EMBED)

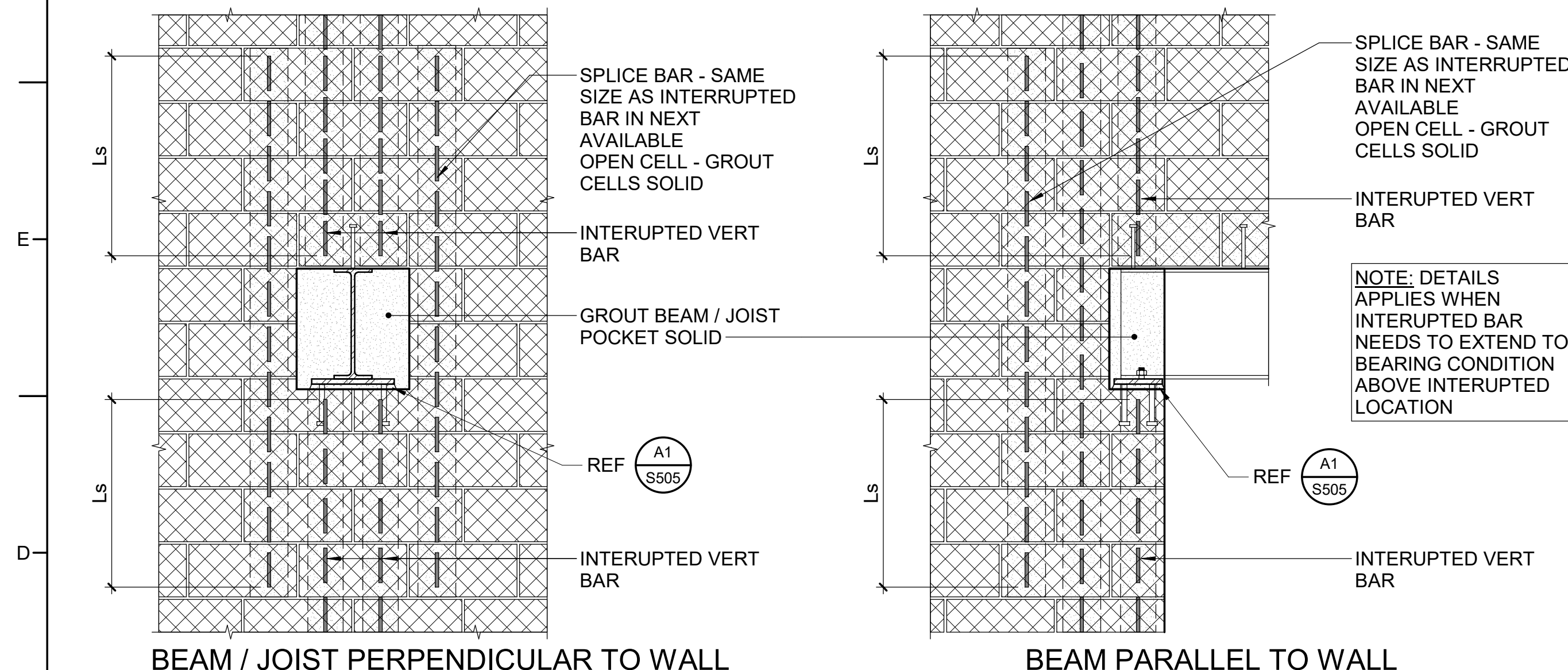


ISOMETRIC VIEW BEARING PLATES

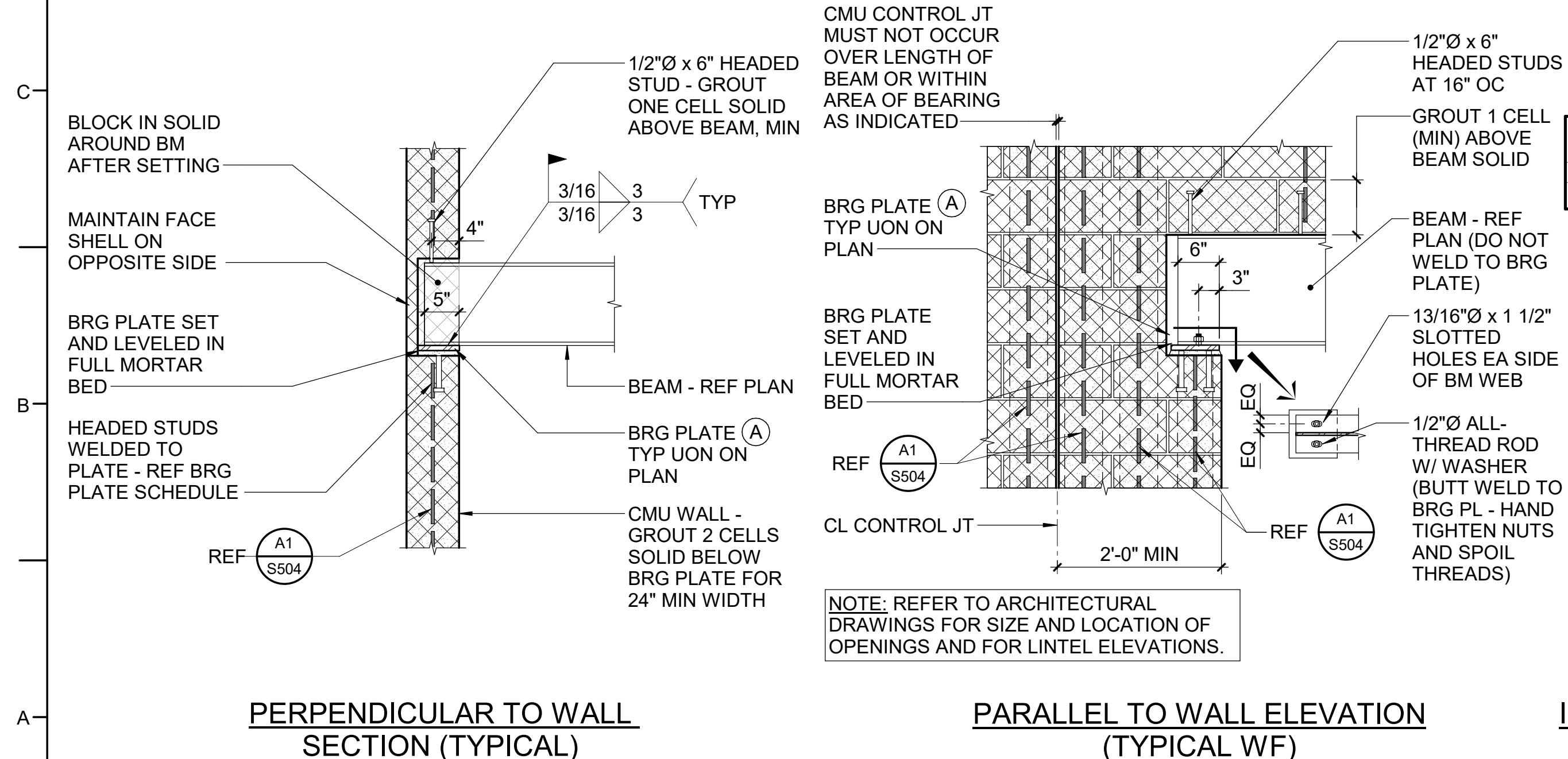


A3 TYP PEMB PEDESTAL REINFORCING DETAILS

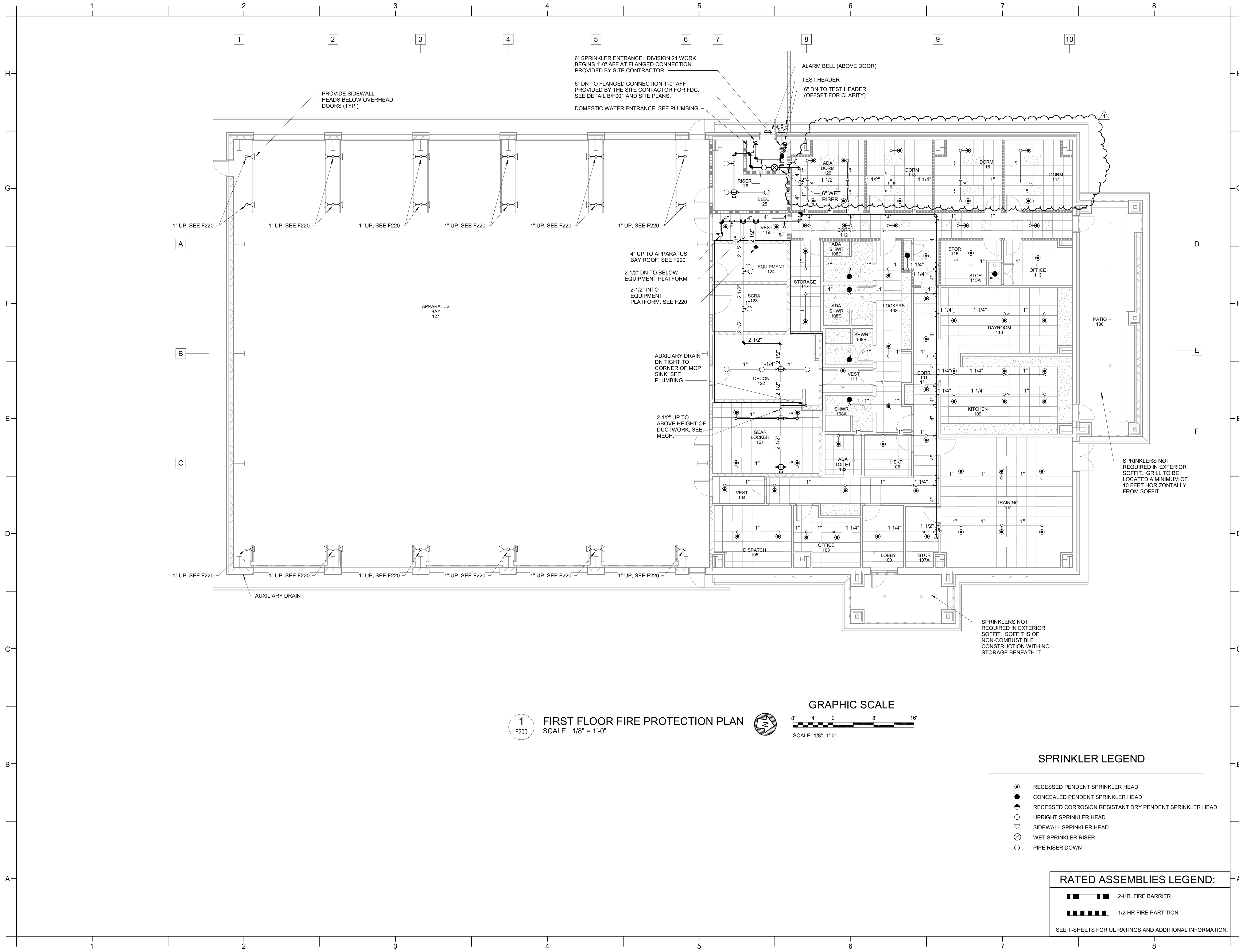
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B1 TYPICAL OFFSET SPLICE AT MASONRY WALL DETAILS



A1 TYPICAL STEEL BEAM BEARING ON MASONRY DETAILS



1
F200

FIRST FLOOR FIRE PROTECTION PLAN

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



GRAPHIC SCALE



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

SPRINKLER LEGEND

- RECESSED PENDENT SPRINKLER HEAD
- CONCEALED PENDENT SPRINKLER HEAD
- RECESSED CORROSION RESISTANT DRY PENDENT SPRINKLER HEAD
- UPRIGHT SPRINKLER HEAD
- ▽ SIDEWALL SPRINKLER HEAD
- ⊗ WET SPRINKLER RISER
- PIPE RISER DOWN

RATED ASSEMBLIES LEGEND:

- 2-HR. FIRE BARRIER
- 1/2-HR FIRE PARTITION

SEE T-SHEETS FOR UL RATINGS AND ADDITIONAL INFORMATION.



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ONSLOW COUNTY BEAR
CREEK FIRE STATION
ONSLOW COUNTY
BID. NO. 102-25C

138 OLD SAND RIDGE RD, HUBERT, NC 28539

SEALS



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SHEET TITLE
FIRST FLOOR FIRE PROTECTION

F200





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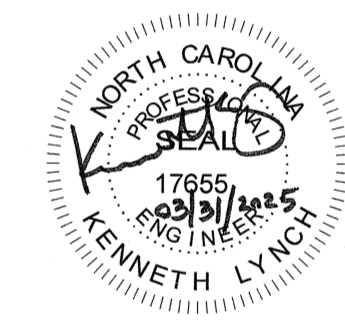
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ONSLOW COUNTY BEAR
CREEK FIRE STATION
ONSLOW COUNTY
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SHEET TITLE
MECHANICAL ROOF

M301

1 MECHANICAL ROOF PLAN
M301
SCALE: 1/8" = 1'-0"

GRAPHIC SCALE



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