

Addendum #01

Project Name: Proposed Renovation and Addition: Ellisville City Hall and Police Station

Project Number: 20016

Date: 2023-03-17

PLEASE NOTE

The following clarifications, deletions, additions and supplemental instructions have been incorporated into Project Manual, Construction Drawings and represent a portion of said Construction Documents.

*In the event of a conflict between this Addendum, Project Manual and or Construction Drawings, **this Addendum shall supersede** all previous instructions, pertaining to said items.*

CLARIFICATIONS & REQUESTS FOR INFORMATION

1. The basis of design RTU (Daiken) cannot meet the seismic certifications. Approved Alternate Manufacturers are not listed. Aeon has indicated they are in the process of getting listed by the EOR. In reviewing the Aeon RTU data sheets, the electrical ratings are higher than Daiken, the basis of design, enough that it may affect the wire and conduit sizing and ultimately cost impacts. I suggest this issue be addressed prior to Bid Opening, so there are no issues Post Bid. We will not be responsible for additional costs the Electricians may incur due to potential conductor and conduit size increases, as a result of an Alternate RTU Manufacturer's higher electrical ratings.
 - a. **Response: Reference Specifications Section 23 00 00 Mechanical General Requirements, Sub Section 2 Products, Article 2.1 Material and Equipment Selection, Paragraph F.**
 - b. **Response: Reference Specifications Section 23 00 00 Mechanical General Requirements, Sub Section 2 Products, Article 2.2 Substitutions, Paragraph F.**
2. Can the AISC requirements be waived if they conform to all the AISC standards ?
 - a. **Response: Chapter 17 of the International Building Code requires special inspections of shop fabricated items, unless they are produced in a shop that has an independent third party quality control program, such as AISC Certification.**

3. Please provide the Allowance for Soils Remediation, as mentioned within Specification Section 01 21 00 Allowances.
 - a. **Response: Delete Section 01 21 00 Allowances in its entirety, Reference attached Revised Section.**
4. Can you confirm there is no new Site Water or Sanitary Work ?
 - a. **Response: The existing Site Water Tap location will be reused, reference Sheet C03.**
 - b. **Response: A new Site Sanitary Tap location shall be provided, reference Sheet C04.**
5. Please confirm that we are allowed to submit Unit Pricing and Subcontractors List, twenty four hours after Bid Documents are submitted.
 - a. **Response: Unit Prices Form shall be attached, as a Supplement, to Bid Form, per Specifications Section 00 41 00 Bid Form.**
 - b. **Response: Proposed Subcontractors Form shall be submitted within twenty four (24) hours after submission of Bid Documents.**
6. Is it required that the Video Management System integrate with Genetec's Synergis access control platform ?
 - a. **Response: All Access Control and Video Management Systems shall be compatible with and monitored via, Genetec Software Program.**
7. Will Owner consider Bids for Access Control and or Video systems independently ? Will Owner be using an integrator, who can provide a turnkey solution for each system ?
 - a. **Response: Electrical Subcontractor's shall be responsible for Access Control and Video Management Systems Bids.**
 - b. **Response: Owner reserves the right to employ a Vendor for integration of both Access Control and Video Management Systems, final decision to be determined.**
8. What type insulation is required for the rectangular return air ducts ?
 - a. **Response: Reference attached New Specification Section 23 31 13 Metal Ducts.**
9. On Sheet E401, I see a Pump Room 020. Is there a Fire Pump within this Building ? If there is, or is not, how many monitor modules are needed to monitor the Sprinkler System.
 - a. **Response: There is no Fire Pump included within this Project. There are anticipated four flow switches and three tamper switches to monitor. Sprinkler layout is Performance Specified.**

10. I did not see a WP horn strobe on the Auxiliary Plans, for the Sprinkler System.
Is this going to be an electric bell gong ? Is this device going to be a WP horn strobe ?
Also, can you please provide the location of this device ?
- a. **Response: Yes, there will be a WP electronic horn on the Building Exterior.
It shall be located on the east wall, outside of the area above the FDC.**
11. On Sheet E401, are there showers in the Locker Rooms ? If so, do the notification devices need to be WP in those locations ?
- a. **Response: AV devices within Showers will need to be weatherproof.**
12. On Sheet E402, are the horn strobes located within the Garage 148 WP devices ?
- a. **Response: AV devices within Garage are not weatherproof.**
13. On Sheet E403, a smoke detector is missing at Corridor 144, due to the doors being held open by door holders, is this intentional ?
- a. **Response: Doors within Corridor 144 are not fire or smoke doors. These doors are not connected into Fire Alarm System. These doors will close upon loss of Power, to secure Storm Shelter area.**
14. Is spray on fire proofing required ? Sheet G003 and the Specifications state in several places that there is fire proofing, but myself and my Subcontractors are confused on if it is needed and if it is, where it is needed.
- a. **Response: This issue will be addressed within Addendum #02.**
15. Do you have an Asbestos Report we can look at ? It states in book on (page 170 3.02 E1) of the Specifications, that there is ACM and it is our responsibility to remove, but does not clarify how much, or what areas need remediation.
- a. **Response: This issue will be addressed within Addendum #02.**
16. Is there insulation under the entire building slab, or just around the perimeter ?
If so, how far does the insulation come off the inside face of the foundation ?
- a. **Response: This issue will be addressed within Addendum #02.**
17. What is the Contractor responsible for, with consideration to Testing ? Is the Owner providing all Testing and the Contractor is just to Schedule ? If so, how much testing time is allotted by the Owner ?
- a. **Response: This issue will be addressed within Addendum #02.**

18. There is no Landscaping Plan to go off, is the Landscaping supposed to be included, as an Allowance, or will there be a Landscaping Plan issued ?
- a. **Response: This issue will be addressed within Addendum #02.**
19. Has there been a Job setup with Ameren yet ? If so, does this Job include the removal of the existing electric pole on Site and are we supposed to carry the cost of this ?
- a. **Response: This issue will be addressed within Addendum #02.**
20. What are we responsible for with the Elevator ? Do we have to sue a specific Company ?
- a. **Response: This issue will be addressed within Addendum #02.**
21. We believe you want solid color reinforced composite toilet partitions, but you have a Wilsonart color listed. Our Product is only available in four colors, please advise.
- a. **Response: Reference Keyed Note 12, Sheet A611.**

PRODUCT SUBSTITUTIONS

1. Specification Section 07 14 00 Fluid Applied Waterproofing.
- a. **Response: This Product Substitution request is approved. Reference attached Substitution Request Form, Carlisle Coatings and Waterproofing.**
2. Specification Section 07 42 13.23 Metal Composite Materials Wall Panels.
- a. **Response: This Product Substitution request is approved. Reference attached Substitution Request Form, Cascadia Windows, Ltd.**
3. Specification Section 08 11 13 Hollow Metal Doors and Frames.
- a. **Response: This Product Substitution request is approved. Reference attached Substitution Request Form, Mesker.**
4. Specification Section 08 71 00 Door Hardware, Exit Devices.
- a. **Response: This Product Substitution request is approved. Reference attached Substitution Request Form, Precision Doors & Hardware.**
5. Specification Section 08 71 00 Door Hardware, Closers.
- a. **Response: This Product Substitution request is approved. Reference attached Substitution Request Form, Best Door Hardware.**

6. Specification Section 08 71 00 Door Hardware, Locks.
 - a. **Response: This Product Substitution request is approved. Reference attached Substitution Request Form, Best Door Hardware.**
7. Specification Section 08 71 00 Door Hardware, Electromechanical Locks.
 - a. **Response: This Product Substitution request is approved. Reference attached Substitution Request Form, Best Door Hardware.**
8. Specification Section 10 21 13.21 Solid Color Composite Toilet Partitions.
 - a. **Response: This Product Substitution request is approved. Reference attached Substitution Request Form, ASI Group.**
9. Specification Section 13 46 50 Bullet Resistant Products.
 - a. **Response: This Product Substitution request is approved. Reference attached Substitution Request Form, Chicago Bullet Proof Systems, Inc.**
10. Specification Section 13 46 50 Bullet Resistant Products.
 - a. **Response: This Product Substitution request is approved. Reference attached Substitution Request Form, United States Bullet Proofing, Inc.**

PROJECT MANUAL

1. Specification Section 00 01 10 Table of Contents.
 - a. **Delete Specification Section 23 09 90 HVAC Instrumentation and Controls, in its entirety.**
2. Specification Section 00 31 00.01 Available Project Information.
 - a. **Add Sub Section 1.03 Geotechnical Report.**
 - b. **Add Sub Section 1.04 Existing Elevator Information.**
 - c. **Delete Section in its entirety, Reference attached New Section.**
3. Specification Section 00 41 00 Bid Form.
 - a. **Revise entire Section.**
 - b. **Delete Section in its entirety, Reference attached New Section.**
4. Specification Section 01 21 00 Allowances.
 - a. **Revise Sub Section 1.03 Allowances Schedule.**
 - b. **Delete Section in its entirety, Reference attached Revised Section.**

5. Specification Section 10 51 13 Welded Metal Lockers.
 - a. **Revised entire Section.**
 - b. **Delete Section in its entirety, Reference attached New Section**
6. Specification Section 22 11 00 Plumbing Valves.
 - a. **Re-printed to include language in PDF version.**
 - b. **Delete Section in its entirety, Reference attached New Section.**
7. Specification Section 23 09 23 Building Automation System for HVAC.
 - a. **Section 2.12.A: Add “Central Operator’s Panel shall be provided by the Rooftop Unit Manufacturer, Vendor. All HVAC Controllers connected to the Network shall be accessed from one Operator’s Panel.”**
 - b. **Delete Section in its entirety, Reference attached Revised Section.**
8. Specification Section 23 31 13 Metal Ducts.
 - a. **Section 3.1.B-Liner, Paragraph 1: Add “C. Return air duct from the connection to the rooftop unit for 8’ upstream of the connection.”**
 - b. **Delete Section in its entirety, Reference attached New Section.**
9. Specification Section 23 36 00 Air Terminal Units:
 - a. **Section 2.2: Add “Seismic Performance: Terminal Unit(s) associated with RTU-03 and 03A shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.**
 - b. **Section 2.2.A: Add “The term “withstand” means “the system will remain in place without separation of any parts when subjected to the seismic forces specified and the system will be fully operational after the seismic event.”**
 - c. **Section 2.2B: Add “Component Importance Factor” 1.5.”**
 - d. **Section 2.3: Add “Seismic Performance: Terminal Unit(s) associated with RTU-03 and 03A shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.**
 - e. **Section 2.3.A: Add “The term “withstand” means “the system will remain in place without separation of any parts when subjected to the seismic forces specified.”**
 - f. **Section 2.3.B: Add “Component Importance Factor: 1.0.”**
 - g. **Delete Section in its entirety, Reference attached New Section.**

10. Specification Section 23 74 16 Packaged Rooftop Units:

- a. Section 7.A: Add “Products shall be provided by the following manufacturers.”
- b. Section 7.A.1: Add “Aaon.”
- c. Section 7.A.2: Add “Daikin.”
- d. Section 7.A.3: Add “Trane.”
- e. Section 7.A.4: Add “York.”
- f. Section 9: Add “Seismic Performance.”
- g. Section 9.A: Add “Roof Top Unit system(s) RTU-03 and 03A shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.”
- h. Section 9.A.1: Add “The term “withstand” means “the system will remain in place without separation of any parts, when subjected to the seismic forces specified and the system will be fully operational after the seismic event.”
- i. Section 9.A.1.i: Add “Component Importance Factor: 1.5.”
- j. Section 9.A.1.ii: Add “Component Importance Factor: 2.5.”
- k. Section 9.A.1.ii: Add “Component Response Modification Factor: 6.0.”
- l. Section 9.A.2: Add “The term “withstand” means “the system will remain in place without separation of any parts when subjected to the seismic forces specified.”
- m. Section 9.A.2.i: Add “Component Importance Factor: 1.”
- n. Section 9.A.2.ii: Add “Component Amplification Factor: 2.5.”
- o. Section 0.A.2.ii: Add “Component Response Modification Factor: 6.0.”
- p. Delete Section in its entirety, Reference attached New Section.

11. Specification Section 27 15 00 Communications Horizontal Cabling:

- a. Include Superior Essex as approved Manufacturer.

CONSTRUCTION DRAWINGS

GENERAL:

- *No documents issued within this Addendum.*

CIVIL:

- *No documents issued within this Addendum.*

ARCHITECTURAL:

1. Sheet G-002: Life Safety-Basement and Level 1
 - a. **Revised Building Code information.**
 - b. **Reference attached Revised Sheet.**
2. Sheet A102D: Lobby Clerestory Plan and Reflected Ceiling Plan
 - a. **A1 Hid doors on Floor Plan and added Floor Plan Keynotes.**
 - b. **C1 Added dimensions and Keynotes to Reflected Ceiling Plan.**
 - c. **Added Keynote to Reflected Ceiling Plan and Floor Plan Legend.**
 - d. **Reference attached Revised Sheet.**
3. Sheet A104: Enlarged Basement Plan-Police
 - a. **Mirrored Section Cut through Elevator Shaft, as required to identify locations of rough openings.**
 - b. **Reference attached Revised Sheet.**
4. Sheet A216: Elevator Sections and Details
 - a. **A1 and A3, added notes for clarity at existing Elevator and shaft.**
 - b. **Reference attached Revised Sheet.**
5. Sheet A302: Wall Sections
 - a. **A2, revised Keynotes at foundation.**
 - b. **A4, added Keynotes at Wall Section.**
 - c. **Reference attached Revised Sheet.**
6. Sheet A303: Wall Sections
 - a. **A3, added detail bubble at Clerestory sill.**
 - b. **Reference attached Revised Sheet.**
7. Sheet A320: Architectural Detail
 - a. **B5, added notes to detail.**
 - b. **C6, added new detail.**
 - c. **Reference attached Revised Sheet.**
8. Sheet A322: Architectural Detail
 - a. **A1, revised detail and added notes.**
 - b. **C4, added new detail.**
 - c. **Reference attached Revised Sheet.**

9. Sheet A610: Interior Finish Schedule and Details
 - a. **Revised Product Data, Glass Wall Tile Type GWT.**
 - b. **Added new Product Data, Wall Protection Type WP3.**
 - c. **Reference attached Revised Sheet.**
10. Sheet A611: Basement and Level 1 Floor Finish Plan
 - a. **Added Keynote 42 to Finish Plan.**
 - b. **Added Keynote 42 to existing Elevator at Level 1 Floor Finish Plan.**
 - c. **Reference attached Revised Sheet.**

STRUCTURAL:

1. Sheet S101: General Notes
 - a. **Revise Paragraphs 1.3.I, 1.4, 1.5A, 1.5C and 1.5D, of the Structural General Notes.**
 - b. **Reference attached Revised Sheet.**
2. Sheet S106: Typical Details
 - a. **Added Typical Details 13, 14 and 16.**
 - b. **Reference attached Revised Sheet.**
3. Sheet S107: Typical Details
 - a. **Revised Detail 3 and added Detail 14.**
 - b. **Reference attached Revised Sheet.**
4. Sheet S108: Loading Diagrams
 - a. **Added uplift pressure symbol on Plan 2.**
 - b. **Reference attached Revised Sheet.**
5. Sheet S201: Foundation Plan-Level 1
 - a. **Revised Foundation and Section Marks on south side between Grids 18 and 13.9.**
 - b. **Revised TP and Section Mark in storm shelter area.**
 - c. **Revised Plan Note #11.**
 - d. **Reference attached Revised Sheet.**

6. Sheet S202: Framing Plan-Level 2
 - a. **Revised steel location, moment connection and top of steel, for beams between Grids N.4 and T.**
 - b. **Revised framing between Grids N and M, from 13 to 13.8.**
 - c. **Added Detail 3 for framing plan, Alternate #02.**
 - d. **Added drag connection design loads, in beams between Grids N.4 and M.**
 - e. **Reference attached Revised Sheet.**
7. Sheet S301: Foundation Sections and Details
 - a. **Revised Sections 2, 5, 7, 16 and 17.**
 - b. **Reference attached Revised Sheet.**
8. Sheet S302: Foundation Sections and Details
 - a. **Revised Sections 1, 2, and 3.**
 - b. **Added Section 4.**
 - c. **Reference attached Revised Sheet.**
9. Sheet S401: Framing Sections and Details
 - a. **Revised Sections 6 and 7.**
 - b. **Reference attached Revised Sheet.**
10. Sheet S402: Framing Sections and Details
 - a. **Revised Sections 2, 3, 6 and 7.**
 - b. **Reference attached Revised Sheet.**
11. Sheet S403: Framing Sections and Details
 - a. **Revised Sections 1, 2, 3, 4, 7, 10 and 11.**
 - b. **Added Sections 12 and 13.**
 - c. **Reference attached Revised Sheet.**
12. Sheet S502: Column Schedule
 - a. **Revised Column Schedule.**
 - b. **Added Base Plate Details 3 and 4.**
 - c. **Reference attached Revised Sheet.**

CONVEYING EQUIPMENT: (Not Applicable)

- *No documents issued within this Addendum.*

FIRE PROTECTION:

- *No documents issued within this Addendum.*

PLUMBING:

1. Sheet P600: Plumbing Schedules
 - a. **Duplicate WB-1 line was deleted from Plumbing Fixture Schedule for clarity.**
 - b. **Reference attached Revised Sheet.**

MECHANICAL:

1. Sheet M001: Mechanical Symbols and Abbreviations
 - a. **Delete turning vane symbol. Turning vanes will not be shown on plans, but shall be provided per Detail 2/M501.**
 - b. **Line on seismic block was added for rooftop units and associated VAV boxes.**
 - c. **Reference attached Revised Sheet.**
2. Sheet M201: Basement and Level 1 Plan-Mechanical
 - a. **Updated section view 3 for new RTU 01 selection.**
 - b. **Updated dashed line denoting RTU 01 outline per new selection.**
 - c. **Updated gas line size for increase in MBH from new RTU selections on plan view.**
 - d. **Moved VAV 115 tag to uncover supply grill.**
 - e. **Keynote 15 deleted.**
 - f. **Reference attached Revised Sheet.**
3. Sheet M202: Roof and 2nd Floor Plan-Mechanical Base Bid
 - a. **Updated gas line size for increase in MBH from new RTU selections on plan view.**
 - b. **Updated gas line routing on plan view for new RTU selections on plan view.**
 - c. **Updated Keynote for gas line size for increase in MBH from new RTU selections.**
 - d. **Reference attached Revised Sheet.**

4. Sheet M203: Second Level and Roof Mechanical-Alternative
 - a. Updated gas line size for increase in MBH from new RTU selections on plan view.
 - b. Updated gas line routing on plan view for new RTU selections on plan view.
 - c. Updated Keynote for gas line size for increase in MBH from new RTU selections.
 - d. Reference attached Revised Sheet.
5. Sheet M601: Mechanical Schedules
 - a. Updated RTU Schedule with new RTU selections and new manufacturer.
 - b. Note was added on RTU Schedule to include modulating hot gas reheat coil for RTU 01.
 - c. VAV Schedule was updated to include model and manufacturer.
 - d. Reference attached Revised Sheet.

AIR DISTRIBUTION: (Not Applicable)

- *No documents issued within this Addendum.*

INTEGRATED AUTOMATION SYSTEMS: (Not Applicable)

- *No documents issued within this Addendum.*

ELECTRICAL:

1. Sheet E211: Roof Equipment Power Plan
 - a. Modify Safety Switches for Rooftop Units.
 - b. Reference attached Revised Sheet.
2. Sheet E303: Partial level 1 Lighting Plan
 - a. Changed fixture type in vestibule.
 - b. Reference attached Revised Sheet.
3. Sheet E305: Level 2 Lighting Plan-Alternative
 - a. Shifted two light fixtures.
 - b. Reference attached Revised Sheet.
4. Sheet E601: Electrical Schedules
 - a. Modified Panel LS and LS (Alternate).
 - b. Reference attached Revised Sheet.

5. Sheet E603: Electrical Schedules and One-Line
 - a. Modified one-line, feeder schedule and equipment data schedule for changes in Rooftop Units.
 - b. Reference attached Revised Sheet.

COMMUNICATIONS:

- *No documents issued within this Addendum.*

ELECTRONIC SAFETY, SECURITY: (Not Applicable)

- *No documents issued within this Addendum.*

EARTHWORK:

- *No documents issued within this Addendum.*

EXTERIOR IMPROVEMENTS:

- *No documents issued within this Addendum.*

UTILITIES:

- *No documents issued with this Addendum.*

MISCELLANEOUS:

- *No documents issued within this Addendum.*

END OF ADDENDUM #01

SECTION 01 21 00
ALLOWANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Inspecting and testing Allowances.
- B. Soils Remediation Allowance under footings and floor slab, new structure.

1.02 INSPECTING AND TESTING ALLOWANCES

- A. Costs Included in Inspecting and Testing Allowances:
 - 1. Cost of engaging an inspecting or testing agency, execution of inspecting and tests and reporting results.
- B. Costs Not Included in the Inspecting and Testing Allowances:
 - 1. Costs of incidental labor and facilities required to assist inspecting or testing agency.
 - 2. Costs of testing services used by Contractor separate from Contract Document requirements.
 - 3. Costs of retesting upon failure of previous tests as determined by Architect.
- C. Payment Procedures:
 - 1. Submit one (1) copy of the inspecting or testing firm's invoice with next application for payment.
 - 2. Pay invoice following approval by Architect.
- D. Differences in cost will be adjusted by Change Order.

1.03 ALLOWANCES SCHEDULE

- A. Inspecting and Testing Allowance: Include the sum of \$ 25,000.00 (twenty five thousand dollars), for payment of Inspection and Testing Services.
 - 1. General contractor to verify allowance with local testing agency's prior to signing contracts.
- B. Soils Remediation Allowance, building **FLOOR SLABS ON GRADE**: The established dollar amount, as indicated within Submitted Bid Documents and based on Allowance for entire amount of cubic yards required for remediation of building **FLOOR SLABS ON GRADE**. This Work shall be performed in conjunction with those recommendations delineated within said Geotechnical Report, provided by SCI Engineering, Inc., to Owner, Ellisville City Hall and Police Station Addition, Ellisville, Mo., and Dated July 22, 2022. This Allowance shall be established, based upon Contractor's Unit Pricing for Item #01, removal and disposal of unsatisfactory soils and import, placement and compaction of Geotechnical Engineer approved soils and shall be specified within the Bid Form. All non-utilized Allowance funds shall be reimbursed to Owner via Change Order.

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- C. Soils Remediation Allowance, **BUILDING FOOTINGS**: The established dollar amount, as indicated within Submitted Bid Documents and based on Allowance for entire amount of cubic yards required for remediation of **BUILDING FOOTINGS**. This Work shall be performed in conjunction with those recommendations delineated within said Geotechnical Report, provided by provided by SCI Engineering, Inc., to Owner, Ellisville City Hall and Police Station Addition, Ellisville, Mo., and Dated July 22, 2022. This Allowance shall be established, based upon Contractor's Unit Pricing for Item #01, removal and disposal of unsatisfactory soils and import, placement and compaction of Geotechnical Engineer approved soils and shall be specified within the Bid Form. All non-utilized Allowance funds shall be reimbursed to Owner via Change Order.
- D. Soils Remediation Allowance, **SITE PAVING**: The established sum as indicated within Submitted Bid Documents, from the General Contractor, as established by the Bidding Contractor, as required to provide remediation of six hundred eighty (680) cubic yards of poor soils removal and replacement, within Project Site paving areas. This Work shall be performed in conjunction with those recommendations delineated within said Geotechnical Report, provided by provided by SCI Engineering, Inc., to Owner, Ellisville City Hall and Police Station Addition, Ellisville, Mo., and Dated July 22, 2022. This Allowance shall be established, based upon Contractor's Unit Pricing for Item #01, removal and disposal of unsatisfactory soils and import, placement and compaction of Geotechnical Engineer approved soils and shall be specified within the Bid Form. All non-utilized Allowance funds shall be reimbursed to Owner via Change Order.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

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SECTION 23 31 13
METAL DUCTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes metal ducts for supply, return, outside, and exhaust air-distribution systems in pressure classes from **minus 2- to plus 10-inch wg.** Metal ducts include the following:
 - 1. Rectangular ducts and fittings.
 - 2. Single-wall, round spiral-seam ducts and formed fittings.
 - 3. Duct Liner.
- B. Related Sections include the following:
 - 1. Division 23 Section "Duct Accessories" for dampers, sound-control devices, duct-mounting access doors and panels, turning vanes, and flexible ducts.
 - 2. Section 23 05 49 "Mechanical Systems Supports, Bracing and Seismic Requirements".
 - 3. Section 23 00 00 "General Mechanical Requirements".
 - 4. Section 23 00 50 "Basic Mechanical Materials and Methods".

1.3 DEFINITIONS

- A. FRP: Fiberglass-reinforced plastic.
- B. NUSIG: National Uniform Seismic Installation Guidelines.

1.4 SYSTEM DESCRIPTION

- A. Duct system design, as indicated, has been used to select size and type of air-moving and -distribution equipment and other air system components. Changes to layout or configuration of duct system must be specifically approved in writing by Architect. Accompany requests for layout modifications with calculations showing that proposed layout will provide original design results without increasing system total pressure.

1.5 SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
 - 1. Ceiling suspension assembly members.
 - 2. Other systems installed in same space as ducts.
 - 3. Ceiling- and wall-mounting access doors and panels required to provide access to dampers and other operating devices.
 - 4. Ceiling-mounting items, including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.

- B. Welding certificates.
- C. Field quality-control test reports.

1.6 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code-Steel," for hangers and supports and AWS D9.1, "Sheet Metal Welding Code," for duct joint and seam welding.
- B. NFPA Compliance:
 - 1. NFPA 90A, "Installation of Air Conditioning and Ventilating Systems."
 - 2. NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."
- C. Comply with NFPA 96, "Ventilation Control and Fire Protection of Commercial Cooking Operations," Ch. 3, "Duct System," for range hood ducts, unless otherwise indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

2.2 SHEET METAL MATERIALS

- A. Comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods, unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.
- B. Galvanized Sheet Steel: Lock-forming quality; complying with ASTM A 653/A 653M and having G90 coating designation; ducts shall have mill-phosphatized finish for surfaces exposed to view.
- C. Carbon-Steel Sheets: ASTM A 366/A 366M, cold-rolled sheets; commercial quality; with oiled, matte finish for exposed ducts.
- D. Stainless Steel: ASTM A 480/A 480M, Type 316, and having a No. 2D finish for concealed ducts.
- E. Aluminum Sheets: ASTM B 209, alloy 3003, temper H14; with mill finish for concealed ducts and standard, 1-side bright finish for exposed ducts.
- F. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts.
- G. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.
- H. Dryer exhaust duct shall be of smooth interior finish with push fittings in direction of airflow.

Screws and other similar fasteners protruding into the ductwork will not be acceptable.

2.3 DUCT LINER

A. Flexible Elastomeric Duct Liner: Comply with NFPA 90A or NFPA 90B.

1. Manufacturers:
 - a. Armstrong World Industries, Inc.
 - b. Or Engineer approved equal.
2. Materials: Unicellular polyethylene thermal plastic, preformed sheet insulation complying with ASTM C 534, Type II, except for density.
 - a. Thickness: As specified in applications section.
 - b. Thermal Conductivity (k-Value): 0.24 at 75 deg F mean temperature.
 - c. Fire-Hazard Classification: Maximum flame-spread index of 25 and smoke-developed index of 50 when tested according to ASTM C 411.
 - d. Liner Adhesive: As recommended by insulation manufacturer and complying with NFPA 90A or NFPA 90B.

B. Fibrous-Glass Liner: Comply with NFPA 90A or NFPA 90B and with NAIMA AH124.

1. Available Manufacturers:
 - a. CertainTeed Corp.; Insulation Group.
 - b. Johns Manville International, Inc.
 - c. Knauf Fiber Glass GmbH.
 - d. Owens Corning.
2. Materials: ASTM C 1071; surfaces exposed to airstream shall be coated to prevent erosion of glass fibers. Comply with ASHRAE 62.1.
 - a. Thickness: 1 inch.
 - b. Thermal Conductivity (k-Value): 0.26 at 75 deg F mean temperature.
 - c. Fire-Hazard Classification: Maximum flame-spread index of 25 and smoke-developed index of 50 when tested according to ASTM E 84.
 - d. Liner Adhesive: Comply with NFPA 90A or NFPA 90B and with ASTM C 916.
 - e. Mechanical Fasteners: Galvanized steel suitable for adhesive attachment, mechanical attachment, or welding attachment to duct without damaging liner when applied as recommended by manufacturer and without causing leakage in duct.

(i) Tensile Strength: Indefinitely sustain a 50-lb- tensile, dead-load test perpendicular to duct wall.

(ii) Fastener Pin Length: As required for thickness of insulation and without projecting more than 1/8 inch into airstream.

(iii) Adhesive for Attaching Mechanical Fasteners: Comply with fire-hazard classification of duct liner system.

2.4 SEALANT MATERIALS

A. Joint and Seam Sealants, General: The term "sealant" is not limited to materials of adhesive or

mastic nature but includes tapes and combinations of open-weave fabric strips and mastics.

- B. Joint and Seam Tape: 2 inches wide; glass-fiber-reinforced fabric.
- C. Tape Sealing System: Woven-fiber tape impregnated with gypsum mineral compound and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.
- D. Water-Based Joint and Seam Sealant: Flexible, adhesive sealant, resistant to UV light when cured, UL 723 listed, and complying with NFPA requirements for Class 1 ducts.
- E. Solvent-Based Joint and Seam Sealant: One-part, nonsag, solvent-release-curing, polymerized butyl sealant formulated with a minimum of 75 percent solids.
- F. Flanged Joint Mastic: One-part, acid-curing, silicone, elastomeric joint sealant complying with ASTM C 920, Type S, Grade NS, Class 25, Use O.
- G. Flange Gaskets: Butyl rubber or EPDM polymer with polyisobutylene plasticizer.

2.5 HANGERS AND SUPPORTS

- A. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.
 - 1. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.
 - 2. Exception: Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.
- B. Hanger Materials: Galvanized sheet steel or threaded steel rod.
 - 1. Hangers Installed in Corrosive Atmospheres: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.
 - 2. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for steel sheet width and thickness and for steel rod diameters.
 - 3. Galvanized-steel straps attached to aluminum ducts shall have contact surfaces painted with zinc-chromate primer.
- C. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- D. Trapeze and Riser Supports: Steel shapes complying with ASTM A 36/A 36M.
 - 1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
 - 2. Supports for Stainless-Steel Ducts: Stainless-steel support materials.
 - 3. Supports for Aluminum Ducts: Aluminum support materials unless materials are electrolytically separated from ducts.

2.6 RECTANGULAR DUCT FABRICATION

- A. Fabricate ducts, elbows, transitions, offsets, branch connections, and other construction according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" and complying with

requirements for metal thickness, reinforcing types and intervals, tie-rod applications, and joint types and intervals.

1. Lengths: Fabricate rectangular ducts in lengths appropriate to reinforcement and rigidity class required for pressure class.
 2. Deflection: Duct systems shall not exceed deflection limits according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."
- B. Transverse Joints: Prefabricated slide-on joints and components constructed using manufacturer's guidelines for material thickness, reinforcement size and spacing, and joint reinforcement.
1. Manufacturers:
 - a. Ductmate Industries, Inc.
 - b. Nexus Inc.
 - c. Ward Industries, Inc.
- C. Formed-On Flanges: Construct according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible," Figure 1-4, using corner, bolt, cleat, and gasket details.
1. Manufacturers:
 - a. Ductmate Industries, Inc.
 - b. Lockformer.
 - c. Engineered approved equal
 2. Duct Size: Maximum 30 inches wide and up to 2-inch wg pressure class.
 3. Longitudinal Seams: Pittsburgh lock sealed with noncuring polymer sealant.
- D. Cross Breaking or Cross Beading: Cross break or cross bead duct sides 19 inches and larger and 0.0359 inch thick or less, with more than 10 sq. ft. of nonbraced panel area unless ducts are lined.

2.7 APPLICATION OF LINER IN RECTANGULAR DUCTS

- A. Adhere a single layer of indicated thickness of duct liner with at least 90 percent adhesive coverage at liner contact surface area. Attaining indicated thickness with multiple layers of duct liner is prohibited.
- B. Apply adhesive to transverse edges of liner facing upstream that do not receive metal nosing.
- C. Butt transverse joints without gaps and coat joint with adhesive.
- D. Fold and compress liner in corners of rectangular ducts or cut and fit to ensure butted-edge overlapping.
- E. Do not apply liner in rectangular ducts with longitudinal joints, except at corners of ducts, unless duct size and standard liner product dimensions make longitudinal joints necessary.
- F. Apply adhesive coating on longitudinal seams in ducts with air velocity of 2500 fpm.

- G. Secure liner with mechanical fasteners 4 inches from corners and at intervals not exceeding 12 inches transversely; at 3 inches from transverse joints and at intervals not exceeding 18 inches longitudinally.
- H. Secure transversely oriented liner edges facing the airstream with metal nosings that have either channel or "Z" profiles or are integrally formed from duct wall. Fabricate edge facings at the following locations:
 - 1. Fan discharges.
 - 2. Intervals of lined duct preceding unlined duct.
 - 3. Upstream edges of transverse joints in ducts where air velocities are greater than 2500 fpm (12.7 m/s) or where indicated.
- I. Secure insulation between perforated sheet metal inner duct of same thickness as specified for outer shell. Use mechanical fasteners that maintain inner duct at uniform distance from outer shell without compressing insulation.
 - 1. Sheet Metal Inner Duct Perforations: 3/32-inch diameter, with an overall open area of 23 percent.
- J. Terminate inner ducts with buildouts attached to fire-damper sleeves, dampers, turning vane assemblies, or other devices. Fabricated buildouts (metal hat sections) or other buildout means are optional; when used, secure buildouts to duct walls with bolts, screws, rivets, or welds.

2.8 ELBOWS RECTANGULAR DUCT

- A. Construct elbows as follows in order of preference:
 - 1. Long radius, unvaned elbows.
 - 2. Short radius, single thickness vaned elbows.
 - 3. Rectangular, single thickness vaned elbows.
- B. Long radius elbows shall have a centerline radius of not less than one and one-half (1-1/2) times the duct width. Short radius elbows shall have a centerline radius of not less than one times the duct width.
- C. Contractor shall have the option to substitute short radius vaned elbows, but shall request the substitution at the time of submittal of Product Data.
- D. Provide turning vanes in all rectangular elbows and offsets.
- E. Job fabricated turning vanes, if used, shall be fabricated of the same gage and type of material as the duct in which they are installed. Vanes must be fabricated for same angle as duct offset. Submit Shop Drawings on factory fabricated and job fabricated turning vanes.
- F. All turning vanes shall be anchored to the cheeks of the elbow in such a way that the cheeks will not breathe at the surfaces where the vanes touch the cheeks. In most cases, this will necessitate the installation of an angle iron support on the outside of the cheek parallel to the line of the turning vanes.
- G. In 90-degree turns that are over 12 inches wide in the plane of the turn, provide and install double thickness vanes on integral side rails. For ducts under 12 inches in width, use single thickness vanes. The installation of the turning vanes shall be as described for single thickness vanes. On other types of turns or elbows, single thickness trailing edge vanes shall be used.

2.9 ROUND AND FLAT-OVAL DUCT AND FITTING FABRICATION

- A. Diameter as applied to flat-oval ducts in this Article is the diameter of a round duct with a circumference equal to the perimeter of a given size of flat-oval duct.
- B. Round, Spiral Lock-Seam Ducts: Fabricate supply ducts of galvanized steel according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."
- C. Duct Joints:
 - 1. Ducts up to 20 Inches in Diameter: Interior, center-beaded slip coupling, sealed before and after fastening, attached with sheet metal screws.
 - 2. Ducts 21 to 72 Inches in Diameter: Three-piece, gasketed, flanged joint consisting of two internal flanges with sealant and one external closure band with gasket.
 - 3. Round Ducts: Prefabricated connection system consisting of double-lipped, EPDM rubber gasket. Manufacture ducts according to connection system manufacturer's tolerances.
 - a. Manufacturers:
 - (i) Ductmate Industries, Inc.
 - (ii) Lindab Inc.
- D. 90-Degree Tees and Laterals and Conical Tees: Fabricate to comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible," with metal thicknesses specified for longitudinal-seam straight ducts.
- E. Diverging-Flow Fittings: Fabricate with reduced entrance to branch taps and with no excess material projecting from fitting onto branch tap entrance.
- F. Fabricate elbows using die-formed, gored, pleated, or mitered construction. Bend radius of die-formed, gored, and pleated elbows shall be 1-1/2 times duct diameter. Unless elbow construction type is indicated, fabricate elbows as follows:
 - 1. Mitered-Elbow Radius and Number of Pieces: Welded construction complying with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible," unless otherwise indicated.
 - 2. Round Mitered Elbows: Welded construction with the following metal thickness for pressure classes from minus 2- to plus 2-inch wg:
 - a. Ducts 3 to 36 Inches in Diameter: 0.034 inch.
 - b. Ducts 37 to 50 Inches in Diameter: 0.040 inch.
 - c. Ducts 52 to 60 Inches in Diameter: 0.052 inch.
 - d. Ducts 62 to 84 Inches in Diameter: 0.064 inch.
 - 3. Round Mitered Elbows: Welded construction with the following metal thickness for pressure classes from 2- to 10-inch wg:
 - a. Ducts 3 to 26 Inches in Diameter: 0.034 inch.
 - b. Ducts 27 to 50 Inches in Diameter: 0.040 inch.
 - c. Ducts 52 to 60 Inches in Diameter: 0.052 inch.

- d. Ducts 62 to 84 Inches in Diameter: 0.064 inch.
- 4. 90-Degree, 2-Piece, Mitered Elbows: Use only for supply systems or for material-handling Class A or B exhaust systems and only where space restrictions do not permit using radius elbows. Fabricate with single-thickness turning vanes.
- 5. Round Elbows 8 Inches and Less in Diameter: Fabricate die-formed elbows for 45- and 90-degree elbows and pleated elbows for 30, 45, 60, and 90 degrees only. Fabricate nonstandard bend-angle configurations or nonstandard diameter elbows with gored construction.
- 6. Round Elbows 9 through 14 Inches in Diameter: Fabricate gored or pleated elbows for 30, 45, 60, and 90 degrees unless space restrictions require mitered elbows. Fabricate nonstandard bend-angle configurations or nonstandard diameter elbows with gored construction.
- 7. Round Elbows Larger Than 14 Inches in Diameter and All Flat-Oval Elbows: Fabricate gored elbows unless space restrictions require mitered elbows.
- 8. Die-Formed Elbows for Sizes through 8 Inches in Diameter and All Pressures 0.040 inch thick with 2-piece welded construction.
- 9. Round Gored-Elbow Metal Thickness: Same as non-elbow fittings specified above.
- 10. Pleated Elbows for Sizes through 14 Inches in Diameter and Pressures through 10-Inch wg: 0.022 inch.

PART 3 - EXECUTION

3.1 DUCT APPLICATIONS

- A. Static-Pressure Classes: Unless otherwise indicated, construct ducts according to the following:
 - 1. Supply Ducts before air terminals: 3-inch wg.
 - 2. Supply Ducts after air terminals: 1-inch wg.
 - 3. Return Ducts (Negative Pressure): 1-inch wg.
 - 4. Exhaust Ducts (Negative Pressure): 2-inch wg.
- B. Liner:
 - 1. Return air duct from the connection to the rooftop unit for 8' upstream of the connection.
 - 2. Return Air Ducts – Flexible elastomeric or Fibrous-Glass, 1/2-inch thick to be applied in the following locations:
 - a. Return air boots.
 - b. Return air transfer ducts.
 - c. Return air duct from the connection to the rooftop unit for 8' upstream of the connection. (Addendum #1)
 - 3. Supply Air Ducts - Flexible elastomeric or Fibrous-Glass, 1-inch thick to be applied in the following locations:
 - a. Rectangular supply air ducts downstream of VAV boxes.
 - b. Rectangular supply air ducts downstream of fan coil units.
- C. All ducts shall be G90 galvanized steel except as follows:
 - 1. Exhaust ductwork serving rooms with showers shall be aluminum.

3.2 DUCT INSTALLATION

- A. Construct and install ducts according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible," unless otherwise indicated.
- B. Install round and flat-oval ducts in lengths not less than **12 feet** unless interrupted by fittings.
- C. Install ducts with fewest possible joints.
- D. Install fabricated fittings for changes in directions, size, and shape and for connections.
- E. Install couplings tight to duct wall surface with a minimum of projections into duct. Secure couplings with sheet metal screws. Install screws at intervals of **12 inches**, with a minimum of 3 screws in each coupling.
- F. Install ducts, unless otherwise indicated, vertically and horizontally and parallel and perpendicular to building lines; avoid diagonal runs.
- G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- H. Install ducts with a clearance of **1 inch**, plus allowance for insulation thickness.
- I. Conceal ducts from view in finished spaces. Do not encase horizontal runs in solid partitions unless specifically indicated.
- J. Coordinate layout with suspended ceiling, fire- and smoke-control dampers, lighting layouts, and similar finished work.
- K. Seal all joints and seams. Apply sealant to male end connectors before insertion, and afterward to cover entire joint and sheet metal screws.
- L. Electrical Equipment Spaces: Route ducts to avoid passing through transformer vaults and electrical equipment spaces and enclosures.
- M. Non-Fire-Rated Partition Penetrations: Where ducts pass through interior partitions and exterior walls and are exposed to view, conceal spaces between construction openings and ducts or duct insulation with sheet metal flanges of same metal thickness as ducts. Overlap openings on 4 sides by at least **1-1/2 inches**.
- N. Fire-Rated Partition Penetrations: Where ducts pass through interior partitions and exterior walls, install appropriately rated fire dampers, sleeves, and firestopping sealant. Fire and smoke dampers are specified in Division 23 Section "Duct Accessories." Firestopping materials and installation methods are specified in Division 7 Section "Through-Penetration Firestop Systems."
- O. Install ducts with hangers and braces designed to withstand, without damage to equipment, seismic force required by applicable building codes. Refer to SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."
- P. Protect duct interiors from the elements and foreign materials until building is enclosed. Follow SMACNA's "Duct Cleanliness for New Construction."
- Q. Paint interiors of metal ducts, that do not have duct liner, for **24 inches** upstream of registers and grilles. Apply one coat of flat, black, latex finish coat over a compatible galvanized-steel

primer. Paint materials and application requirements are specified in Division 9 painting Sections.

- R. Dryer exhaust duct shall not have any fasteners within air stream. Interior of duct shall be smooth and free of any possible lint catching ridges.

3.3 SEAM AND JOINT SEALING

- A. Seal duct seams and joints according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for duct pressure class indicated.

- 1. For pressure classes lower than 2-inch wg, seal transverse joints.

- B. Seal ducts before external insulation is applied.

3.4 HANGING AND SUPPORTING

- A. Support horizontal ducts within 24 inches of each elbow and within 48 inches of each branch intersection.
- B. Support vertical ducts at maximum intervals of 16 feet and at each floor.
- C. Install upper attachments to structures with an allowable load not exceeding one-fourth of failure (proof-test) load.
- D. Install concrete inserts before placing concrete.
- E. Install powder-actuated concrete fasteners after concrete is placed and completely cured.

- 1. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.

3.5 CONNECTIONS

- A. Make connections to equipment with flexible connectors according to Division 23 Section "Duct Accessories."
- B. Comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.6 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections according to SMACNA's "HVAC Air Duct Leakage Test Manual" and prepare test reports:
 - 1. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.
 - 2. Conduct tests at static pressures equal to maximum design pressure of system or section being tested. If pressure classes are not indicated, test entire system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure. Give seven days' advance notice for testing.
 - 3. Maximum Allowable Leakage: Comply with requirements for Leakage Class 3 for round

and flat-oval ducts, Leakage Class 12 for rectangular ducts in pressure classes lower than and equal to 2-inch wg (both positive and negative pressures), and Leakage Class 6 for pressure classes from 2- to 10-inch wg.

4. Remake leaking joints and retest until leakage is equal to or less than maximum allowable.
- B. Seal open ends of duct prior to shipment to construction site to maintain duct cleanliness. Maintain seal on duct ends prior to installation.

END OF SECTION

ISSUED VIA ADDENDUM #01



SUBSTITUTION REQUEST

(During the Bidding/Negotiating Stage)

Project: New Ellisville Government Center Substitution Request Number: _____
Ballwin, MO From: Luna & Associates
To: Archimages Inc Date: 3/16/2023
A/E Project Number: 20016
Re: Substitution request Contract For: Waterproofing
Specification Title: Fluid applied waterproofing Description: Fluid applied waterproofing
Section: #071400 Article/Paragraph: #2.01

Proposed Substitution: Carlisle Coating & Waterproofing (CCW) Barricoat waterproofing
Manufacturer: CCW Address: 900 Hensley Lane - TX Phone: 800-527-7092
Trade Name: Barricoat Model No.: n/a

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Stephanie Waggoner
Signed by: Stephanie Waggoner
Firm: Luna & Associates
Address: IL/MO
Telephone: 402-763-0206

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____

Date: _____

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____



SUBSTITUTION REQUEST

(During the Bidding/Negotiating Stage)

Project: New Ellisville Government Center Substitution Request Number: _____
Ballwin, MO From: Luna & Associates
To: Archimages Inc Date: 3/16/2023
A/E Project Number: 20016
Re: Substitution request Contract For: Subgirt framing system
Specification Title: Metal composite metal wall panels Description: Subgirt framing assembly
Section: #074213.23 Article/Paragraph: #2.04 B

Proposed Substitution: Cascadia continuous framing system
Manufacturer: Cascadia Address: _____ Phone: _____
Trade Name: Cascadia Model No.: n/a

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

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- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Stephanie Waggoner
Signed by: Stephanie Waggoner
Firm: Luna & Associates
Address: IL/MO
Telephone: 402-763-0206

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____

Date: _____

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____



SUBSTITUTION REQUEST

(During the Bidding Phase)

Project: Ellisville City Hall & Police Station Renovation Substitution Request Number: _____
Ellisville, MO From: D.L. Neuner Company, Inc.
To: Roy Mangan Date: March 7, 2023
Archimages A/E Project Number: 20016
Re: Substitution Request Contract For: General Construction

Specification Title: Hollow Metal Doors & Frames Description: _____
Section: 081113 Page: _____ Article/Paragraph: 2.1

Proposed Substitution: Mesker Door Company

Manufacturer: _____ Address: Huntsville, AL Phone: (314) 962-2377

Trade Name: _____ Model No.: N Series Doors/F Series Frames

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: David L. Neuner, Jr., CSI, CDT
Signed by: David L. Neuner, Jr., CSI, CDT
Firm: D.L. Neuner Company, Inc.
Address: 3015 S. Brentwood Blvd.
St. Louis, MO 63144
Telephone: (314) 962-2377

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01330.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Supporting Data Attached: ☐ Drawings ☒ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____



SUBSTITUTION REQUEST

(During the Bidding Phase)

Project: Ellisville City Hall & Police Station Renovation Substitution Request Number: _____
Ellisville, MO From: D.L. Neuner Company, Inc.
To: Roy Mangan Date: March 7, 2023
Archimages A/E Project Number: 20016
Re: Substitution Request Contract For: General Construction

Specification Title: Door Hardware Description: Exit Devices
Section: 087100 Page: _____ Article/Paragraph: 2.11 – B

Proposed Substitution: Precision Exit Devices

Manufacturer: _____ Address: Indianapolis, IN Phone: (314) 962-2377

Trade Name: dormakaba USA Model No.: APEX 2000 Series

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: David L. Neuner, Jr., CSI, CDT
Signed by: David L. Neuner, Jr., CSI, CDT
Firm: D.L. Neuner Company, Inc.
Address: 3015 S. Brentwood Blvd.
St. Louis, MO 63144
Telephone: (314) 962-2377

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01330.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Supporting Data Attached: ☐ Drawings ☒ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____



SUBSTITUTION REQUEST

(During the Bidding Phase)

Project: Ellisville City Hall & Police Station Renovation Substitution Request Number: _____
Ellisville, MO From: D.L. Neuner Company, Inc.
To: Roy Mangan Date: March 7, 2023
Archimages A/E Project Number: 20016
Re: Substitution Request Contract For: General Construction

Specification Title: Door Hardware Description: Closers
Section: 087100 Page: _____ Article/Paragraph: 2.13

Proposed Substitution: BEST Access Solutions

Manufacturer: _____ Address: Indianapolis, IN Phone: (314) 962-2377

Trade Name: dormakaba USA Model No.: EHD9000

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: David L. Neuner, Jr., CSI, CDT
Signed by: David L. Neuner, Jr., CSI, CDT
Firm: D.L. Neuner Company, Inc.
Address: 3015 S. Brentwood Blvd.
St. Louis, MO 63144
Telephone: (314) 962-2377

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01330.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Supporting Data Attached: ☐ Drawings ☒ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____



SUBSTITUTION REQUEST

(During the Bidding Phase)

Project: Ellisville City Hall & Police Station Renovation Substitution Request Number: _____
Ellisville, MO From: D.L. Neuner Company, Inc.
To: Roy Mangan Date: March 7, 2023
Archimages A/E Project Number: 20016
Re: Substitution Request Contract For: General Construction

Specification Title: Door Hardware Description: Locks
Section: 087100 Page: _____ Article/Paragraph: 2.7

Proposed Substitution: BEST Access Solutions

Manufacturer: _____ Address: Indianapolis, IN Phone: (314) 962-2377

Trade Name: dormakaba USA Model No.: 45H

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: David L. Neuner, Jr., CSI, CDT
Signed by: David L. Neuner, Jr., CSI, CDT
Firm: D.L. Neuner Company, Inc.
Address: 3015 S. Brentwood Blvd.
St. Louis, MO 63144
Telephone: (314) 962-2377

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01330.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Supporting Data Attached: ☐ Drawings ☒ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____



SUBSTITUTION REQUEST

(During the Bidding Phase)

Project: Ellisville City Hall & Police Station Renovation Substitution Request Number: _____
Ellisville, MO From: D.L. Neuner Company, Inc.
To: Roy Mangan Date: March 7, 2023
Archimages A/E Project Number: 20016
Re: Substitution Request Contract For: General Construction

Specification Title: Door Hardware Description: Electromechanical Locks
Section: 087100 Page: _____ Article/Paragraph: 2.8 – A

Proposed Substitution: BEST Access Solutions

Manufacturer: _____ Address: Indianapolis, IN Phone: (314) 962-2377

Trade Name: dormakaba USA Model No.: 45HW

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: David L. Neuner, Jr., CSI, CDT
Signed by: David L. Neuner, Jr., CSI, CDT
Firm: D.L. Neuner Company, Inc.
Address: 3015 S. Brentwood Blvd.
St. Louis, MO 63144
Telephone: (314) 962-2377

A/E's REVIEW AND ACTION

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☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Supporting Data Attached: ☐ Drawings ☒ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____



SUBSTITUTION REQUEST

(During the Bidding Phase)

Project: Ellisville City Hall & Police Station Renovation Substitution Request Number: _____
Ellisville, MO From: D.L. Neuner Company, Inc.
To: Roy Mangan Date: March 7, 2023
Archimages A/E Project Number: 20016
Re: Substitution Request Contract For: General Construction

Specification Title: Specialties Description: Solid Color Composite Partitions
Section: 102113.21 Page: _____ Article/Paragraph: 2.1

Proposed Substitution: ASI Accurate / ASI Global Partitions

Manufacturer: _____ Address: Toccoa, GA Phone: (314) 962-2377

Trade Name: ASI Group Model No.: Color-Thru Phenolic

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
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- Same maintenance service and source of replacement parts, as applicable, is available.
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- Proposed substitution does not affect dimensions and functional clearances.
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Submitted by: David L. Neuner, Jr., CSI, CDT
Signed by: David L. Neuner, Jr., CSI, CDT
Firm: D.L. Neuner Company, Inc.
Address: 3015 S. Brentwood Blvd.
St. Louis, MO 63144
Telephone: (314) 962-2377

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01330.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Supporting Data Attached: ☐ Drawings ☒ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

CSI Form 1.5C

SUBSTITUTION REQUEST (During the Bid Period)

Project: **New Ellisville Government Center** Substitution Request Number: _____
From: **Chicago Bullet Proof**
To: **Archimages Inc** Date: **March 14th, 2023**
Attn: Roy Mangan. rmangan@archimages-stl.com A/E Project Number: **20016**
Re: **Request for "Approved Equal"** Contract For: _____
Specification Title: **Bullet Resistant Products** Description: **Aluminum Transaction Window W1**
Section: **13 46 50** Page: **2** Article/Paragraph: **2.01**

Proposed Substitution: **Chicago Bullet Proof. Three Sided Aluminum Transaction Window. (3SATW)**
Manufacturer: **CBP** Address: **2595 Bond Street** Phone: **708-534-9102**
Trade Name: _____ Model No.: **3SATW**

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: **Bill Crane**
Signed by: *William Crane*
Firm: **Chicago Bullet Proof**
Address: **2595 Bond Street, University Park. IL. 60484**
Telephone: **708-534-9102**

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____

Date: _____

Supporting Data Attached: ☒ Drawings ☒ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

CSI Form 1.5C

SUBSTITUTION REQUEST (During the Bid Period)

Project: New Ellisville Government Center Substitution Request Number: _____
From: Chicago Bullet Proof
To: Archimages Inc Date: March 14th, 2023
Attn: Roy Mangan. rmangan@archimages-stl.com A/E Project Number: 20016
Re: Request for "Approved Equal" Contract For: _____

Specification Title: Bullet Resistant Products Description: Stainless Transaction Window W2
Section: 13 46 50 Page: 3 Article/Paragraph: 2.04

Proposed Substitution: Chicago Bullet Proof. Three Sided Transaction Window. (3STW)
Manufacturer: CBP Address: 2595 Bond Street Phone: 708-534-9102
Trade Name: _____ Model No.: 3STW

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Bill Crane
Signed by: William Crane
Firm: Chicago Bullet Proof
Address: 2595 Bond Street. University Park, IL. 60484
Telephone: 708-534-9102

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____

Date: _____

Supporting Data Attached: ☒ Drawings ☒ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____



SUBSTITUTION REQUEST! (During the Bidding Phase)!

Project: Ellisville Government Center Substitution Request Number: _____
"##%&\$#"?! () _____
To: Archimages From: D.L. Neuner Company, Inc.
_____ Date: March 16, 2023
_____ A/E Project Number: _____
Re: Substitution Request Contract For: _____

Specification Title: Bullet Resistant Products Description: _____
Section: 134650 Page: 1-4 Article/Paragraph: 2.01

Proposed Substitution: US Bullet Proofing

Manufacturer: US Bullet Proofing Address: Upper Marloboro MD Phone: (202) 915-6722

Trade Name: _____ Model No.: _____

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
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- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: _____
Signed by: _____
Firm: D.L. Neuner Company, Inc.
Address: 3015 S. Brentwood Blvd.
St. Louis, MO 63144
Telephone: (800) 775-9455

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01330.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

SECTION 00 31 00.01
AVAILABLE PROJECT INFORMATION

PART 1 GENERAL

1.01 PREVAILING WAGE DETERMINATION AND REPORT FORMS

- A. The Prevailing Wage Determination issued by the State of Missouri, County of St. Louis, effective at the time of the performance of the work will be made part of the Contract Documents. Annual Wage Order Number **29** (in effect as of **March 10, 2022**) is attached for reference only.
- B. It is the responsibility of all General Contract bidders and all subcontractors to comply with the minimum wage rates as set forth in the Prevailing Wage Determination, including any subsequent Prevailing Wage Determinations that are issued when the current Prevailing Wage that are issued when the current Prevailing Wage Determination expires. Refer to Section 00 73 00 - Supplemental Conditions for further information.
- C. The Contractor and each of his subcontractors shall keep an accurate record showing the names and occupation of all laborers, workers, and mechanics employed by them, in connection with the Construction of the PROJECT, and showing also the actual hourly wages paid to each person. This record shall be open at all reasonable hours to inspection by the OWNER, its officers and agents, and to the Director of Labor and his deputies and agents. These records of Employees and Wages Paid are required by the Prevailing Wage Determination. The Architect will require that an affidavit be submitted stating compliance with the Prevailing Wage with each application for payment. In addition, weekly Certified Payroll submittal is required. Payment will not be made unless all certified payrolls are provided for the time covered in the pay application.
- D. The Contractor will forfeit as a penalty to the OWNER, ten dollars (\$10.00) for each worker employed for each calendar day, or portion thereof, if such worker is paid less than the said stipulated rates for any work done under a said contract, by the Contractor or by any subcontractor under them.
- E. All Contractor's bonds will include such provisions as will guarantee the faithful performance of the prevailing hourly wage clause as provided by Contract.
- F. Additional information and forms can be found on the Missouri Department of Labor website, <http://www.labor.mo.gov>.

1.02 BUY AMERICAN ACT

- A. The Buy American Act requires that all supplies and construction materials purchased must be produced in the United States, unless such materials are not reasonably available, or such a purchase would not be in the public interest. Additionally, ARRA requires that projects funded by the Act, for the construction, alteration, maintenance, or repair of a public building or public work use American iron, steel, and manufactured goods in the project unless one of the specified exemptions applies. The Act provides that this requirement be applied in a manner consistent with U.S. obligations under international agreements. Definitions of "manufactured good," "public building and public work," and other terms as they pertain to the Buy American guidance in 2 CFR part 176 are found in 176.140 and 176.160. Grant recipients must follow the Federal Acquisition Regulations implementing the Buy American Act, 48 CFR Part 25.
- B. The Architect, Engineers and other Consultants employed for this project have made every effort to ensure that the products specified on this project are manufactured within the United States as required. Should a bidder find that this is not the case, please notify Archimages immediately and identify the product in question.

ISSUED VIA ADDENDUM #01

00 31 00.01 - 1 of 2
AVAILABLE PROJECT INFORMATION
20016 - Ellisville City Hall and Police Station

1.03 GEOTECHNICAL REPORT

- A. Geotechnical Report prepared for Ellisville City Hall and Police Station Addition, Ellisville, Mo., by SCI Engineering, Inc. and Dated July 22, 2022.
 - 1. A copy of this Report has been attached to the end of this Section.
 - 2. Said Report identifies existing soils properties of below grade conditions and offers recommendations prepared primarily for use by Architect and Engineers.
 - 3. Recommendation described **shall not** be construed as a requirement of this Contract, unless specifically referenced and or directed within Contract Documents.
 - 4. Report, by its very nature, cannot reveal all existing conditions within a Project Site. Should subsurface existing conditions be discovered to vary substantially from said Report, changes within proposed design will be made, with resulting credits or expenditures to Contract Sum accruing to Owner.

1.04 EXISTING ELEVATOR INFORMATION

- A. Existing Dover Elevator Information, re: Specifications and Shop Drawing Submittal, **for reference only**.
 - 1. A copy of this Information has been attached to the end of this Section.
 - 2. Note: Reference Specification Section 2.2 Elevator: Sub Section R: Provisions for Future Travel.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

3.01 OBTAINMENT OF PERMITS

- A. Owner shall obtain following Permits, at no cost to Contractor:
 - 1. Building and Plumbing Permits, as issued by City of Ellisville.
- B. Contractor shall obtain following Permits, as a reimbursable expense from Owner"
 - 1. Fire Permit, as issued by Metro West Fire Protection District
 - 2. Mechanical and Electrical Permits, as issued by St. Louis County.

END OF SECTION

ISSUED VIA ADDENDUM #01

00 31 00.01 - 2 of 2

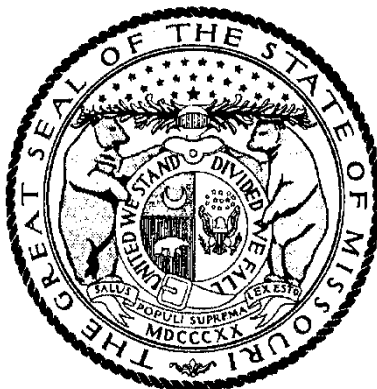
AVAILABLE PROJECT INFORMATION

20016 - Ellisville City Hall and Police Station

Missouri

Division of Labor Standards

WAGE AND HOUR SECTION



MICHAEL L. PARSON, Governor

Annual Wage Order No. 29

Section 100
ST. LOUIS COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by

Todd Smith, Director
Division of Labor Standards

Filed With Secretary of State: March 10, 2022

Last Date Objections May Be Filed: April 11, 2022

Prepared by Missouri Department of Labor and Industrial Relations

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	\$65.45
Boilermaker	\$39.32*
Bricklayer	\$60.54
Carpenter	\$58.58
Lather	
Linoleum Layer	
Millwright	
Pile Driver	
Cement Mason	\$54.43
Plasterer	
Communications Technician	\$59.45
Electrician (Inside Wireman)	\$71.06
Electrician Outside Lineman	\$68.45
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Elevator Constructor	\$91.46
Glazier	\$65.02
Ironworker	\$65.54
Laborer	\$51.36
General Laborer	
First Semi-Skilled	
Second Semi-Skilled	
Mason	\$49.84
Marble Mason	
Marble Finisher	
Terrazzo Worker	
Terrazzo Finisher	
Tile Setter	
Tile Finisher	
Operating Engineer	\$65.26
Group I	
Group II	
Group III	
Group III-A	
Group IV	
Group V	
Painter	\$42.45
Plumber	\$73.66
Pipe Fitter	
Roofer	\$54.64
Sheet Metal Worker	\$69.85
Sprinkler Fitter	\$76.83
Truck Driver	\$39.32*
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.

**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in Section 290.210 RSMo.

Heavy Construction Rates for
ST. LOUIS County

Section 100

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	\$60.73
Millwright	
Pile Driver	
Electrician (Outside Lineman)	\$68.45
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Laborer	\$51.58
General Laborer	
Skilled Laborer	
Operating Engineer	\$66.22
Group I	
Group II	
Group III	
Group IV	
Truck Driver	\$49.97
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.

**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in Section 290.210 RSMo.

OVERTIME and HOLIDAYS

OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, "**overtime work**" shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January first;
The last Monday in May;
July fourth;
The first Monday in September;
November eleventh;
The fourth Thursday in November; and
December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.



SCI ENGINEERING, INC.
130 Point West Boulevard
St. Charles, Missouri 63301
636-949-8200
www.sciengineering.com

Geotechnical Report

**ELLISVILLE CITY HALL & POLICE STATION ADDITION
ELLISVILLE, MISSOURI**

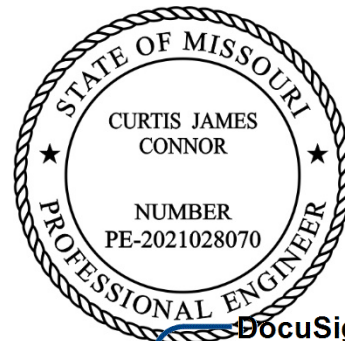
July 2022

CITY OF ELLISVILLE
Owner

ARCHIMAGES, INC.
Architect

CIVIL ENGINEERING DESIGN CONSULTANTS, INC.
Civil Engineer

SCI No. 2022-0786.10



DocuSigned by:

A handwritten signature in blue ink, appearing to read 'Curtis Connor'.

2AE24DACCC9E4FF...



SCI ENGINEERING, INC.

EARTH • SCIENCE • SOLUTIONS

GEOTECHNICAL
ENVIRONMENTAL
NATURAL RESOURCES
CULTURAL RESOURCES
CONSTRUCTION SERVICES

July 22, 2022

Bill Schwer, P.E.
City of Ellisville
1 Weis Avenue
Ellisville, Missouri 63011

RE: Geotechnical Report
Ellisville City Hall & Police Station Addition
Ellisville, Missouri
SCI No. 2022-0786.10

Dear Bill Schwer:

Attached is SCI Engineering, Inc.'s *Geotechnical Report*, dated July 2022. It should be read in its entirety, and our recommendations applied to the design and construction of the project. Selected excerpts from the report are highlighted below:

- Undocumented existing fill was encountered in B-1, B-2, and B-4 to depths ranging from 2 to 3 feet and will be present below the floor slab and foundations in the western portion of the addition's footprint. We anticipate that some of the existing fill will be removed from below the perimeter foundations during fat clay remediation as discussed in Section 4.2; however, it is recommended that where any remaining existing fill will underlie the foundations, that the fill be excavated and either recompact, or replaced.
- Fat clay soils were encountered at shallow depths within the existing fill and native soils. Remediation of fat clay soils will be required beneath the majority of the footings and portions of the floor slab, where less than 3 feet of fill is planned. Where bearing soils consist of fat clay, we recommend that they be removed to minimum depths of 2 feet beneath the bearing level of the footings and 3 feet beneath the bottom of the floor slab.
- Shallow foundations can be sized for maximum net allowable bearing pressures of 2,500 pounds per square foot (psf) for continuous wall footings and 3,000 psf for isolated spread footings if supported on at least 2 feet of structural fill.
- Seismic Site Class C should be used for the project, with seismic design parameters as follows: $F_a = 1.20$, $F_v = 1.65$, $S_{DS} = 0.30$, and $S_{D1} = 0.17$, which results in a Seismic Design Category of C for a Risk Category of I, II, or III.

We appreciate the opportunity to be of service and look forward to working with you during the development phase of the project. If you have any questions or comments, please do not hesitate to us.

Bill Schwer
City of Ellisville

2


July 22, 2022
SCI No. 2022-0786.10

Respectfully,

SCI ENGINEERING, INC.

A handwritten signature in blue ink, appearing to read "Curtis J. Connor".

Curtis J. Connor, P.E.
Project Engineer

A handwritten signature in blue ink, appearing to read "Timothy J. Barrett".

Timothy J. Barrett, P.E., CFM
Senior Engineer

CJC/TJB/snp

Enclosure
Geotechnical Report

\\SCISTCFPS01\Projects\2022\2022-0786 Ellisville City Hall & Police Station Addition\GS\Report\Ellisville City Hall & Police - GS Report.docx

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Figure 1 – Vicinity and Topographic Map

Figure 2 – Aerial Photograph

Figure 3 – Site Plan

APPENDIX

Appendix A – Boring Log Legend and Nomenclature, Boring Logs

Geotechnical Report

ELLISVILLE CITY HALL & POLICE STATION ADDITION ELLISVILLE, MISSOURI

1.0 INTRODUCTION

At the request of Bill Schwer, City Manager of the City of Ellisville, SCI Engineering, Inc. (SCI) performed a geotechnical study for the proposed building addition. The purpose of our exploration was to characterize and evaluate the subsurface conditions, provide recommendations for foundations, and address other geotechnical aspects. Our services were provided in general accordance with our proposal, dated June 15, 2022, and authorized on the same date.

2.0 SITE AND PROJECT DESCRIPTION

A building addition is planned for the Ellisville Police Station located at 1 Weiss Avenue in Ellisville, Missouri. The location of the site is shown on the *Vicinity and Topographic Map*, Figure 1. The addition will be located on the southern wall of the existing facility, which is currently an asphaltic concrete parking lot. The existing city hall building is located south of the parking lot. The area slopes from the north downward to the south, with approximately 4 feet of relief. The existing police station building is single-story, brick, approximately 7,033 square feet (sf) in footprint, with a finished floor elevation (FFE) of 764.15 to 764.92. The facility was built in 1993. The building appears to be performing satisfactorily with no significant cracking, tilting, or bowing observed, nor is SCI aware of any performance issues. The current site conditions are shown on the *Aerial Photograph*, Figure 2.

Based on the *Site and Grading Plan* prepared by Civil Engineering Design Consultants, Inc. (CEDC), dated April 15, 2022, the city hall will be relocated from to the proposed addition and the existing building will be demolished to create a new parking lot. The addition will be a single-story, slab-on-grade structure with a footprint of approximately 7,500 sf. The addition will require fills of approximately 2 to 5 feet for the proposed finished floor elevation (FFE) which will range from 763.42 to 764.92. The proposed construction is shown on the *Site Plan*, Figure 3.

Structural loads were not available at the time of this report; however, we assume that the addition will be lightly loaded, with column loads of less than 150 kips and wall loads of less than 4 kips per linear foot.

We have not reviewed, nor are we aware of, any previous studies on this specific site, by SCI or others, that would affect the preparation of this report.

SCI Engineering, Inc.
City of Ellisville

Ellisville City Hall & Police Station Addition
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3.0 SUBSURFACE CONDITIONS

Six borings (B-1 through B-6) were drilled at the approximate locations shown on the *Site Plan*. The boring locations were staked in the field by SCI personnel by a handheld global positioning unit. Approximate surface elevations at the boring locations were obtained from the existing topography shown on the *Site and Grading Plan* prepared by CEDC, dated April 15, 2022. Detailed information regarding the nature and thickness of the soils encountered, and the results of the field sampling and laboratory testing are shown on the *Boring Logs* (Appendix A).

3.1 Surficial Material and Existing Fill

The parking lot pavement section consisted of 4 to 5 inches of asphaltic concrete underlain with approximately 4 to 6 inches of aggregate base.

Existing fill was encountered in B-1, B-2, and B-4 to depths of 2 to 3 feet as shown in the Table 3.1.

Table 3.1 –Existing Fill Summary

Boring	Approximate Boring Elevation	Existing Fill Depth (feet)	Approximate Bottom of Fill Elevation (feet)
B-1	761	2	759
B-2	760	3	757
B-3	761	NE	--
B-4	762	3	759
B-5	763	NE	--
B-6	762	NE	--

NE – not encountered

The fill consisted of lean clay and fat clay. In B-4, the clay fill contained crushed rock. A Standard Penetration Test (SPT) within the fill resulted in an N-value of 6 blows per foot (bpf), classifying the fill as medium stiff in consistency. The moisture content in the fill soils ranged from 22 to 26 percent, with an average of 25 percent. Documentation regarding the placement and compaction of fill material is not available; however, we anticipate that it was placed during construction of the existing parking lot in the late 1960s to early 1970s.

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3.2 Native Soil Profile

The native soils predominantly consisted of fat clay (CH in accordance with the Unified Soil Classification System and ASTM D 2488-06) that extended to the maximum boring termination depth of 20 feet. As an exception, a layer of lean clay (CL) was encountered from depths of 3 to 8 feet in B-5. The SPT N-values in the native soils ranged from 7 to 17 bpf, with an average of 10 bpf, classifying the soil as medium stiff to very stiff in consistency. The moisture content of the native soils ranged from 12 to 28 percent, with an average of 24 percent.

3.3 Bedrock Geology

Documented geology, including the *Bedrock Geologic Map of the St. Louis Quadrangle, Missouri and Illinois*, indicates that bedrock at the site consists of the Warsaw Formation, which is typically dark, fissile shale or dolomitic limestone in the upper half and shaley, cherty dolomitic limestone in the lower half.

Auger refusal was not encountered in any boring. Auger refusal is a designation applied to any material that cannot be further penetrated by the power auger without extraordinary effort and is indicative of a very hard or very dense material, usually boulders or bedrock.

3.4 Groundwater

Groundwater was not observed while drilling. The groundwater level depends on seasonal and climatic variations and may be present at different depths in the future. In addition, without extended periods of observation, accurate groundwater level measurements may not be possible, particularly in low permeability soils. Groundwater is not anticipated to significantly influence construction.

4.0 DESIGN RECOMMENDATIONS

4.1 Existing Fill

Based on the assumed FFEs of 763.42 to 764.92, existing fill will be present below the floor slab and foundations in the western portion of the addition's footprint. It is our assumption that the existing fill was likely placed during the construction of existing parking lot in the late 1960s to early 1970s; however, documentation regarding the placement and compaction of fill material is not available. As a result, there is risk of settlement if the foundations, floor slab, or pavements are supported on the fill material. To eliminate this risk, the fill would need to be excavated and either recompacted or replaced in its entirety. The majority of the existing fill appears suitable for recompaction; however, fat clay should not be placed within a zone of 2 feet below the building's foundations and 3 feet below the floor slab.

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We anticipate that some of the existing fill will be removed from below the perimeter foundations during fat clay remediation as discussed in Section 4.2; however, it is recommended that where any remaining existing fill will underlie the foundations, that the fill be excavated and either recompacted, or replaced. The overexcavation should extend at least 2 feet beyond the outside edge of the footings and building footprint to facilitate uniform compaction of the replacement materials and may require additional widening at the building corners to allow equipment access for proper compaction. The footing overexcavation should be backfilled with properly compacted low plastic soil or 1-inch minus crushed limestone. As an alternate, the footing overexcavation may be backfilled with lean concrete. Widening of the footing excavations would not be required with lean concrete backfill.

The disposition of the existing fill beneath the floor slab should also be considered. To eliminate potential settlement and cracking of the new floor slab that would overlie the existing fill, the fill should be removed. However, the cost of entirely removing and replacing the fill beneath the floor slab may not justify the potential benefit gained; and the risk of excessive floor slab settlement is judged to be low, based on the results of field and laboratory testing, the observed performance of the existing improvements, and the age of the fill.

At a minimum the floor slab subgrade should be proofrolled to identify soft or unstable soils that should be removed prior to fill placement and/or floor slab construction. Additionally, existing fill consisting of fat clay should be remediated to a depth of 3 feet below the bottom of the floor slab as discussed in Section 4.2.

4.2 Expansive Clay Remediation

Fat clay soils were encountered at relatively shallow depths within the existing fill and native soils. Fat clay soils are susceptible to excessive volume change with variations in moisture content, which can lead to movement of concrete slabs and foundations of lightly loaded structures, or pavements. Based on the proposed FFE, we anticipate that remediation of fat clay soils will be required beneath the majority of the foundations and portions of the floor slab, where less than 3 feet of new fill is planned. However, the actual need for, and extents of, expansive soil remediation should be delineated by SCI personnel in the field during construction.

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Where bearing soils consist of fat clay, we recommend that they be removed to minimum depths of 2 feet beneath the bearing level of the footings and 3 feet beneath the bottom of the floor slab. The overexcavation should extend at least 2 feet beyond the outside edge of the footings and building addition footprint to facilitate uniform compaction of the replacement materials and may require additional widening at wall corners to allow equipment access for proper compaction. The overexcavation should be backfilled with properly compacted low plastic soil or one-inch minus crushed limestone. As an alternate, the footing overexcavation may be backfilled with lean concrete. With this option, widening of the footing excavation is not required. If clean rock is used as backfill material, it must be drained to daylight or to a sump with a pump. The footings would then be constructed on the newly placed fill.

As an alternative to overexcavation and replacement, the fat clay may be remediated by the addition of lime in combination with a recompaction operation. If lime stabilization is performed, we recommend thoroughly mixing in "Code L" (a locally available calcium oxide by-product also known as lime kiln dust) at a rate of 7 percent, or approximately 8 pounds of Code L per cubic foot of soil, to the depths and lateral limits described in the preceding paragraph. Water may need to be added during mixing to allow for proper hydration of the lime. Pulverizing and tilling equipment, such as "gators," are preferred for mixing the lime into the soil. The treated soil should be placed in compacted lifts as discussed in Section 5.2.

The methods of treatment described above are based on generally accepted standards in the local engineering community; however, swell pressures and volume change potential greater than can be mitigated by these methods may exist. Consequently, the owner should recognize that there is an inherent, but reduced risk that foundation and floor slab damage may occur, even after remedial treatment of the subgrade soil.

4.3 Shallow Foundations

Shallow spread footing foundations bearing in remediated fat clay; recompacted existing fill; or newly placed, low plastic structural fill are appropriate for support of the proposed building addition. Based on the soils encountered during our exploration, shallow foundations can be sized for maximum net allowable bearing pressures of 2,500 pounds per square feet (psf) for continuous wall footings and 3,000 psf for isolated spread footings if supported on at least 2 feet of structural fill. A one-third increase in the net allowable bearing pressures may be used for transient loadings, such as wind and earthquake.

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Exterior footings and foundations in unheated areas of the addition should be provided with at least 30 inches of soil cover for frost protection. Interior footings in heated areas can be located at nominal depths below the finished floor. For footings designed and constructed in accordance with our recommendations, total settlement should be less than 1 inch, and differential settlement between adjacent footings should be less than $\frac{3}{4}$ inch.

Special attention must be given to designing the foundations immediately adjacent to the existing building. It is advisable to place the foundations for the proposed addition at the same level as those of the existing building. If the footings of the new addition bear at a different elevation, either the new or existing footing walls, whichever are deeper, should be structurally checked to evaluate whether they could accommodate the external stresses imposed by the shallower adjacent existing structure or new footings. In spite of these precautions, some minor settlement of the existing building adjacent to the addition should be expected. Accordingly, we recommend that construction joints be provided, and other measures be taken, as needed, between the existing and proposed construction. Even so, small differential movements may occur and future leveling of the floor slab between the existing and new construction may be necessary.

4.4 Seismic Considerations

Ground shaking at the foundation of structures and liquefaction of the soil under the foundation are the principle seismic hazards to be considered in design of earthquake-resistant structures. Liquefaction occurs when a rapid buildup in water pressure, caused by the ground motion, pushes sand particles apart, resulting in a loss of strength and later densification as the water pressure dissipates. This loss of strength can cause bearing capacity failure, while the densification can cause excessive settlement. Potential earthquake damage can be mitigated by structural and/or geotechnical measures or procedures common to earthquake resistant design.

4.4.1 Design Earthquake

According to International Building Code (2015 edition) (IBC 2015), structures such as those proposed for this project are required to be designed to a design earthquake with a 2 percent Probability of Exceedance over a 50-year exposure period (i.e., a 2,475-year design earthquake).

4.4.2 International Building Code Site Classification

Based on procedures outlined in the IBC 2015 and our geotechnical exploration, and the anticipated depth to bedrock, the site can be classified as Site Class C. Using the procedures outlined in Section 1613 of the IBC 2015, the calculated weighted average undrained shear strength (s_u) is in excess of 2,000 psf as required to be classified as Site Class C. Seismic design parameters for the site as determined from data provided by the IBC 2015 and the United States Geological Survey National Seismic Hazard Mapping Project are shown in Table 4.1.

Table 4.1 - Seismic Design Parameters

Site Class	C
M_w	7.64
PGA	0.19
F_{PGA}	1.20
Site Modified PGA_M	0.23
S_s	0.38
S_1	0.15
F_a	1.20
F_v	1.65
S_{DS} (Design Spectral Acceleration at 0.2 sec)	0.30
S_{D1} (Design Spectral Acceleration at 1.0 sec)	0.17
Seismic Design Category (Risk Category I, II, and III)	C

4.4.3 Liquefaction Potential Analysis

The liquefaction potential analysis for the site was conducted using data from the field exploration and laboratory test results and the techniques outlined in the National Center for Earthquake Engineering (NCEER) Technical Report NCEER-97-0022. Based on our analyses, the soils at the project site have sufficient strength values to resist liquefaction and/or fines content that make the threat of liquefaction minimal during the design earthquake. While the amount of the seismically induced settlement is dependent on the magnitude and distance from the seismic event, we estimate that the settlements from the design earthquake will be negligible and relatively uniform in nature, so liquefaction mitigation techniques are not required.

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4.5 Floor Slab

The following recommendations are based on an assumed average uniform floor load of less than 150 psf. If sections of the floor slab will support higher floor slab loads, underlying subgrade soils below these sections may need to be removed and replaced with compacted/engineered fill. If more heavily loaded floor slab sections are proposed, then SCI should be provided the opportunity to review the final design plans and specifications to determine if the underlying subsurface soils can adequately support the heavily loaded floor slab sections. Proofrolling, as discussed earlier in this report, should be accomplished to identify soft or unstable soils that should be removed from the floor slab area prior to fill placement and/or floor slab construction.

We recommend that the floor slab be designed using a modulus of subgrade reaction, k value, of 150 pounds per cubic inch (pci) based on values typically obtained from 1-foot by 1-foot plate load tests. This value assumes the slab will bear on remediated fat clay; recompacted existing fill; or newly placed, low plastic structural fill. Depending on how the slab load is applied, the value will have to be geometrically modified. The value should be adjusted for larger areas using the following expression for cohesive and cohesionless soil:

Modulus of Subgrade Reaction;

$k_s = \left(\frac{k}{B}\right)$ for cohesive soil; and

$k_s = k \left(\frac{B+1}{2B}\right)^2$ for cohesionless soil.

where:

k_s = coefficient of vertical subgrade reaction for loaded area;

k = coefficient of vertical subgrade reaction for 1x1 square foot area; and

B = width of area loaded, in feet.

The slab should be supported on a minimum 4-inch-thick layer of crushed stone. This will help to distribute concentrated loads and equalize moisture conditions beneath the slab.

It is generally preferable to maintain structural separation between the floor slab and the foundation walls and column pads using isolation joints. We also suggest that joints be placed in the floor slab on intervals (in feet) no more than three times the slab thickness (in inches) in any direction. Such joints permit slight movements of the independent elements and help reduce random cracking that might otherwise be caused by restraint of shrinkage, slight rotations, heave or settlement.

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Where occupied space or moisture sensitive floor coverings are planned, we recommend a 6-mil-thick polyethylene sheeting be placed immediately beneath the floor slab and above the crushed rock or gravel, to reduce the transfer of capillary moisture to the slab. However, without careful attention to curing of the floor slab, the polyethylene sheeting can cause excessive shrinkage cracking and "curling."

The precautions listed below should be followed for construction of slab-on-grade pads. These details will not reduce the amount of movement, but are intended to reduce potential damage, should some settlement of the supporting subgrade take place. Some increase in moisture content is inevitable as a result of development and associated landscaping. However, extreme moisture content increases can be largely controlled by proper and responsible site drainage, building maintenance and irrigation practices.

- Cracking of slab-on-grade concrete is normal and should be expected. Cracking can occur not only as a result of heaving of the supporting soil, but also as a result of concrete curing stresses. The occurrence of concrete shrinkage cracking, and problems associated with concrete curing may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement, finishing, curing, and by the placement of crack control joints at frequent intervals, particularly where re-entrant slab corners occur. The American Concrete Institute recommends a maximum panel size (in feet) equal to approximately three times the thickness of the slab (in inches) in both directions. For example, joints are recommended at a maximum spacing of 12 feet based on having a 4-inch slab. SCI also recommends that the slabs be independent of the foundation walls.
- Areas supporting slabs should be properly moisture conditioned and compacted. Backfill in all interior and exterior water and sewer line trenches should be carefully compacted to reduce the shear stress in the concrete extending over these areas.

Exterior slabs should be isolated from the addition. These slabs should be reinforced to function as independent units. Movement of these slabs should not be transmitted to the building foundation or superstructure.

4.6 Pavements

Selection of the pavement section is dependent on the design life, traffic loads, subgrade strength, drainage characteristics, and the desired level of maintenance. Neither California Bearing Ratio testing nor formal pavement design was a part of our scope for this project. However, for planning purposes, the following recommendations typically result in pavements that perform satisfactorily on similar subgrades under automobile and pickup truck loads. They are intended to roughly provide a pavement requiring routine maintenance for a 5-year period, minor repair and maintenance during the 5- to 10-year life of the pavement, and possibly major repairs and restoration after a 10-year service life.

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A flexible pavement section may be used for parking areas and driveways. Parking areas for automobiles and light trucks should consist of a minimum 6-inch-thick crushed stone base with a minimum 3-inch-thick asphaltic concrete wearing surface. The crushed stone base should be thickened to at least 8 inches in drive areas. Care should be taken to provide drains or drainable transition at locations where pavement sections of varying thickness abut, so as not to trap water within the crushed stone base, which could saturate and soften the subgrade.

Alternately, a rigid concrete pavement section may be used, with less anticipated long-term maintenance. Parking areas for automobiles and light trucks should consist of a minimum 6-inch-thick, non-reinforced concrete pavement. Crushed stone base is not required under this light-duty pavement section. For more heavily trafficked areas, such as trash dumpster pads, approaches, and other areas where trucks will maneuver, we recommend that the section consist of an 8-inch-thick, non-reinforced concrete pavement, placed over 4 inches of compacted base rock. To provide resistance against salt and freeze-thaw cycles, we recommend the concrete have a minimum 28-day compressive strength of 4,000 pounds per square inch and air entrainment of 5 to 7 percent by volume. We also recommend that the maximum joint spacing be approximately 15 feet.

Pavement subgrades may be subjected to construction traffic and exposure to weather for an extended period and significant problems may be incurred. Soft areas or otherwise unacceptable materials, if encountered, should be removed and replaced with structural fill or stabilized prior to placing additional fill. If removal of soft soils is impractical due to their excessive depth, they should be stabilized or “bridged over” in a manner approved by SCI.

The fat clay and existing fill could cause some distress in the pavement. To reduce long-term maintenance, consideration could be given to remediating the upper 12 inches of subgrade. Alternatives include removal and replacement with crushed stone or low plastic soil, lime treatment, or geogrid reinforcement. At a minimum, the pavement subgrade should be proofrolled and any soft areas repaired prior to the placement of the crushed rock base and asphalt. Any soft areas identified during the proofroll should be removed to firmer soils and backfilled with engineered fill material in accordance with Sections 5.1 and 5.2.

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4.7 Site Grading

Positive site drainage should be provided to reduce surface water infiltration around the perimeter of the addition and its floor slab. All grades should be sloped away from addition. Roof and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill of the addition.

Large trees and shrubs should be planted away from exterior footings as they may cause drying and shrinkage of the foundation soils and, with the passage of time, potentially detrimental settlement of the floor slab and foundations. A minimum distance of 20 feet or the mature tree's dripline, whichever is greater, is suggested.

We recommend that all final slopes have a maximum inclination of 3 horizontal to 1 vertical (3H:1V), and that a crest of at least 10 feet in width or a distance equivalent to the total height of the slope, whichever is less, be provided before the surface slopes down and away. Slopes of less than 15 feet in total height should perform satisfactorily at this inclination, or flatter.

4.8 Underground Utilities

Underground utilities can provide a pathway for water to migrate below the floor slab. Drain and utility pipes beneath floors should have tight joints to prevent leakage. If utility excavations are backfilled with free-draining granular materials, then cutoffs should be provided at the exterior walls to reduce the potential for water to migrate beneath the addition. Impermeable cutoffs may consist of a 3-foot-long "plug" of cohesive soil or bentonite soil mix, or a 1-foot-long plug of lean concrete. Soil may be used for the balance of the backfill.

With the exception of individual service lines to the addition that intersect foundations perpendicularly, below-grade utilities should not be located within the stress influence zone of the foundations. Accordingly, below-grade utilities should be located outside a zone extending 45 degrees downward and outward from the edge of the footings.

5.0 SITE DEVELOPMENT AND CONSTRUCTION CONSIDERATIONS

5.1 Site Preparation

Within the construction area, any below-grade components to be abandoned, must be properly demolished and the debris removed from the site. Existing pavements, and utilities, as well as their associated backfill, should be removed from below and at least 10 feet beyond the proposed addition's footprint.

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As an exception, deep utilities may be grouted in-place rather than being removed. However, the existing backfill associated with deep utilities should be removed and replaced or recompacted. Excavations resulting from the removal of existing structures should be backfilled with properly compacted fill.

The addition footprint should be checked for expansive clay and existing fill and undercut in accordance with Sections 4.1 and 4.2. Then the site should be proofrolled by systematically passing over the subgrade to achieve complete coverage with proper compaction or loaded construction equipment, and observing the subgrade for pockets of excessively soft, wet, or disturbed soil, or otherwise unacceptable materials. **In particular, any soft areas within the existing fill to remain in place, should be identified during this process.**

Soft areas or otherwise unacceptable material should be removed and replaced with structural fill or otherwise stabilized as approved by SCI prior to placing additional fill. If removal of soft or unacceptable soils is impractical due to their excessive depth, they should be stabilized or “bridged over” in a manner approved by SCI. “Bridging” of the soft soils can often be accomplished by either working 2- to 4-inch clean crushed rock into the softer soils and then placing a geofabric, such as Mirafi 600X or equivalent, or by placing a layer of geogrid, such as Tensar TX-140, or equivalent prior to placing additional fill.

5.2 Fill Materials and Compaction

Prior to fill placement and compaction, the upper 8 inches of the exposed subgrade should be scarified, moisture conditioned and recompacted. Structural fill should be placed in maximum 8-inch-thick loose lifts and mechanically compacted in accordance with Table 5.1, below. We recommend that any fill placed in building areas have a liquid limit less than 45 and a plasticity index less than 25. If higher plasticity soils are placed within 3 feet of the floor slab subgrade, or 2 feet of the bottom of the footings, then remediation will be required. Acceptable non-organic fill soils include materials designated CL, ML, CL-ML, GP, and GW by ASTM D 2487-11. The fat clay may be lime stabilized as discussed in Section 4.2 and used as structural fill.

Table 5.1 - Typical Compaction Requirements for Fill

Material Tested	Proctor Type	Minimum Percentage Dry Density
Structural Fill (Cohesive)	Modified (ASTM D 1557)	90
	Standard (ASTM D 698)	95

Table 5.1 - Typical Compaction Requirements for Fill (continued)

Material Tested	Proctor Type	Minimum Percentage Dry Density
Structural Fill (Granular)	Modified	95
	Standard	98
Landscaped Areas (non-load bearing)	Modified	88
	Standard	92
Utility Trench Backfill	Modified	90
	Standard	95

Prior to compaction, the soil may require moisture adjustment. During warm weather, moisture reduction can generally be accomplished by disking or otherwise aerating the soil. When air drying is not feasible, a moisture reducing chemical additive, such as hydrated lime, could be incorporated into the soil. During dry weather, some addition of moisture may be required to facilitate compaction. This should also be done in a controlled manner using a tank truck with a spray bar. The moistened soil should be thoroughly blended with a disk or pulverizer to produce a uniform moisture content. If construction is performed during the winter season, fill materials should be carefully observed to see that no frozen soil is placed as fill or remains in the base materials upon which fill is placed.

Backfill for foundation walls may consist of lean clay, one-inch minus crushed limestone, or controlled low-strength material. We advise performing field density tests on at least every other lift to monitor compaction. As an alternate, we suggest using one-inch clean crushed limestone to provide improved drainage and to reduce lateral pressures on the walls. Due to a slight risk of migration of soil fines into the clean rock, a synthetic filter fabric, such as Mirafi 140N or equivalent, should be placed between the soil face of the excavation and the crushed limestone. If clean rock is used, it may be placed in 2-foot-thick lifts and tamped or tracked to achieve adequate densification. Exterior clean rock backfill should be capped with cohesive soil to reduce the potential for surface water infiltration.

Backfill placed next to walls should be compacted with hand operated equipment and not large, self-propelled or machine operated equipment, which could result in potential overcompaction and higher lateral pressures. Compaction should be reduced within approximately 1 foot of the walls, and the walls should be observed periodically for signs of movement. If movement is detected, it may be necessary to provide bracing and/or change backfill procedures.

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In addition to the minimum density requirements listed above, the soil must be stable, i.e., not “pumping” or rutting excessively under construction traffic, prior to placing additional fill or constructing foundations, floor slabs, or pavements. Field density tests should be performed on each lift of fill to document that proper compaction is achieved.

5.3 Shallow Foundation Excavations

SCI should observe all footing and floor slab excavations for problem areas, such as soft zones, unsuitable existing fill, fat clay, or otherwise unsuitable material, prior to placing new fill or concrete. Overexcavation and replacement with structural fill should be performed where inadequate bearing materials are present in footing excavations.

During construction, existing footings must not be undercut, i.e., no excavation should encroach within an area extending 45 degrees downward and outward from the outside edge of the existing foundations. If this is required, then SCI should be retained to provide specific recommendations to maintain support of the existing foundations and lateral support of the excavations.

The base of all excavations should be clean, free of loose soil or uncompacted fill, relatively dry, and maintained near their optimum moisture content. Excavations should be protected from extreme temperatures, precipitation, and construction disturbances. To reduce the possibility of desiccation or saturation of the foundation soils, we recommend that the concrete be placed as soon as possible after excavations are made.

Groundwater is not anticipated to be encountered in the footing excavations. However, in most situations, small amounts of groundwater seepage into the excavations can be handled by means of gravity ditching and a sump pump. If greater flows are experienced, SCI should be retained to provide additional consultation.

5.4 Floor Slab and Pavement Subgrades

Floor slab and pavement subgrades may be subjected to construction traffic and exposure to weather for an extended period and significant problems may be incurred. It may be necessary to proofroll the subgrade, in both cut and fill areas, and recompact the subgrade immediately prior to placing base rock for the floor slab or pavement.

In addition, subgrades covered with base rock may be very slow to dry if precipitation occurs after placing the base rock. Therefore, we recommend that proofrolling and placement of the base rock be done as close to the time of pouring the floor slab or paving as is practical. Proofroll passes should be limited, particularly on silty subgrades, to reduce the potential for pumping of moisture from deeper within the soil profile.

Special measures may be required to facilitate construction during wet or cold weather, or where excessive areas of soft soils are identified. These measures may include, but are not limited to, the addition of lime to the subgrade soils for drying purposes, or the removal of soft spongy soils and their replacement with crushed limestone. Soft areas should be selectively undercut and backfilled with properly compacted cohesive soil. A geotextile, such as Mirafi 600X, or geogrid, such as Tensar TriAx-140, or equivalents, may be used to help stabilize particularly soft areas. Where possible, the subgrade should be sloped to provide drainage.

5.5 Excavation Bracing Requirements

In the *Federal Register*, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, Part 1926, Subpart P." This document was issued to provide for the safety of workers entering excavations, including utility trenches, basements, footings, and others. All operations should be performed under the supervision of qualified site personnel in accordance with OSHA regulations.

5.6 Erosion Control and Land Disturbance Monitoring Program

Appropriate erosion and sediment control measures, such as proper contouring during site grading activities, the installation of siltation fences and/or inlet protection, should be used during construction to keep eroded materials from being carried onto adjacent properties or waterbodies. Depending on the length of time the subgrade is exposed and the amount of siltation that occurs, it may be necessary to periodically remove materials collected by the sediment control systems. Timely sodding and/or seeding of sloped surfaces will help reduce this potential problem.

SCI recommends following the procedures detailed in the Stormwater Pollution Prevention Plan (SWPPP). Any site disturbing more than one acre of ground must obtain a Land Disturbance Permit from the Missouri Department of Natural Resources. As part of the permit compliance procedures, weekly and rain-event site observations must be performed to document the changing site conditions and maintenance of control measures.

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6.0 CONSTRUCTION MONITORING PROGRAM

The following list summarizes SCI's recommendations for a construction monitoring program. These services are recommended to provide quality assurance in assessing design assumptions and to document earth-related construction procedures for compliance with plans, specifications, and good engineering practice. SCI should be retained to:

- Participate in a formal preconstruction meeting with the Owner's Representative, Civil Engineer, and Contractor, prior to construction at the site;
- Observe site preparation activities prior to construction, including demolition, stripping and proofrolling;
- Conduct and document weekly and rain-event observations at the site, maintain and update on-site paperwork, and provide submittals required by the SWPPP and Land Disturbance Permit;
- Assess the suitability of potential fill materials, including both on-site and off-site sources;
- Monitor placement and compaction of structural fill and backfill;
- Observe foundation excavations and the floor slab subgrade to assess the impact of soft soils, existing fill, and expansive clay, and to recommend the extent of remedial measures;
- Observe footing excavations for adequacy of bearing materials;
- Observe the floor slab subgrade prior to placing base rock;
- Observe backfilling of below-grade utility excavations;
- Observe pavement subgrade preparation and provide observation and testing services for the base course and pavement section;
- Check the thickness of pavement sections and, for asphaltic concrete, its density; and
- Provide quality assurance testing of structural concrete and pavement materials.

7.0 LIMITATIONS

The recommendations provided herein are for the exclusive use of the City of Ellisville. It is imperative that SCI be contacted by any third-party interests to evaluate the applicability of this report relative to use by anyone other than the City of Ellisville. Our recommendations are specific only to the project described and are not meant to supersede more stringent requirements of local ordinances. They are based on subsurface information obtained at six specific, widely spaced boring locations within the project area drilled by SCI; our understanding of the project as presented in Section 2.0, "Site and Project Description";

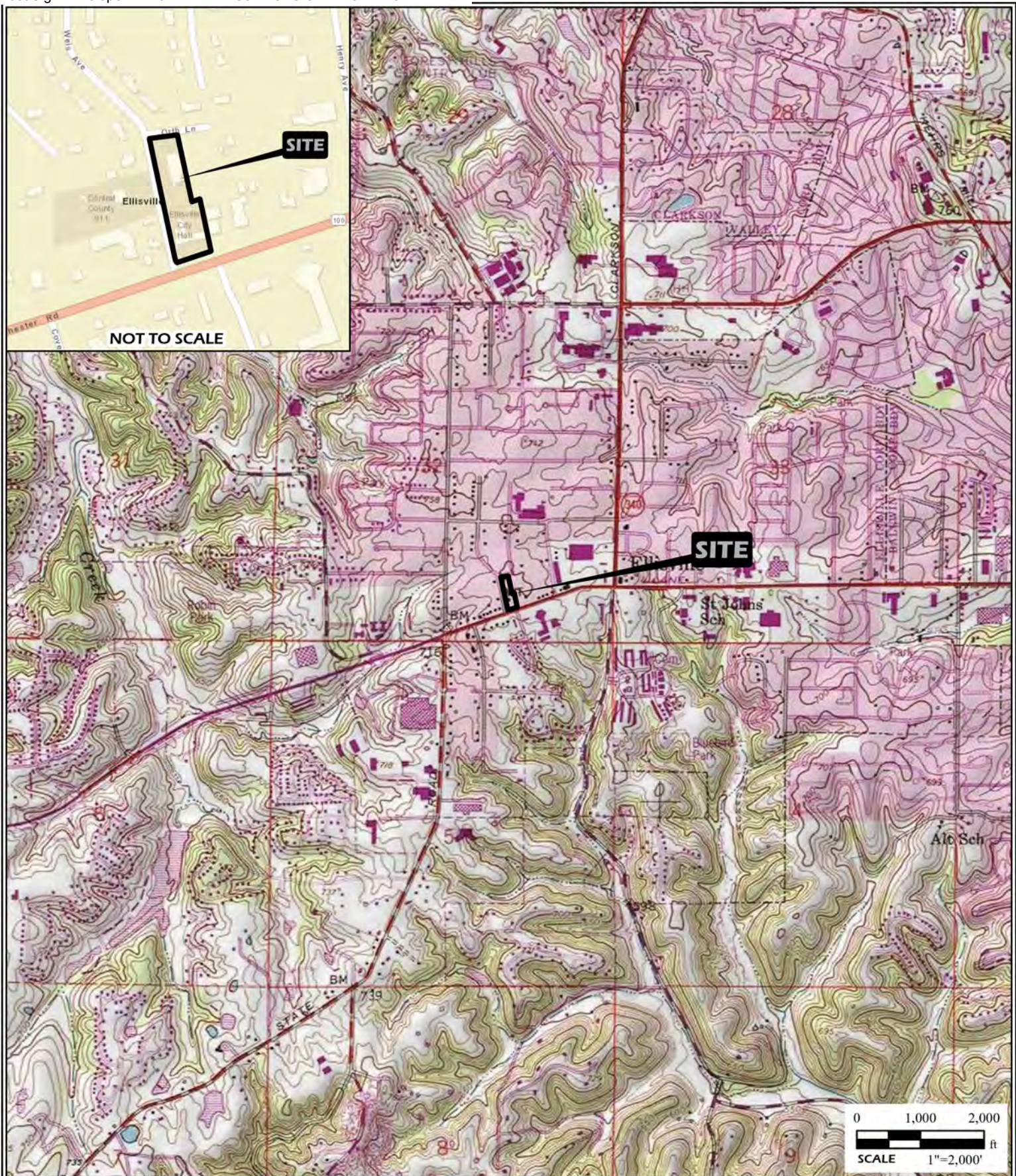
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and geotechnical engineering practice consistent with the standard of care. No other warranty is expressed or implied. SCI should be contacted if conditions encountered are not consistent with those described.

We should also be provided with a set of final development plans, once they are available, to review whether our recommendations have been understood and applied correctly, and to assess the need for additional exploration or analysis. Failure to provide these documents to SCI may nullify some or all of the recommendations provided herein. In addition, any changes in the planned project or changed site conditions may require revised or additional recommendations on our part.

The final part of our geotechnical service should consist of direct observation during construction, to observe that conditions actually encountered are consistent with those described in this report, and to assess the appropriateness of the analyses and recommendations contained herein. SCI cannot assume responsibility or liability for the adequacy of its recommendations without being retained to observe construction.



PROJECT NAME
ELLISVILLE CITY HALL
AND POLICE STATION ADDITION
ELLISVILLE, MISSOURI

VICINITY AND TOPOGRAPHIC MAP

DRAWN BY JTM

DATE

JOB NUMBER

CHECKED BY CJC

07/2022

2022-0786.10

GENERAL NOTES/LEGEND

USGS TOPOGRAPHIC MAP
 MANCHESTER, MISSOURI QUADRANGLE
 DATED 1954 PHOTO REVISED 1993
 10' CONTOURS

STREET MAP




[HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_STREET_MAP](http://GOTO.ARCGISONLINE.COM/MAPS/WORLD_STREET_MAP)

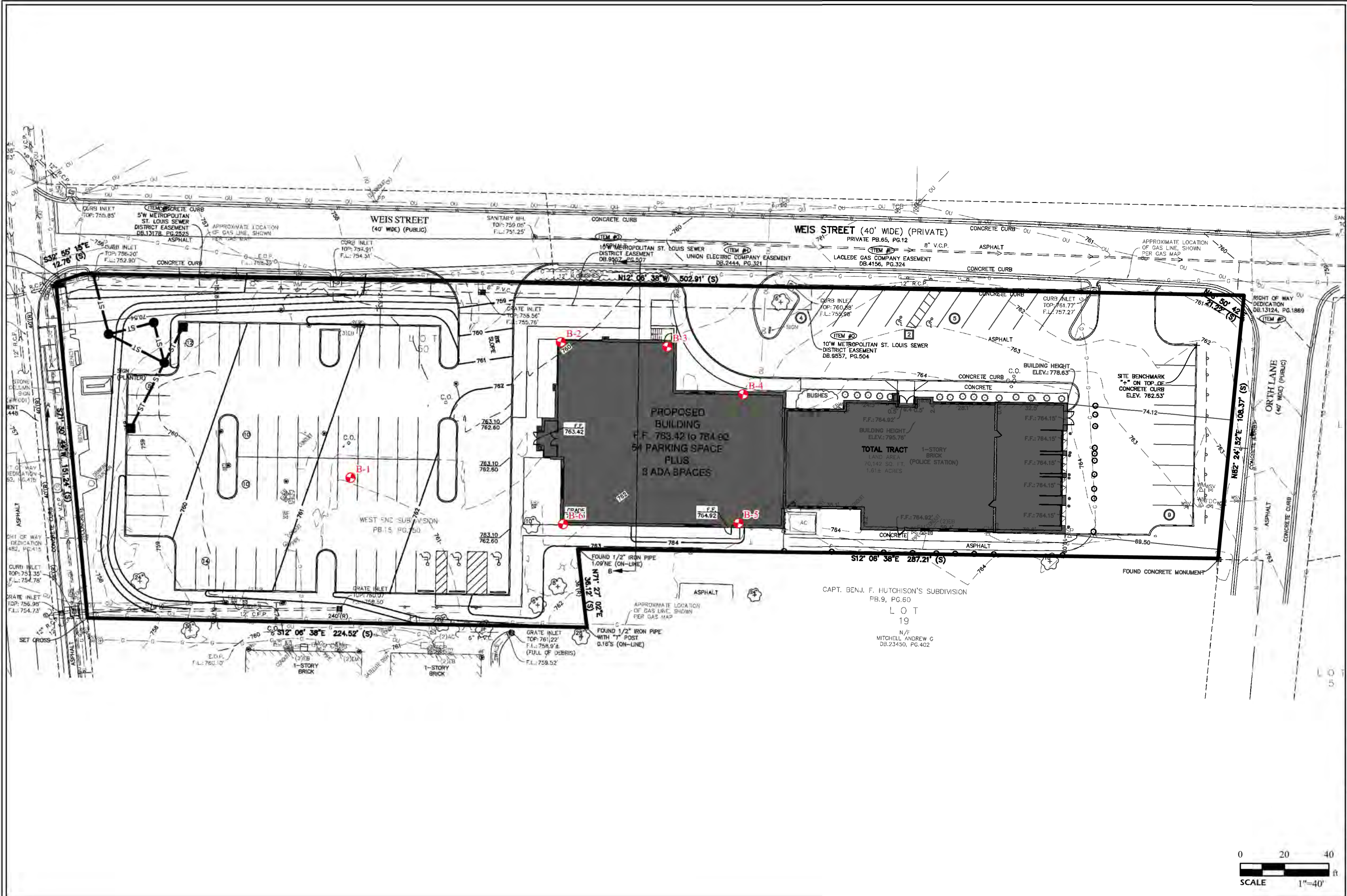


FIGURE

1



	PROJECT NAME ELLISVILLE CITY HALL AND POLICE STATION ADDITION ELLISVILLE, MISSOURI			<u>GENERAL NOTES/LEGEND</u>  APPROXIMATE SOIL BORING LOCATIONS STL Co roads AERIAL PHOTOGRAPH OBTAINED FROM ARCGIS ONLINE, WORLD IMAGERY. DIMENSIONS AND LOCATIONS ARE APPROXIMATE; ACTUAL MAY VARY. DRAWING SHALL NOT BE USED OUTSIDE THE CONTEXT OF THE REPORT FOR WHICH IT WAS GENERATED.	 FIGURE 2
	AERIAL PHOTOGRAPH				
	DRAWN BY	JTM	DATE	JOB NUMBER	
	CHECKED BY	CJC	07/2022	2022-0786.10	



GENERAL NOTES/LEGEND

APPROXIMATE SOIL BORING LOCATIONS

PLAN DATED 04/15/2022 BY CIVIL ENGINEERING DESIGN CONSULTANTS.

DIMENSIONS AND LOCATIONS ARE APPROXIMATE; ACTUAL MAY VARY. DRAWING SHALL NOT BE USED OUTSIDE THE CONTEXT OF THE REPORT FOR WHICH IT WAS GENERATED.

PROJECT NAME

ELLISVILLE CITY HALL
AND POLICE STATION ADDITION
ELLISVILLE, MISSOURI

SITE PLAN

JOB NUMBER

2022-0786.10

DATE

07/2022

DRAWN BY

JTM

CHECKED BY

CJC

FIGURE

3

0 20 40

SCALE 1"=40'

Appendix A



SCI ENGINEERING, INC.

**130 Point West Boulevard
St. Charles, Missouri 63301
636-949-8200
www.sciengineering.com**

BORING LOG LEGEND AND NOMENCLATURE

Depth is in feet below ground surface. **Elevation** is in feet mean sea level, site datum, or as otherwise noted.

Sample Type

- SS** Split-spoon sample, disturbed, obtained by driving a 2-inch-O.D. split-spoon sampler (ASTM D 1586).
- NX** Diamond core bit, nominal 2-inch-diameter rock sample (ASTM D 2113).
- ST** Thin-walled (Shelby) tube sample, relatively undisturbed, obtained by pushing a 3-inch-diameter, tube (ASTM D 1587).
- CS** Continuous sample tube system, relatively undisturbed, obtained by split-barrel sampler in conjunction with auger advancement.
- SV** Shear vane, field test to determine strength of cohesive soil by pushing or driving a 2-inch-diameter vane, and then shearing by torquing soil in existing and remolded states (ASTM D 2573).
- BS** Bag sample, disturbed, obtained from cuttings.

Recovery is expressed as a ratio of the length recovered to the total length pushed, driven, cored.

Blows Numbers indicate blows per 6 inches of split-spoon sampler penetration when driven with a 140-pound hammer falling freely 30 inches. The number of total blows obtained for the second and third 6-inch increments is the N value (Standard Penetration Test or SPT) in blows per foot (ASTM D 1586). Practical refusal is considered to be 50 or more blows without achieving 6 inches of penetration, and is expressed as a ratio of 50 to actual penetration, e.g., 50/2 (50 blows for 2 inches).

For analysis, the N value is used when obtained by a cathead and rope system. When obtained by an automatic hammer, the N value may be increased by a factor of 1.3.

Vane Shear Strength is expressed as the peak strength (existing state) / the residual strength (remolded state).

Description indicates soil constituents and other classification characteristics (ASTM D 2488) and the Unified Soil Classification (ASTM D 2487). Secondary soil constituents (expressed as a percentage) are described as follows:

Trace	<5
Few	5-15
With	>15-30

Stratigraphic Breaks may be observed or interpreted, and are indicated by a dashed line. Transition between described materials may be gradual.

Laboratory Test Results

- Natural moisture content (ASTM D 2216) in percent.
- Dry density in pounds per cubic foot (pcf).
- Hand penetrometer value of apparently intact cohesive sample in kips per square foot (ksf).
- Unconfined compressive strength (ASTM D 2166) in kips per square foot (ksf).
- Liquid and Plastic Limits (ASTM D 4318) in percent.

RQD (Rock Quality Designation) is the ratio between the total length of core segments 4 inches or more in length and the total length of core drilled. RQD (expressed as a percentage) indicates insitu rock quality as follows:

Excellent	90 to 100
Good	75 to 90
Fair	50 to 75
Poor	25 to 50
Very Poor	0 to 25



BORING LOG

PROJECT Ellisville City Hall & Police Station Addition

BORING NUMBER B-1

LOCATION Ellisville, Missouri

SHEET 1 of 1

DRILLER Midwest Drilling, Inc.

HAMMER Auto

PROJECT NO. 2022-0786.10

EQUIPMENT CME-550 w/CFA

ELEVATION 761±

DATE DRILLED 07/02/2022

DEPTH (ft)	SAMPLE				DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LABORATORY TEST RESULTS						ELEVATION (ft)
	NUMBER	TYPE	RECOVERY (in/in)	BLOWS (per 6 in)				MOISTURE CONTENT (%)	DRY DENSITY (pcf)	HAND PENETROMETER (ksf)	UNCONFINED COMPRESSIVE STRENGTH (ksf)	LIQUID LIMIT	PLASTICITY INDEX	
3	1	SS	11/18	2	5" ASPHALTIC CONCRETE			22		2.5				759
				1	4" CRUSHED ROCK									
				3	FILL: Brown, lean clay									
6	2	SS	18/18	4	FAT CLAY (CH): Brown			28		4.0				756
				5										
9	3	SS	18/18	3				28		1.5				753
				4										
				6										
12	4	SS	18/18	4				21		8.0				750
				6										
15					Boring terminated at 10 feet.									747
18														744

WATER LEVEL:

☒ NONE OBSERVED WHILE DRILLING
☐ ft WHILE DRILLING
☐ ft HRS AFTER DRILLING
☐ ft DAYS AFTER DRILLING

REMARKS:



BORING LOG

PROJECT Ellisville City Hall & Police Station Addition

BORING NUMBER B-2

LOCATION Ellisville, Missouri

SHEET 1 of 1

DRILLER Midwest Drilling, Inc.

HAMMER Auto

PROJECT NO. 2022-0786.10

EQUIPMENT CME-550 w/CFA

ELEVATION 760±

DATE DRILLED 07/02/2022

DEPTH (ft)	SAMPLE				DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LABORATORY TEST RESULTS						ELEVATION (ft)
	NUMBER	TYPE	RECOVERY (in/in)	BLOWS (per 6 in)				MOISTURE CONTENT (%)	DRY DENSITY (pcf)	HAND PENETROMETER (ksf)	UNCONFINED COMPRESSIVE STRENGTH (ksf)	LIQUID LIMIT	PLASTICITY INDEX	
3	1	SS	16/18	2	4" ASPHALTIC CONCRETE			26		5.5		56	37	759
				3	6" CRUSHED ROCK									
				3	FILL: Brown, fat clay									
6	2	SS	18/18	3	FAT CLAY (CH): Brown			24	104.7	4.0	2.8			756
				4										
				6										
9	3	ST	19/24	5				23						753
				5										
				6										
12	4	SS	18/18	5				25		6.5				750
				5										
				6										
15	5	SS	18/18	4				23		8.5				747
				5										
				7										
18	6	SS	18/18	4	Becomes gray			24		5.5				744
				4										
				8										
				9										741

Boring terminated at 20 feet.

WATER LEVEL:

☒ NONE OBSERVED WHILE DRILLING
☐ ft WHILE DRILLING
☐ ft HRS AFTER DRILLING
☐ ft DAYS AFTER DRILLING

REMARKS:



BORING LOG

PROJECT Ellisville City Hall & Police Station Addition

BORING NUMBER B-3

LOCATION Ellisville, Missouri

SHEET 1 of 1

DRILLER Midwest Drilling, Inc.

HAMMER Auto

PROJECT NO. 2022-0786.10

EQUIPMENT CME-550 w/CFA

ELEVATION 761±

DATE DRILLED 07/02/2022

DEPTH (ft)	SAMPLE				DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LABORATORY TEST RESULTS						ELEVATION (ft)
	NUMBER	TYPE	RECOVERY (in/in)	BLOWS (per 6 in)				MOISTURE CONTENT (%)	DRY DENSITY (pcf)	HAND PENETROMETER (ksf)	UNCONFINED COMPRESSIVE STRENGTH (ksf)	LIQUID LIMIT	PLASTICITY INDEX	
					4" ASPHALTIC CONCRETE									
					5" CRUSHED ROCK									
					FAT CLAY (CH): Brown									
1	1	SS	16/18	2 3 4				27		4.5				759
3					Becomes reddish-brown									
2	2	SS	18/18	3 4 5				12		4.5		83	56	756
6					Becomes brown									
3	3	SS	18/18	3 4 6				23		7.0				753
9	4	SS	18/18	4 5 7				27		4.5				750
12														
15	5	SS	17/18	3 5 6				21		8.0				747
					Boring terminated at 15 feet.									
18														744

WATER LEVEL:

☒ NONE OBSERVED WHILE DRILLING
☐ ft WHILE DRILLING
☐ ft HRS AFTER DRILLING
☐ ft DAYS AFTER DRILLING

REMARKS:

BORING LOG



PROJECT Ellisville City Hall & Police Station Addition

LOCATION Ellisville, Missouri

DRILLER Midwest Drilling, Inc.

EQUIPMENT CME-550 w/CFA

BORING NUMBER B-4

SHEET 1 of 1

PROJECT NO. 2022-0786.10

DATE DRILLED 07/02/2022

HAMMER Auto

ELEVATION 762±

DEPTH (ft)	SAMPLE				DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LABORATORY TEST RESULTS						ELEVATION (ft)
	NUMBER	TYPE	RECOVERY (in/in)	BLOWS (per 6 in)				MOISTURE CONTENT (%)	DRY DENSITY (pcf)	HAND PENETROMETER (ksf)	UNCONFINED COMPRESSIVE STRENGTH (ksf)	LIQUID LIMIT	PLASTICITY INDEX	
3 														

WATER LEVEL:

X

NONE OBSERVED WHILE DRILLING

ft WHILE DRILLING

ft HRS AFTER DRILLING

ft DAYS AFTER DRILLING

REMARKS:

1) Recovery too low for meaningful strength or density testing.



BORING LOG

PROJECT Ellisville City Hall & Police Station Addition

BORING NUMBER B-5

LOCATION Ellisville, Missouri

SHEET 1 of 1

DRILLER Midwest Drilling, Inc.

HAMMER Auto

PROJECT NO. 2022-0786.10

EQUIPMENT CME-550 w/CFA

ELEVATION 763±

DATE DRILLED 07/02/2022

DEPTH (ft)	SAMPLE				DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LABORATORY TEST RESULTS						ELEVATION (ft)
	NUMBER	TYPE	RECOVERY (in/in)	BLOWS (per 6 in)				MOISTURE CONTENT (%)	DRY DENSITY (pcf)	HAND PENETROMETER (ksf)	UNCONFINED COMPRESSIVE STRENGTH (ksf)	LIQUID LIMIT	PLASTICITY INDEX	
	1	SS	15/18	3	5" ASPHALTIC CONCRETE									762
				4	4" CRUSHED ROCK									
3	2	SS	18/18	3	FAT CLAY (CH): Brown			26		4.5		60	19	759
				4										
6	3	SS	18/18	3	LEAN CLAY (CL): Brown			25		4.0				756
				4										
9	4	SS	17/18	4	FAT CLAY (CH): Brown			26		3.0				753
				5										
12	5	SS	17/18	4				25		5.0				750
				5										
15	6	SS	16/18	3	Becomes gray			21		8.0				747
				5										
18	6	SS	16/18	3				23		9.0				744
				8										

Boring terminated at 20 feet.

WATER LEVEL:

☒ NONE OBSERVED WHILE DRILLING
 _____ ft WHILE DRILLING
 _____ ft _____ HRS AFTER DRILLING
 _____ ft _____ DAYS AFTER DRILLING

REMARKS:

BORING LOG



PROJECT Ellisville City Hall & Police Station Addition

LOCATION Ellisville, Missouri

DRILLER Midwest Drilling, Inc.

EQUIPMENT CME-550 w/CFA

BORING NUMBER B-6

SHEET 1 of 1

PROJECT NO. 2022-0786.10

DATE DRILLED 07/02/2022

HAMMER Auto

ELEVATION 762±

DEPTH (ft)	SAMPLE				DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LABORATORY TEST RESULTS						ELEVATION (ft)
	NUMBER	TYPE	RECOVERY (in/in)	BLOWS (per 6 in)				MOISTURE CONTENT (%)	DRY DENSITY (pcf)	HAND PENETROMETER (ksf)	UNCONFINED COMPRESSIVE STRENGTH (ksf)	LIQUID LIMIT	PLASTICITY INDEX	
3	1	SS	15/18	2	5" ASPHALTIC CONCRETE			23		7.5				759
				3	5" CRUSHED ROCK									
6	2	ST	22/24	4	FAT CLAY (CH): Brown			24	98.3		2.9			756
9	3	SS	18/18	4				24		5.0		61	17	753
				5										
12	4	SS	18/18	3				23		6.0				750
				4										
15	5	SS	18/18	4				21		8.0				747
				5										
18				6	Boring terminated at 15 feet.									744

WATER LEVEL:

X

NONE OBSERVED WHILE DRILLING

ft WHILE DRILLING

ft HRS AFTER DRILLING

ft DAYS AFTER DRILLING

REMARKS:

Important Information about Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply the report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time to perform additional study.* Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely on Your ASFE-Member Geotechnical Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



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Ellisville Police

ELEVATORS

PART 1 - GENERAL

1.1 SCOPE:

- A. Furnish all labor, material, equipment and supervision necessary and required to install hydraulic elevators as shown on Drawings and specified in this Section. Refer to Drawings for details, type, quantity and location of elevators.
- B. All work shall be performed in accordance with the ASME A-17.1-1987 Safety Code, BOCA 1987 Building Code, ANSI A17.1-1986 Handicapped Code Americans with Disabilities Act and National Electric Code, and such state and local codes as may be applicable. This Contractor shall obtain and pay for any permits that may be required by state or local agencies.

1.2 WORK NOT INCLUDED IN THIS SECTION:

- A. The following work will be performed by the General Contractor or other Contractors:
 - 1. Extend the electrical service from the power main through a fused safety switch of ample capacity to the terminals of power unit controller.
 - 2. Any cutting, patching or painting of wall and grouting at thresholds and jambs.
 - 3. Adequate supports for guide rail brackets.
 - 4. Ladder to pit floor from lower landing.
 - 5. Electric current during erection and testing equipment.
 - 6. Necessary recesses to accommodate doors, sills and signal equipment such as indicators, pushbuttons, etc.
 - 7. VCT car flooring.
 - 8. Disconnect switch, a dry and isolated contact set and wire to elevator control.
 - 9. Properly located elevator jack hole. Provide egress and ingress for truck mounted drill rig and provide disposal of jack hole debris.

1.3 GUARANTEE:

The Elevator Contractor shall guarantee that the material and workmanship of the apparatus installed by him under these Specifications shall be first class in every respect; and that he will make good any defects, not due to ordinary wear and tear or improper use, which may develop within one (1) year from date of acceptance of the equipment.

PART 2 - PRODUCTS

2.1 MANUFACTURER: Provide one (1) hydraulic passenger elevator as manufactured by Otis, Schindler, U.S. Elevator, Long Elevator Co., or Dover.

2.2 ELEVATOR: Shall have the following characteristics:

- | | |
|----------------------------|---|
| A. Capacity: | 2500 pounds, minimum |
| B. Full Load Car Speed: | 125 FPM up, 150 FPM down. |
| C. Motor Control: | Wye delta starting. |
| D. Leveling: | Two (2) way |
| E. Operation: | Selective collective -
Micro-processor controlled |
| F. Number of Stops: | Two (2), at Basement & First Floors.
Provide for future Second Floor
(present roof). |
| G. Number of Openings: | Two (2) in line. (See "Provisions
for future travel"). |
| H. Travel Distance: | Present Travel 13'-5", Provide
for 12'-10" of future additional
travel. |
| I. Platform Clear, Inside: | 6'-8" wide x 4'-3" deep x 7'-4"
to suspended ceiling |
| J. Car Enclosure: | 8'-0" High paneled cab with fan,
emergency-car light, plastic
laminate selections, rear handrail,
and stainless steel front returns
with swing return |
| K. Door: | Single slide 3'-6" wide x 7'-0" high
stainless steel finish |

- L. Hoistway Entrance: Standard baked enamel
- M. Door Operation: D.C. powered with dual beam photo cell.
- N. Signals and Controls: Conform in all respects to ANSI 117.1 and ASME 17.1
- O. Motor Size: 25 H.P. - Minimum
- P. Battery operated, emergency power, auto lowering feature. During building power failure, elevator will lower to lowest level and provide normal door operation.
- Q. Independent service operation with key switch in car station.
- R. Provisions for Future Travel:
Elevator shall presently travel 13'-5" and serve two (2) landings in line. The following provisions shall be included for travel to a future 3rd landing:
 - 1. Elevator jack hole and cylinder assembly with a removeable stop ring shall be provided for a future travel of 26'-3".
 - 2. Include controller provisions for future landing.
 - 3. Include provisions in car position indicator and a blank button in the car operating station for the future floor.
 - 4. Include provisions for Fire Service Operation in controller. Provide space in present car operating station for future installation of fire service key switch (Note: this operation will not be required for the present two stop application).
- S. Special Key Operation: Each hall station shall include a push button and a standard "on/off keyed switch." When key is in the "off" position the push button for the landing hall station shall be deactivated.

2.3 ELECTRIC SERVICE

- A. 208 Volt, 3 Phase, 60 cycle

PART 3 - EXECUTION:

- 3.1 Install elevators in strict accordance with ASME A17.1-1987 and manufacturer's published instructions.
- 3.2 Drill jackhole plumb and jack hole to be drilled, cased and capped (as required) to the required depth without additional cost to Owner regardless of ground conditions encountered. The casing double wrapped with an approved coating designed to protect it from electrolytic and chemical corrosion. Any underground piping similarly protected.
- 3.3 Maintenance: Provide maintenance service of the equipment for a period of twelve (12) months after final acceptance. Include regular semi-monthly examinations of the installation, and all necessary adjustments, lubrications, cleaning, supplies and parts to keep equipment in operation.

Perform maintenance and call back service by competent elevator mechanics in direct employ of Elevator Manufacturer.
- 3.4 Prior to the acceptance of Elevator, furnish Owner with one (1) complete bound instruction manual for operation and maintenance of Elevator Equipment. Manuals shall include complete description of system; complete parts list showing all parts by name, identifying number, function and source of supply if such is other than manufacture of Elevator installed; detailed maintenance instructions with copy of manufacture of Elevator installed; detailed maintenance instructions with copy of complete circuit diagram as installed; complete lubrication schedule and lubrication instructions.
- 3.5 Upon completion, Elevator Contractor shall make, in the presence of Owner's designated representative, tests and inspections specified in ASME A-17-1-1987 Code.

END OF SECTION

OILDRAULIC ELEVATOR CONTRACT DATA

ELLISVILLE POLICE STATION
KEY PLAN WITH ELEVATOR EQUIPMENT ROOM
AT LEVEL LL ADJACENT TO HOISTWAY

WORK NOT INCLUDED IN ELEVATOR CONTRACT

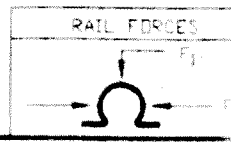
THIS DRAWING AND ALL INFORMATION THEREON IS THE PROPRIETARY PROPERTY OF DOVER ELEVATOR SYSTEMS, INC. AND MUST NOT BE MADE PUBLIC OR COPIED. THIS DRAWING IS LOANED SUBJECT TO RETURN ON DEMAND AND IS NOT TO BE USED DIRECTLY OR INDIRECTLY IN ANY MANNER DETRIMENTAL TO THE INTEREST OF DOVER ELEVATOR SYSTEMS, INC.

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DOVER ELEVATOR SYSTEMS		12-89 PC	2 10
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SILL SUPPORT

SECTION VIEW

PIT PLAN



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PIPE LINES AND FITTINGS
EFFECTIVE STRAIN
REACTIONS ON THIS
DETAILS OF CAR ENGINE
MANUFACTURER'S DRAWING

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A	1 OF 1

SECTION 00 41 00
BID FORM

THE PROJECT AND THE PARTIES

1.01 TO

- A. Owner
1. City of Ellisville
1 Weis Avenue
Ellisville, Mo. 63011-2107
Ph: 636.277.9660

1.02 FOR

- A. Proposed: Renovation and Addition, Ellisville City Hall and Police Station
- B. Location: "As indicated above".
- C. Architect's Project Number: 20016

1.03 DATE: _____(BIDDER TO ENTER DATE)

1.04 SUBMITTED BY: (BIDDER TO ENTER COMPANY NAME AND ADDRESS)

A. Bidder's Full Firm Name: _____

1. Firm Address: _____

2. City, State and Zip Code: _____

1.05 OFFER

- A. Having examined the Place of The Work and all matters referenced within the Instructions to Bidders and the Contract Documents prepared by Archimages, Inc. for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform said Work for the Sum of:
- B. _____ Dollars
(\$ _____), in lawful money of the United States of America.
- C. We have included the required security Bid Bond as required by the Instruction to Bidders.
- D. We have included the required Performance Assurance Bonds within the Bid Amount, as required by the Instructions to Bidders.
1. The cost of the required Performance Assurance Bonds is _____ Dollars
(\$ _____), in lawful money of the United States of America.

ISSUED VIA ADDENDUM #01

00 41 00 - 1 of 4

BID FORM

20016 - Ellisville City Hall and Police Station

- E. We have included the required Builders Risk Insurance within the Bid Amount, as required by the Instructions to Bidders.
1. The cost of the required Builders Risk Insurance is _____ Dollars
(\$ _____), in lawful money of the United States of America.
- F. We have included an Allowance for the entire amount of cubic yards required for soils remediation of the building **FLOOR SLABS ON GRADE**, based on unit prices submitted, (Unit Price Option #01) and based on recommendations for floor slab remediation within the Geotechnical Report, provided by SCI Engineering, Inc., to Owner, Ellisville City Hall and Police Station Addition, Ellisville, Mo. and Dated July 22, 2022.
1. The amount of Cubic Yards for the soils remediation below building FLOOR SLABS ON GRADE is:
- a. _____ Cubic Yards
2. The total cost of the soils remediation for building FLOOR SLABS ON GRADE, included in the Base Bid is:
- a. _____ Dollars
- (\$ _____), in lawful money of the United States of America based on unit price option #01 x Cubic Yards of remediation.
- G. We have included an Allowance for the entire amount of cubic yards required for soils remediation of the building **FOOTINGS**, based on unit prices submitted, (Unit Price Option #01) and based on recommendations for footings remediation within the Geotechnical Report, provided by SCI Engineering, Inc., to Owner, Ellisville City Hall and Police Station Addition, Ellisville, Mo. and Dated July 22, 2022.
1. The amount of Cubic Yards for the soils remediation below building FOOTINGS is:
- a. _____ Cubic Yards
2. The total cost of the soils remediation for building FOOTINGS, included in the Base Bid is:
- a. _____ Dollars
- (\$ _____), in lawful money of the United States of America based on unit price option #01 x Cubic Yards of remediation.

ISSUED VIA ADDENDUM #01

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BID FORM

20016 - Ellisville City Hall and Police Station

- H. We have included an Allowance for six hundred eighty (680) cubic yards, for soils remediation of the **SITE PAVING**, based on unit prices submitted, (Unit Price Option #01) and based on recommendations for Site Paving remediation within the Geotechnical Report, provided by SCI Engineering, Inc., to Owner, Ellisville City Hall and Police Station Addition, Ellisville, Mo. and Dated July 22, 2022.

b. The amount of Cubic Yards for the soils remediation below SITE PAVING is:

a. _____ Cubic Yards

c. The total cost of the soils remediation for SITE PAVING, included in the Base Bid is:

b. _____ Dollars

(\$ _____), in lawful money of the United States of America based on unit price option #01 x Cubic Yards of remediation.

- I. All applicable Federal and State taxes have been excluded from the Bid Sum.
- J. We have reviewed all additional Allowances identified in Section 01 21 00 Allowances and have included same within the Bid Sum.

1.06 ACCEPTANCE

- A. This offer shall be open to acceptance and is irrevocable for Sixty (60) days from the bid closing date.
- B. If this bid is accepted by Owner within the time period stated above, we will:
1. Execute the Agreement within seven days of receipt of Notice of Award.
 2. Furnish the required bonds within seven days of receipt of Notice of Award.
 3. Commence work within seven days after written Notice to Proceed of this bid.
- C. If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.
- D. In the event our bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders, unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

1.07 CONTRACT TIME

- A. If this Bid is accepted, we will:
- B. Complete the Work within _____ **Calendar** days from Notice to Proceed.
(Bidder to enter number of **Calendar** days.)

ISSUED VIA ADDENDUM #01

00 41 00 - 3 of 4

BID FORM

20016 - Ellisville City Hall and Police Station

1.08 ADDENDA

- A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.

- | | |
|----------------------|-------------|
| 1. Addendum #01_____ | Dated:_____ |
| 2. Addendum #02_____ | Dated:_____ |
| 3. Addendum #03_____ | Dated:_____ |

1.09 BID FORM SUPPLEMENTS

- A. The following Supplements are attached to this Bid Form and are considered an integral part of this Bid Form (THESE FORMS ARE TO BE SUBMITTED ATTACHED TO THIS BID FORM):
1. Document 00 41 10-Contractor's Affidavit for Public Construction Projects
 2. Document 00 41 20-Non Collusion Affidavit
 3. Document 00 43 22-Unit Prices Form: Include a listing of unit prices specifically requested by the Contract Documents. (Not Used)
 4. Document 00 43 23-Alternates Form: Include the cost variations to the Bid Sum applicable to the Work as described in Section 01 23 00-Alternates.
- B. We agree to submit the following Supplements to Bid Forms within twenty-four (24) hours after submission of this bid for additional bid information:
1. Document 00 43 36-Proposed SubContractors Form: Include the names of all Subcontractors and the portions of the Work they will perform.

1.10 BID FORM SIGNATURE(S)

- A. The Corporate Seal of
- B. _____
- C. (Bidder, print the full name of your Firm)
- D. was hereunto affixed in the presence of:
- E. _____
- F. (Authorized signing Officer, Title)
- G. (Seal)
- H. _____
- I. (Authorized signing Officer, Title)

1.11 IF THE BID IS A JOINT VENTURE OR PARTNERSHIP, ADD ADDITIONAL FORMS OF EXECUTION FOR EACH MEMBER OF THE JOINT VENTURE WITHIN THE APPROPRIATE FORM OR FORMS AS ABOVE.

END OF BID FORM

ISSUED VIA ADDENDUM #01

00 41 00 - 4 of 4

BID FORM

20016 - Ellisville City Hall and Police Station

SECTION 10 51 13
WELDED METAL LOCKERS

PART 1 GENERAL

1.01 SUMMARY

- A. This section includes Tactical Lockers with a bench drawer and Day Use lockers. All lockers should be from one manufacturer to ensure consistencies in quality and finishes:
 - 1. Tactical Lockers with Built-In Bench Drawer.
 - 2. Day Use Lockers.
- B. Related Work, Not Furnished:
 - 1. Finish floor covering material and installation.

1.02 DESCRIPTION

- A. Finishes:

Fabricated Metal Components and Assemblies: All components shall be painted with an electro-statically applied Powder Coat paint finish that will meet or exceed test requirements of ASTM standard D3451-06 Standard Guide for Testing Coating Powders and Powder Coatings.
- B. Sizes:

Tactical Lockers with built-in bench drawers: height, eighty four (84) inches, built-in bench drawer height, eighteen (18) inches, depth (37.125) inches, width twenty four (24) inches. Sloped tops shall bring total height to ninety two (92) inches.

Day Use Lockers: height, seventy six (76) inches, including four inch base, depth sixteen (16) inches including, door width, twelve (12) inches. Sloped tops shall bring total height to eighty four (84) inches.

1.03 PERFORMANCE REQUIREMENTS

- A. Design Requirements: Overall width shall not exceed specified nominal width, locker width designed for zero growth.
- B. Seismic Performance: Provide Project Site specific seismic evaluation Report of said metal lockers, performed by an independent structural engineer licensed within the state of Missouri. Said seismic anchorage report shall calculate loads from lockers to floor and will analyze, design components from bottom of lockers to connection to structure. Report shall include the length, diameter and minimum embedment of anchors to be used. Report must be provided within submittals and be particular to Project Site installation. Blanket statement without calculations stating the product meets seismic code is unacceptable. Said Report is mandatory.

ISSUED VIA ADDENDUM #01

10 51 13 - 1 of 9

WELDED METAL LOCKERS

20016 - Ellisville City Hall and Police Station

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product literature for each type welded metal locker delineated within Drawings and Specifications. Include technical data substantiating products to be furnished comply with Drawings and Specifications.
- B. Shop Drawings: Provide layout, dimensions, show complete extent of installation layout including clearances, spacings, particular to Project Site and relation to adjacent construction in plan, elevation, sections.
- C. Selection Samples: For initial selection of colors and textures, submit manufacturer's color charts, showing full range of colors and textures available. For final color selections, submit three (3) eight inch square product samples for each locker type delineated within Drawings and Specifications. Said product samples shall accurately represent finish, color and general appearance of product.
- D. Warranty: Minimum five (5) years, all materials and minimum one (1) year all labor. Submit "Draft" copy of proposed warranty for Architect review.
- E. Reference List: Provide list of recently installed metal lockers, minimum six (6) Projects, to Owner and Architect. Intent of said list is to aid in verifying suitability of manufacturer's products and provide comparison with materials, product delineated within Drawings and Specifications. Include contact names, street addresses, phone numbers and email addresses, minimum six (6) previous clients.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Engage an experienced manufacturer who is ISO 9001 certified for said design, production, installation and service of welded metal lockers. Furnish certification attesting ISO 9001 quality system registration.
- B. Installer Qualifications: Engage an experienced installer who is the manufacturer's authorized representative for the specified products for installing welded metal lockers and seismically anchoring shelving units to the structure.

PART 2 PRODUCTS

2.01 BASIS OF DESIGN

- A. Manufacturer:
 - 1. Spacesaver, as manufactured by Bradford Systems, 10979 Lin Valle Drive, St. Louis, Mo. 63123-7202, Curt Rogers, curt@bradfordsystems.com, 314-401-3345, www.bradfordsystems.com., 800.696.3453 are specified to establish desired quality and performance of work and represent "basis of design".
 - 2. Due to complexity and number of required specifications, each bidder shall compare their product bid with required listed minimum point by point and identify any deviations from said specifications. A descriptive brochure of said product will not be acceptable as proper identification of deviations from Drawings and Specification. Owner reserves the right to assess each deviation in terms of its acceptability and impact on performance.

ISSUED VIA ADDENDUM #01

10 51 13 - 2 of 9

WELDED METAL LOCKERS

20016 - Ellisville City Hall and Police Station

3. Substitutions: Reference Section 01 60 00-Product Requirements.

2.02 TACTICAL LOCKER WITH BUILT-IN BENCH DRAWER

A. Welded Frame:

1. The welded frame must consist of top, bottom, back, and sides constructed of a minimum of 18-gauge steel. All frame components shall be joined using resistance welding. Riveting of structural members will not be permitted.
2. Horizontal front flanges will be a minimum of two (2) inches. Vertical front flanges will be a minimum of one (1) inch. Horizontal and vertical flanges shall overlap and be secured with a minimum two (2) resistance welds per corner.
3. Corner gussets shall be MIG and spot welded in each of the four front corners of the locker, as required for increased stiffness and rigidity.
4. Provide side panel lances evenly spaced at three (3) inch centers. Lances shall provide the flexibility of on-site, end-user reconfiguration, addition of internal components anytime, anywhere, now or in the future.
5. Bench Housing for built-in bench drawer.
6. Welded frame construction shall consist of top, bottom and side components joined by using resistance welding. Riveting of bench housing structural members will not be permitted.
7. Corner gussets shall be welded in the two (2) front bottom corners of the bench housing, as required for increased stiffness, rigidity.
8. Horizontal front flanges shall be minimum of one (1) inch.
9. Vertical front flanges shall be minimum of one (1) inch.
10. Horizontal and Vertical front flanges shall overlap and shall be secured with minimum of one (1) resistance weld per corner.
11. Side panels, Lances symmetric and evenly spaced, as required to provide optimum component locations, standard based upon three (3) inch on center vertical placement, as required to match mating locker lance design.
12. Return flanges on housing shall securely fasten housing to welded frame of locker.
13. Base of bench housing shall include four (4) 3/8" 16 UNC threaded weld-nuts and corresponding leveling feet.
14. Top of bench housing shall include hole pattern, as required for mating bench seat.
15. Sides of bench housing shall include mounting holes, in the event lockers are ever ganged together.
16. Lockers with built-in bench drawer and built-in external access drawer shall include intermediate base shelf with interlocking mechanism for securing drawer when locker door is closed.

ISSUED VIA ADDENDUM #01

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WELDED METAL LOCKERS

20016 - Ellisville City Hall and Police Station

17. Provide four (4) 0.875 inch diameter electrical knock-outs per locker, two (2) located on top of locker in both right and left rear corners and two (2) located within back of locker centered, at distance no greater than twenty four (24) inches from top and bottom. Knock-outs shall allow end-user flexibility of adding electrical capability to said lockers.
18. Lockers shall be prepared with mounting holes, as required for use with the continuous sloped top system.
19. Lockers shall be prepared with mounting holes, as required for attaching any necessary trim components.
20. Locker shall be prepared with mounting holes, as required for ganging lockers, back to back or side to side.
21. Base of all lockers shall include four (4) 3/8" 16 UNC threaded weld-nuts, including corresponding leveling feet.
22. End, Back Panels: End, Back Panels with no exposed fasteners, shall be provided upon exposed end, back of each locker run, thus providing clean and aesthetically pleasing appearance.

B. Ventilation:

1. Provide ventilation holes in top of locker, as required to allow mechanically extracted air to be pulled up through locker. Ventilation shall be controlled by eight (8) evenly spaced 0.625 inch diameter holes. Proper ventilation system shall ensure odors are removed from said lockers.
2. Provide adjustable air baffle for system balancing, whenever mechanical air extraction is used. Upon balancing system, air baffle shall be secured with fasteners, as required to maintain ventilation.
3. Provide louvered air vents within bottom of main locker doors, as required to allow mechanically extracted air to be pulled up through said locker.
4. Provide louvered air vents within drawer front, at those locations where built-in bench drawer or built-in external access drawers are provided.
5. Provide minimum 0.500 inch gap between back of shelving components and back of locker, as required to provide uninterrupted air flow up rear of said locker.
6. Place minimum two (2) inches gap between front of shelving and locker door, as required to provide uninterrupted air flow up front of said locker.
7. Manufacturer shall provide HVAC tech data, as required to serve as a guideline for the General Contractor and appropriate Subcontractors.
8. Provide decorative "Chimney" covers, as required to hide any and all HVAC ducts extending from ceiling systems to sloped tops of lockers.

C. Drawers:

1. Drawer body wrapper shall have welded frame construction. Riveting of structural members will not be permitted.
2. Drawers for locker with built-in bench drawers and built-in external access drawers shall have box-formed drawer front.
3. Provide automatic interlocking system for securing bottom drawer. Provide passive system, so when main locker door is closed, bottom drawer is locked. When main door is open, bottom drawer shall be unlocked, without any additional end user action.
4. Built-in bench drawer shall have a nominal thirty six (36) inches of depth.
5. Provide flush mounted pull handles, as required.
6. Drawer Slides: Provide two hundred (200) lbs. maximum load capacity and pass 50,000 cycle performance testing, (Maximum load, uniform distribution), (Test data shall be provided by manufacturer, to Owner and Architect, for review.
7. Bench drawer minimum (26.5) inches drawer extension.
8. Provide louvered air vents within drawer fronts, when built-in bench drawer and or built-in external access drawer models are provided.

D. Bench Seat:

1. Provide nine (9) inch deep laminated kiln dried maple bench seat, material thickness one and one quarter (1.25) inches.
2. Front, leading edge of each bench seat shall have receive (.625) inch radius bull nose.
3. Finish of each bench seat shall be sanded smooth and receive two (2) applied coats catalyzed varnish.

E. Welded Doors:

1. Shall be formed from two (2) pieces of minimum 18-gauge cold rolled steel box formed and welded together using modern GMAW techniques. Single-piece door with inner and outer door panels shall have a combined steel thickness of no less than [0.096] inches thick. Manufacturer's standard latching mechanism with slam shut feature, no moving parts for function, including Owner provided padlocks.
2. Exterior door panels shall be constructed with formed flanges and return flanges, as required to provide added stiffness.
3. Internal door panels shall be constructed with formed flanges, as required to provided added stiffness.
4. All inner door panels, (except Multi-Tier) heights, shall be minimum 70% of external door height.
5. Single-piece welded door frames, shall consist of internal door panel nested inside exterior door panel and welded per following requirements:

ISSUED VIA ADDENDUM #01

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WELDED METAL LOCKERS

20016 - Ellisville City Hall and Police Station

6. Top, bottom: Exterior and interior panels shall be welded in minimum three (3) locations with weld spacing not to exceed six (6) inches between adjacent welds and one (1) inch from any corner.
7. Sides: Exterior and interior panels shall be welded with spacing not to exceed twelve (12) inches between adjacent welds and one (1) inch from any corner.
8. Inner door panels shall include peg board style hole pattern, as required to allow the attachment of Document Holder and standard peg board accessories.
9. Inner door panels shall have four (4) inch rectangular slot, centered towards top of locker.
10. External door panels shall have louvers, as required to provide adequate air circulation throughout lockers.
11. Louvered air vents shall be located at bottom of locker doors, as required to enhance circulation of mechanically extracted air, from bottom of locker, out top of locker.
12. Louvered air vents shall be approximately three (3) inches in width and (0.75) inches in height and spaced on one (1) inch centers.
13. All doors shall include neoprene silencers, as required to provide noise reduction
14. Door torsional deflection shall not exceed (0.1875) inch, with a twenty (20) pound point load. Testing data shall be provided to Owner and Architect.
15. Provide 16-gauge full length hinge, as required for increased strength and security of said locker system.
16. Hinges shall be welded to door frames via spot welds, not to exceed six (6) inches.
17. Door assemblies shall be riveted to door frames, upon factory pre-established hole patterns.
18. Provide padlock hasps as required, Owner shall provide padlocks.

F. Interior, Accessory components:

1. All interior components shall be constructed of minimum 18-gauge steel, unless directed otherwise.
2. For added security, internal components may be secured utilizing blind rivets, threaded fasteners and or bending specially designed tabs.
3. All interior components, available at time of order and as post-installation upgrades within future.
4. Provide Shelf with integral hanger bracket:
 - 1) Size specified via locker width.
 - 2) Hanger bracket designed with perforations on approximately three (3) inch centers, as required to insure clothing separation is provided with optimum ventilation.

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WELDED METAL LOCKERS

20016 - Ellisville City Hall and Police Station

- 3) Performance: Uniform load rating, three hundred (300) pounds.
 - b. Shelf rear return flange stops minimum [0.50] inch short of locker back panel on order, as required to allow air circulation throughout entire locker assembly.
 - c. All performance test data shall be provided to Owner and Architect, for review.
5. Provide Boot Tray:
- a. Material, Rubber.
 - b. Dimensions:
 - 1) Width – [12.90] inches.
 - 2) Depth – [19.90] inches.
 - 3) Height – [1.25] inches.
 - c. Manufactured from Natural rubber compounds, environmentally friendly, durable, water repellant easily cleaned with soap, water, resistant to alkalis and weak acids, mold, mildew and dust mites.
6. Provide Body Armor Drying Rack for Bench Drawer Model:
- a. Size of tray shall be dictated by locker width.
 - b. Bottom of drying tray shall have louvered pattern, as required to provide air circulation throughout unit.
 - c. Drying tray shall have ability to adjust, glide frontward and backward, while mounted within bench drawer.
7. Provide all sloped tops, as required for particular Project Site.
- G. Locker Tag Numbers:
1. Manufacturer shall provide locker tag number at each locker per, per direction from Owner and Architect.
- H. Accessories:
1. Provide Trim, Fillers: Provide manufacturer's standard, at all locations where gap between locker and adjacent surface, is greater than three eighths 3/8".

2.03 DAY USE LOCKERS

- A. Welded Frame:
1. Welded frames shall consist of top, bottom, back and sides, constructed of minimum 18-gauge or [1.214] millimeters steel. All frame components shall be joined using resistance welding.
 2. Provide a four inch welded base.

ISSUED VIA ADDENDUM #01

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WELDED METAL LOCKERS

20016 - Ellisville City Hall and Police Station

B. Metal Doors:

1. Shall be formed from two (2) pieces of minimum 20-gauge [0.91] millimeter cold rolled steel box formed and riveted together. Door with inner and outer door panels shall have a combined steel thickness of no less than [0.075] inches or [1.9] millimeters thick.
2. Exterior door panels shall be constructed with formed flanges and return flanges, as required to add necessary stiffness.
3. All doors shall be full overlay style.
4. Hinge:
5. Full overlay one (1) inch hinge.
6. Soft close style.
7. One-piece wraparound hinge.
8. Steel, nickel-plated.
9. Minimum of four (4) hinges per door.
10. Opens 110 degrees.

C. Shelves:

1. Provide one (1) shelf per unit.

D. Locks:

1. Locks shall be centered vertically within door.
2. Provide hasp locks.
3. Doors shall remain closed, when in unlocked mode.

E. Accessories:

1. Provide locker number tags, per directions from Owner and Architect.
2. Provide single hooks, for both right and left side of lockers.

PART 3 EXECUTION

3.01 INSTALLATION

- A. System shall be installed in accordance with manufacturer's written instructions.
- B. Immediately following completion of installation, thoroughly clean all locker components and surfaces. Remove all surplus materials, trash and construction debris, immediately upon completion of said Work. Maintain environment, Work areas in a neat, clean condition, until Project Date of Substantial Completion.

ISSUED VIA ADDENDUM #01

10 51 13 - 8 of 9

WELDED METAL LOCKERS

20016 - Ellisville City Hall and Police Station

3.02 FIELD QUALITY CONTROL

- A. Confirm all accessories unit alignment and plumb following installation. Repair and or replace, as required to meet manufacturer's instructions.

3.03 ADJUSTING

- A. Adjust all accessories, components as required to provide smoothly operating, visually acceptable installation.

END OF SECTION

SECTION 22 11 00
PLUMBING VALVES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes general duty valves common to plumbing piping systems.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Special purpose valves specified in Division 22 piping system Sections.
 - 2. Valve tags and charts specified in Division 22 Section "Plumbing Identification."
 - 3. Section 22 05 00 "Basic Mechanical Materials and Methods".

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Section 22 Specification Sections.
- B. Product Data for each valve type. Include body material, valve design, pressure and temperature classification, end connection details, seating materials, trim material and arrangement, dimensions and required clearances, and installation instructions. Include list indicating valve and its application.
- C. Maintenance data for valves to include in the operation and maintenance manual specified in Division 1. Include detailed manufacturer's instructions on adjusting, servicing, disassembling, and repairing.

1.4 QUALITY ASSURANCE

- A. ASTM Compliance: Brass valves- ASTM B-61, ASTM B-62, and ASTM B-584. Silicon Brass- ASTM B-371 Alloy 694 or ASTM B-99 Alloy 651. Only valves containing 15% or less of zinc will be acceptable.
- B. ASME Compliance: Comply with ASME B31.9 for building services piping and ASME B31.1 for power piping.
- C. ASME Compliance for Ferrous Valves: ASME B16.10 and ASME B16.34 for dimension and design criteria.
- D. MSS Compliance: Comply with the various MSS Standard Practice documents referenced.
- E. NSF Compliance: NSF 61 and NSF 372 for valve materials for potable water.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
 - 1. Protect internal parts against rust and corrosion.
 - 2. Protect threads, flange faces, and grooves.
 - 3. Set ball valves open to minimize exposure of functional surfaces.
 - 4. Set butterfly valves closed or slightly open.
 - 5. Block check valves in either closed or open position.
- B. Use the following precautions during storage:
 - 1. Maintain valve end protection.

ISSUED VIA ADDENDUM #01

22 11 00- 1 of 7
Plumbing Valves
Ellisville City Hall and Police Station

1. Store indoors and maintain valve temperature higher than ambient dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.
- C. Use a sling to handle large valves. Rig to avoid damage to exposed parts. Do not use handwheels and stems as lifting or rigging points.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Ball Valves:
 - a. Conbraco Industries, Inc.; Apollo Division.
 - b. Hammond Valve Corporation.
 - c. Milwaukee Valve.
 - d. NIBCO Inc.
 - e. Watts
2. Butterfly Valves:
 - a. DeZurik (General Signal)
 - b. Hammond Valve Corporation.
 - c. NIBCO Inc.
 - d. Milwaukee Valve.
 - e. Watts
3. Swing Check Valves:
 - a. Conbraco Industries, Inc.; Apollo Division.
 - b. Cla-Val Co.
 - c. Hammond Valve Corporation.
 - d. NIBCO Inc.
 - e. Watts
4. Wafer Check Valves:
 - a. NIBCO Inc.
 - b. Watts
5. Calibrated Balancing Valves:
 - a. Bell & Gossett (Xylem).

2.2 b. NIBCO Inc.

1. Thermostatic Balancing Valves:
 - a. Circuit Solver (ThermOmegaTech).

2.3 BASIC, COMMON FEATURES

- A. Pressure and Temperature Ratings: As indicated in the "Application Schedule" of Part 3 of this Section and as required to suit system pressures and temperatures.
- B. Sizes: Same size as upstream pipe, unless otherwise indicated.
- C. Operators: Use specified operators and handwheels, except provide the following special operator features:
 1. Handwheels: For valves other than quarter turn.
 2. Lever Handles: For quarter-turn valves 4 inches and smaller.
 3. Gear-Drive Operators: For quarter-turn valves 6 inches and larger.
- D. Extended Stems: Where insulation is indicated or specified, provide extended stems arranged to receive insulation.
- E. Bypass and Drain Connections: Comply with MSS SP-45 bypass and drain connections.

- F. Threads: ASME B1.20.1.
- G. Flanges: ASME B16.1 for cast iron, ASME B16.5 for steel, and ASME B16.34 for bronze and brass valves.

2.4 BALL VALVES

- A. Ball Valves, 4 Inches and Smaller: MSS SP-110, Class 150, 600-psi CWP, ASTM B 584 bronze body and bonnet, 2-piece construction; chrome-plated brass ball, full port for 1-inch valves and smaller and conventional port for 1-1/4-inch valves and larger; blowout proof; bronze or brass stem; teflon seats and seals; threaded or soldered end connections:
 - 1. Operator: Vinyl-covered steel lever handle.
 - 2. Operator: Lever operators with lock where called for on the drawings.
 - 3. Stem Extension: For valves installed in insulated piping.
 - 4. Memory Stop: For operator handles.

2.5 BUTTERFLY VALVES

- A. Butterfly Valves: MSS SP-67, 200-psi CWP, 150-psi maximum pressure differential, ASTM A 126 cast-iron body and bonnet, extended neck, stainless-steel stem, field-replaceable EPDM or Buna N sleeve and stem seals, wafer, lug, or grooved style:
 - 1. Disc Type: Nickel-plated ductile iron.
 - 2. Disc Type: Epoxy-coated ductile iron.
 - 3. Operator for Sizes 2-1/2 Inches to 4 Inches: Lever handle with latch lock.
 - 4. Operator for Sizes 6 Inches and larger: Gear operator with position indicator.
 - 5. Operator for Sizes 6 Inches and Larger, 96 Inches or Higher above Floor: Chain-wheel operator.

2.6 CHECK VALVES

- A. Swing Check Valves, 2-1/2 Inches and Smaller: MSS SP-80; Class 125, 200-psi CWP, or Class 150, 300-psi CWP; horizontal swing, Y-pattern, ASTM B 62 cast-bronze body and cap, rotating bronze disc with rubber seat or composition seat, threaded or soldered end connections:
- B. Swing Check Valves, 3 Inches and Larger: MSS SP-71, Class 125, 200-psi CWP, ASTM A 126 cast-iron body and bolted cap, horizontal-swing bronze disc, flanged or grooved end connections.
- C. Wafer Check Valves: Class 125, 200-psi CWP, ASTM A 126 cast-iron body, bronze disc/plates, stainless-steel pins and springs, Buna N seals, installed between flanges.
- D. Check Valves-Vertical Position: Check Valves used in vertical position shall be Mueller Steam Specialty Co., Figure 105-BP glove type, bronze body, flanged ends, 175# W.W.P., seats and disc of composition bronze, guide pins and bushings of silicon bronze, phosphor bronze springs. The units shall be designed for quiet action and positive protection against water hammer.

2.7 BALANCING VALVES

- A. Furnish and install in the hot water recirculating branches a balancing valve, circuit setter, or a thermostatic balance. If a circuit setter is used, then provide with provisions for connecting portable differential pressure meter. An integral pointer shall be installed to provide degree of valve opening. A calibrated chart shall accompany the circuit setter and may be used to determine flow rate. Each circuit setter shall be constructed for 125 lbs. working pressure at 250°F, and supplied with a preformed polyurethane package that can be reused for insulation on the piping system.

ISSUED VIA ADDENDUM #01

Before the job is turned over to the owner the Circuit Setters shall be adjusted to balance the circulation of hot water in all branches.

- B. Similar valves by Armstrong will be acceptable. NOTE: If Armstrong balancing valves are used the Plumbing Contractor may eliminate the shut-off valve at each balancing valve as shown on the drawings.

2.10 FLOW CONTROL VALVES

- A. General: The Plumbing Contractor shall install automatic pressure compensating flow control valves where indicated on the drawings. Valves shall have the capacities and pressure differential characteristics as indicated in the schedule below.
 - B. Valves shall be factory set and shall automatically lift the rate of flow to required engineered capacity with plus or minus 5% accuracy over an operating pressure differential of at least 14 times the minimum required for control.
 - C. The control mechanism of the valve shall consist of a self-contained, open-chamber cartridge assembly with unobstructed flow passages that eliminate accumulation of particles and debris. All internal working parts shall be passivated stainless steel.
 - D. The cartridge assembly shall consist of a springloaded cup. The cup shall be guided at two points and shall utilize the full available differential pressure across the valve to actuate the cup and thereby reduce friction and hysteresis and eliminate binding. It shall have a thin orifice plate for self cleaning of the variable inlet ports over the full control range.
 - E. Valves shall be available in four pressure differential ranges, with the minimum range requiring less than 2 psid to control flow. Gray cast iron or brass alloy valve bodies shall be provided with inlet and outlet tapings suitable for connection of the instruments for verification of flow rates. Valve bodies shall be rated for use of not less than 150% of system designed operating pressures.
 - F. All valves located in the domestic hot water recirculating system in the main Building shall be 3/4" size with female seat ends, brass body ASTM B 584 rated for 300 PSI/250 degree F. Flow rate shall be 2 GPM at 1-14 PSID range (Model No. 3631).
 - G. Certified performance data for the flow control valve, based on independent laboratory tests, supervised and witnessed by a registered professional engineer, shall be available.
 - H. All flow control valves shall be supplied by a single source responsibility.
 - I. Each automatic flow control valve shall be furnished with a valve kit consisting of 1/4 inch x 2 inch minimum nipples, quick-disconnect valves (to be located outside of insulation), and fittings suitable for use with the measuring instruments specified.
-
- A. Provide a metal identification tag, with chain, for each installed valve. The tag to be metal stamped with zone identification, valve mode number, rated flow in GPM and differential pressure range.
 - B. Furnish and install ahead of each automatic flow control valve a bronze self cleaning "Y" type strainer with blowoff and check valve.
 - C. See Schedule on drawings for sizes, flow rates, etc.

2.11 VALVES-SEWAGE PUMP DISCHARGE

- A. Gate Valves
 - 1. 200# non-shock W.W.P. iron body, flanged ends, bolted bonnet, outside screw and yoke, rising stem, solid bronze wedge or iron wedge with bronze face, bronze seat ring, silicon brass stem, TFE impregnated asbestos packing.
 - 2. Federal Specification WW-V-58, Type 1, Class 1.
 - 3. Valves shall be as manufactured by Jenkins, Stockham, Crane or Nibco/Scott.

- B. Check Valves-Sewage Pump Discharge
 - 1. 200# W.W.P. iron body, flanged ends, bolted cover, bronze mounted, bronze disc, bronze seat ring, renewable seat and disc, horizontal swing. Include an outside lever and weight to maintain exterior control over disc movement to prevent the slamming of check valve upon pump shut-off.
 - 2. Valves shall be as manufactured by Jenkins, Stockham, Crane or Nibco/Scott.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine piping system for compliance with requirements for installation tolerances and other conditions affecting performance of valves. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
- C. Operate valves from fully open to fully closed positions. Examine guides and seats made accessible by such operation.
- D. Examine threads on valve and mating pipe for form and cleanliness.
- E. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Check gasket material for proper size, material composition suitable for service, and freedom from defects and damage.
- F. Do not attempt to repair defective valves; replace with new valves.

3.2 INSTALLATION

- A. Install valves as indicated, according to manufacturer's written instructions.
- B. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate the general arrangement of piping, fittings, and specialties.
- C. Install valves with unions or flanges at each piece of equipment arranged to allow servicing, maintenance, and equipment removal without system shutdown.
- D. Locate valves for easy access and provide separate support where necessary.
- E. Install valves in horizontal piping with stem at or above the center of the pipe.
- F. Install valves in a position to allow full stem movement.
- G. For chain-wheel operators, extend chains to 60 inches above finished floor elevation.
- H. Installation of Check Valves: Install for proper direction of flow as follows:
 - 1. Swing Check Valves: Horizontal position with hinge pin level.
 - 2. Wafer Check Valves: Horizontal or vertical position, between flanges.

3.3 THREADED CONNECTIONS

- A. Note the internal length of threads in valve ends and proximity of valve internal seat or wall to determine how far pipe should be threaded into valve.
- B. Align threads at point of assembly.
- C. Apply appropriate tape or thread compound to the external pipe threads, except where dry seal threading is specified.
- D. Assemble joint, wrench tight. Wrench on valve shall be on the valve end into which the pipe is being threaded.

3.4 FLANGED CONNECTIONS

- A. Align flange surfaces parallel.

ISSUED VIA ADDENDUM #01

- B. Assemble joints by sequencing bolt tightening to make initial contact of flanges and gaskets as flat and parallel as possible. Use suitable lubricants on bolt threads. Tighten bolts gradually and uniformly with a torque wrench.
- C. For dead-end service, butterfly valves require flanges both upstream and downstream for proper shutoff and retention.

3.5 VALVE END SELECTION

- A. Select valves with the following ends or types of pipe/tube connections:
 - 1. Copper Tube Size, 2 Inches and Smaller: Threaded ends.
 - 2. Copper Tube Size 2-1/2 Inches and Larger: Flanged ends.

3.6 APPLICATION SCHEDULE

- A. General Application: Use gate, ball, and butterfly valves for shutoff duty; globe, ball, and butterfly for throttling duty. Refer to piping system Specification Sections for specific valve applications and arrangements.
- B. Domestic Water Systems: Use the following valve types:
 - 1. Ball Valves: Class 150, 600-psi CWP, with stem extension.
 - 1. Butterfly Valves: Nickel-plated ductile iron or elastomer-coated ductile iron disc; EPDM or Buna N sleeve and stem seals.
 - 2. Bronze Swing Check: Class 125, with rubber seat.
 - 3. Check Valves: Class 125, swing or wafer type as indicated.

3.7 DOMESTIC HOT WATER RETURN SYSTEM BALANCING

- A. This Contractor shall obtain the services of an independent firm to perform the hot water return system balancing. A Professional Engineer shall supervise all work and certify the balance report.
- B. The Plumbing Contractor shall:
 - 1. Install all domestic hot water recirculating balancing valves indicated to be installed under this contract in a manner that will leave them accessible and readily adjustable. All hose connections and dial face shall be turned down or horizontal for ease of attachments and reading.
 - 2. He shall pre-set all balancing valves installed by him as directed by the Engineer.
 - 3. Provide the balance firm with one copy of the plumbing plans indicating the exact location of all devices.
 - 4. Place the plumbing equipment into full operation, domestic hot water heaters and hot water recirculating pumps and continue operating the equipment during the balancing.
 - 5. Open all valves throughout the domestic hot water system.
 - 6. Aid the balancing firm in locating and adjusting all balancing valves.
- C. The balance firm shall adjust the flow through all balancing elements to within 5% of design conditions.
- D. The balance firm shall prepare and submit to the Engineer four copies of the test and balance report.
- E. The balance firm shall provide a one-year warranty during which time additional adjustments may be required.

3.8 ADJUSTING

ISSUED VIA ADDENDUM #01

- A. Adjust or replace packing after piping systems have been tested and put into service, but before final adjusting and balancing. Replace valves if leak persists. (Addendum #1)

END OF SECTION 22 11 00

ISSUED VIA ADDENDUM #01

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Plumbing Valves
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SECTION 23 09 23

BUILDING AUTOMATION SYSTEM FOR HVAC

PART 1 - GENERAL

PART 2 - PRODUCT

- 2.0 Section Includes
- 2.1 Summary
- 2.2 System Structure
- 2.3 Gateway Hardware
- 2.4 Gateway Operating System & Supporting Software
- 2.5 Gateway Communications
- 2.6 Device Interoperability and Profiling
- 2.7 Application Software
- 2.8 System Functionality
- 2.9 User Management
- 2.10 Security
- 2.11 Licensing and Renewal

2.1 SUMMARY

- A. The system (e.g., BMS, EMS) or systems shall be accessible via a cloud-based service that is capable of integration with the facility infrastructure system via one or more on-premises gateways.
- B. The service shall provide permission-based user access to data and controls by local or remote networks via the Internet and a web browser interface, also through a RESTful API.
- C. The service shall provide secure access for authorized users via PC or mobile devices.
- D. No additional software is required to be resident on a PC or mobile device, and without the requirement of a dedicated PC or work station.

2.2 SYSTEM STRUCTURE

This section describes the major components and structure of required system.

- A. System shall be comprised of a facility located gateway with Internet connection to hosted cloud-based servers for system management, secure access and data collection.
- B. The end-user shall have access to the system via any internet-accessible device, with no dedicated workstation required for access, nor special software installed on end-user devices.
- C. System access will be cloud based, where all users will view and control remote the remote system(s). Direction connection or VPN access will not be required to view/manage/control the local system via the Internet. (i.e., not on the premises).
- D. Cloud servers shall have secure access for managing user access, site and device profiles, data collection, RESTful API access and user interface.

- E. One or more gateway devices shall communicate with the facility system, and securely communicate to the cloud service and provide the required system accessibility.

2.3 GATEWAY HARDWARE

This section describes hardware components and operating environment requirements.

- A. Hardware shall be mountable using provided DIN rail and panel brackets.
- B. The hardware shall operate with provided power of 12-57VDC through a terminal block connector, or by Power-over-Ethernet (PoE) provided to an RJ-45 connector.
- C. The hardware shall provide its own heat dissipation without a fan in operational temperature ranges of 0C to +50C.
- D. Processor shall be at least a 64-bit dual core Intel running at 1.2 GHz.
- E. Non-volatile memory shall be at least 32 GB, integrated inside the chassis, using solid state memory. Random access memory shall be at least 2 GB.
- F. The hardware shall have at least two 10/100Base-T Ethernet RJ-45 ports.
- G. The hardware shall support 2.4 GHz WiFi (IEEE 802.11b/g/n) signaling.
- H. The hardware shall support one cellular SIM connection when operating. At least two types of cellular provider services shall be allowed, and must include AT&T and Verizon.
- I. When the gateway WLAN is configured as an AP, Internet access will be provided to its WiFi clients through one of the other interfaces. This shall be configurable by the user.
- J. At least one USB 2 and one USB 3 integrated interface shall be incorporated.
- K. At least one CANbus 2.0 integrated interface shall be incorporated.
- L. TPM and Secure Boot methods shall be used upon application or reset of power.

2.4 GATEWAY OPERATING SYSTEM & SUPPORTING SOFTWARE

This section describes the operating system and supporting software requirements. The operating system is comprised of kernel functionality and a hardware abstraction layer for all hardware incorporated in the gateway. The supporting software, or middleware layer, are components such as protocol stacks for the various interfaces, web services, updating services, etc. this is distinguished from the application software, which provides functionality specific to the product.

- A. Operating System shall be Ubuntu Core / Snappy, version 16 or higher.
- B. The operating system and supporting software shall be completely open source, based on modern programming languages (e.g., Javascript, Python). "Open source" means that source code is readily available, and "completely" means the software component is used in the system without modification by the product vendor.
- C. The operating system and support software shall be from approved vendor stores, openly available for the particular operating system used.
- D. The operating system and supporting software shall be containerized in individual snaps, as needed.
- E. The operating system shall periodically check vendor-approved snap stores for updates. Snaps will be updated automatically through a secure download.
- F. The operating system and all software shall be operable in a headless server fashion, i.e., without the need for a mouse or keyboard.

ISSUED VIA ADDENDUM #01

- G. At least three versions of the snaps and specific instance configurations shall be stored locally on the hardware. The latest snap will not be used until its digest is verified, per a vendor-supplied key from the store.
- H. Automated snap updates shall not require manual intervention; upon completion of an update, the gateway functionality will operate with the previous version of the instance configuration.
- I. Java libraries, if used, shall be incorporated within the snap or snaps using them. No snap shall be dependent upon any external or independent Java or other library update.
- J. The installer shall be able to enable or disable the automatic update features.

2.5 GATEWAY COMMUNICATIONS

This section describes the networking interfaces functionality and protocols.

- A. Communications between on-premises gateway(s) and cloud-based server(s) shall be outbound, initiated only by the gateway.
- B. Only well-known ports that are used in typical web services communications shall be used for all messaging.
- C. All communications with web services and/or clients shall utilize TLS protocol and encryption, for both the gateway and cloud services, and for gateway-cloud messaging.
- D. Gateways shall automatically and systematically initiate connections to services, and push facility data to the cloud for use in system management, UI's, energy reporting, analytics etc.
- E. Local network communications with facility infrastructure equipment, meters and devices shall be based on open control protocols of ModBus/TCP, ASHRAE/ANSI Standard 135 BACnet/IP (Annex J) and BACnet/8802-3 (Ethernet), and SNMP (versions 1, 2 or 3).
- F. The installer shall be able to disable/enable all interfaces and ports that are not being used.
- G. The WiFi interface shall be configurable as an Access Point or a Client. Security in either case shall be supported using WPA2-PSK. The user shall be able to configure the SSID and Passphrase.
- H. The WiFi interface shall be configured as an Access Point at the factory, with a published default SSID, passphrase and IPv4 address that is used by the installer for initial access to the gateway.
- I. When the WiFi interface is configured as an Access Point, the gateway shall route its Internet-accessible interface for WiFi clients, with the interface for such sharing being configurable by the installer.

2.6 DEVICE INTEROPERABILITY & PROFILING

This section describes connectivity to devices, such as controllers, meters, sensors and anything that communicate via the supported protocols listed above.

- A. Native connectivity to 3rd party systems conforming to the specified protocols shall be provided without additional software or drivers.
- B. Single-value points for analog, binary (digital) or multi-state inputs, outputs and programmatic variables within devices shall supported by allowing users accessibility to these points through the KMC Commander web UI and API.
- C. The Haystack tagging schema and protocol shall be supported in the KMC Commander system.
- D. For all device models that use any of the support networking protocols, each device and point which is accessible to the user through the KMC Commander system shall be tagged.

- E. Devices and points shall be accessible through system UI and API interfaces, in such a way so that all such devices and points are presented in a single level peer-to-peer fashion, regardless of the native protocol being used by the devices. This homogeneity in shall be accomplished for networks comprised of more than one kind of native protocol.
- F. The installer shall have the ability to use pre-configured device profiles, which define the points that will be accessible to the user for that device model, as well as trending configuration.
- G. The device profiles shall be available, during and after gateway installation for authorized project administrators and technicians.
- H. Authorized persons shall be allowed to create device profiles, which shall subsequently be made available to all other authorized persons in the same organization.
- I. Pre-defined point types shall be available for the installer, based on a unique set of Haystack tags that identifies the point type.

2.7 APPLICATION SOFTWARE

This section describes general requirements for the application software operating on the gateway and cloud service.

- A. The application software user experience will be the same for end users, whether they are using the cloud interface or the gateway interface, with a few exceptions if appropriate.
- B. The web interface for the application software must employ modern HTML5 code for end user development and customization of desired KPI's, UI components and/or dashboards.
- C. A web-based interface shall be provided, hosted on the gateway, that allows the installer to configure Ethernet and Cellular interfaces, enable and disable these interfaces, and modify or add/remove SSH accounts.

2.8 SYSTEM FUNCTIONALITY

All functions described must be executable by any internet-accessible device through cloud-hosted connection.

- A. Operating system must be resident on gateway(s) and include the following functions:
 - 1. Automated device discovery
 - 2. Data tagging
 - 3. Device profile management
 - 4. Gateway operating system must perform automated BAS device discovery for defined networks.
- B. Local gateway and servers must employ open data "tagging" of Project Haystack collection for use in dashboards, KPI's, analytics, or 3rd party extraction.
- C. System must utilize an open API for data extraction by 3rd party systems.
- D. Alarms
 - 1. Provide notification based on user defined priority
 - 2. Notification delivery by both text and email
 - 3. Notifications must be flexible and adjustable to notify single or multiple users
 - 4. Notification "name" must be customizable
 - 5. User interface to have alarm notification on landing with link to alarm console
 - 6. Alarms must be color coded for priority and acknowledgement
- E. Scheduling
 - 1. Add/Modify Start/Stop weekly scheduling

ISSUED VIA ADDENDUM #01

2. Create temporary schedules
 3. Define holiday schedules
- F. Histories, Graphs and Trends
1. All points must be capable of history and trending
 2. All points must be available, regardless of point location for graphing and trends
 3. Histories must be stored within the cloud database and stored in perpetuity
 4. Relevant point data must be stored in history from inception into perpetuity
 5. Graphs/Trends must be capable of accessing point data in history for display, regardless of postdate of graph/trend creation
 6. Graph/trend data must be downloadable in CSV format

2.9 USER MANAGEMENT

Various levels and types of users will be supported, as follows.

- A. Individual user accounts shall be managed either as members of a system integrator/installer account, or an end customer account.
- B. The system must provide administrative user management console.
- C. End Customer administrators shall have full control on individual end user permissions and accessibility for any user in their system.
- D. The system shall provide a means for administrators to grant user access rights based on permission to control or view-only data.
- E. The system shall provide a means for administrators to grant user access rights based for specific facility devices that are selectable by the administrator.
- F. The system shall provide a means for administrators to define alarm recipient and/or group recipients for alarm viewing and notification.
- G. User access levels are to include:
 1. Occupant
 2. Technician
 3. Administrator

2.10 SECURITY

Other security features required, and not already specified above, include:

- A. The gateway security policy shall be distinguished between local (LAN) and external (WAN) networks.
- B. IP address and IP subnet ranges for LAN and WAN policies shall be white-listed such that messages originating from addresses or ranges not white-listed shall be ignored by the gateway.
- C. TCP and UDP port and port ranges for LAN and WAN policies shall be white-listed such that ports or ranges not white-listed shall be ignored by the Gateway.
- D. White-lists for IP addresses and TCP or UDP ports shall be configurable by an administrator.
- E. System shall require *no* special network configuration or VPN requirements.
- F. Secure Shell connections between a local (LAN) host and a gateway shall be allowed, unless disabled by the administrator. A default username will be used, but the password will be unique for each gateway, set at the factory facilities. An administrator will be able to change the gateway 'su' credentials if desired.

2.11 LICENSING AND RENEWALS

- A. The platform is licensed on the basis of data points and cloud storage.
 - 1. Data points are tracked by the platform in bundles of 100, 250, 500, 1000, and 5000 points. A point constitutes any single point of information coming out of a connected device.
 - 2. Cloud storage is licensed in bundles of 5GB and 25GB of storage.
- B. Point Licensing includes software updates, feature enhancements, and security updates for 1 year.
- C. Cloud Storage Licensing includes the online storage of data being managed by the platform.
- D. Point and cloud licensing renewals are paid on an annual basis.
- E. If the cloud is not utilized, constituting an “on-premise only” installation, there will be no annual cloud licensing.
 - 1. On-premise only installations do still require a point licensing.
 - 2. On-premise only installations require additional, manual maintenance of the gateway software to maintain software updates, feature enhancements, and security updates.

2.12 MANUFACTURERS

- A. A central operator’s panel shall be provided by the Rooftop Unit manufacturer/vendor. All HVAC controllers connected to the network shall be accessed from one operator’s panel. (Addendum #1).

PART 3 – EXECUTION

END OF SECTION

ISSUED VIA ADDENDUM #01

SECTION 23 36 00 - AIR TERMINAL UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:

- 1. Shutoff single-duct air terminal units.

- B. Related sections include the following:

- 1. Section 23 05 49 "Mechanical, Plumbing and Fire Protection Systems; Supports, Bracing and Seismic Requirements".
 - 2. Section 23 00 50 "Basic Mechanical Materials and Methods".
 - 3. Section 23 05 48 "Mechanical Systems Vibration Control".

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated, include rated capacities, furnished specialties, sound-power ratings, and accessories.

- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.

- 1. Include a schedule showing unique model designation, room location, model number, size, and accessories furnished.
 - 2. Wiring Diagrams: Power, signal, and control wiring.

- C. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

- 1. Ceiling suspension assembly members.
 - 2. Method of attaching hangers to building structure.
 - 3. Size and location of initial access modules for acoustical tile.
 - 4. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.

- D. Operation and Maintenance Data: For air terminal units to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section "Operation and Maintenance Data," include the following:

- 1. Instructions for resetting minimum and maximum air volumes.
 - 2. Instructions for adjusting software set points.

- E. Field quality control reports.

ISSUED VIA ADDENDUM #01

1.4 COORDINATION

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

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

2.2 Seismic Performance: Terminal Unit(s) associated with RTU-03&03A shall withstand the effects of earthquake motions determined according to ASCE/SEI 7. (Addendum #1)

- A. The term "withstand" means "the system will remain in place without separation of any parts when subjected to the seismic forces specified and the system will be fully operational after the seismic event." (Addendum #1)
- B. Component Importance Factor: 1.5. (Addendum #1)

2.3 Seismic Performance: Terminal Unit(s) associated with RTU-01&02 shall withstand the effects of earthquake motions determined according to ASCE/SEI 7. (Addendum #1)

- A. The term "withstand" means "the system will remain in place without separation of any parts when subjected to the seismic forces specified". (Addendum #1)
- B. Component Importance Factor: 1.0. (Addendum #1)

2.4 SHUTOFF SINGLE-DUCT AIR TERMINAL UNITS

- A. Manufacturers:

- 1. Carnes Company.
 - 2. Johnson Controls.
 - 3. Krueger.
 - 4. Nailor Industries Inc.
 - 5. Price Industries.
 - 6. Titus.
 - 7. Trane
 - 8. Tuttle & Bailey.

- B. Configuration: Volume-damper assembly inside unit casing with control components located inside a protective metal shroud.

- C. Casing: 0.034-inch steel.

- 1. Casing Lining: 1/2-inch- thick, coated, fibrous-glass duct liner complying with

- ASTM C 1071; secured with adhesive. Cover liner with nonporous foil.
 2. Air Inlet: Round stub connection or S-slip and drive connections for duct attachment.
 3. Air Outlet: S-slip and drive connections.
 4. Access: Removable panels for access to dampers and other parts requiring service, adjustment, or maintenance; with airtight gasket.
- D. Regulator Assembly: Extruded-aluminum or galvanized-steel components; key damper blades onto shaft with nylon-fitted pivot points located inside unit casing.
1. Factory-calibrated and field-adjustable assembly with shaft extension for connection to externally mounted control actuator.
- E. Volume Damper: Galvanized steel with peripheral gasket and self-lubricating bearings.
1. Maximum Damper Leakage: ARI 880 rated, 3 percent of nominal airflow at 3-inch wg inlet static pressure.
 2. Damper Position: Normally open.
- F. Electric Heating Coil: Slip-in-type, open-coil design with integral control box factory wired and installed. Include the following features:
1. Primary and secondary overtemperature protection.
 2. Nickel chrome 80/20 heating elements.
 3. Airflow switch.
 4. Noninterlocking disconnect switch.
 5. Fuses (for coils more than 48 A).
 6. Mercury contactors.
 7. Pneumatic-electric switches and relays.
 8. SCR controls.
- G. DDC Controls: Bidirectional damper operators and microprocessor-based controller and room sensor shall be compatible with temperature controls specified in Division 23 Section "HVAC Instrumentation and Controls" and shall have the following features:
1. Damper Actuator: 24 V, powered closed, powered open.
 2. Terminal Unit Controller: Pressure-independent, variable-air-volume controller with electronic airflow transducer with multipoint velocity sensor at air inlet, factory calibrated to minimum and maximum air volumes, and having the following features:
 - a. Proportional, plus integral control of room temperature.
 - b. Time-proportional reheat-coil control.
 - c. Occupied and unoccupied operating mode.
 - d. Remote reset of airflow or temperature set points.
 - e. Adjusting and monitoring with portable terminal.
 - f. Communication with temperature-control system specified in Division 23 Section "HVAC Instrumentation and Controls."
 3. Room Sensor:
 - a. Type 1 - Wall mounting, with slider type temperature set-point adjustment and access for

- connection of portable operator terminal. No display screen. Temperature setpoint and adjustment range shall be set at the centralized building controller. Sensor shall be provided with a occupancy override switch to allow for occupant override of space occupancy setting. Length of override shall be adjustable via the centralized building controller.
- b. Type 2 – Wall mounting, with temperature set-point adjustment and access for connection of portable operator terminal. LCD display screen showing current space temperature and space temperature setpoint as well as occupied/unoccupied status. Sensor shall be provided with a occupancy override switch to allow for occupant override of space occupancy setting. Length of override shall be adjustable via the centralized building controller.

H. Control Sequence:

1. Suitable for operation with duct pressures between 0.25- and 3.0-inch wg inlet static pressure.
2. Factory-mounted and -piped, 5-micron filter; velocity-resetting, adjustable, high-limit control; and amplifying relay.
3. System-powered, wall-mounting thermostat.

2.5 SOURCE QUALITY CONTROL

- A. Identification: Label each air terminal unit with plan number, nominal airflow, maximum and minimum factory-set airflows, coil type, and ARI certification seal.
- B. Verification of Performance: Rate air terminal units according to ARI 880.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install air terminal units according to NFPA 90A, "Standard for the Installation of Air Conditioning and Ventilating Systems."
- B. Install air terminal units level and plumb. Maintain sufficient clearance for normal service and maintenance.
- C. Provide tag on ceiling grid or access panel below unit indicating air terminal unit plan number. Provide tag on space sensor with same nomenclature.

3.2 CONNECTIONS

- A. Connect ducts to air terminal units according to Division 23 Section "Metal Ducts."
- B. Ground units with electric heating coils according to Division 26 Section "Grounding and Bonding."
- C. Connect wiring according to Division 26 Section "Conductors and Cables."
- D. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.3 FIELD QUALITY CONTROL

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

3.4 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.
 - 1. Complete installation and startup checks according to manufacturer's written instructions and do the following:
 - a. Verify that inlet duct connections are as recommended by air terminal unit manufacturer to achieve proper performance.
 - b. Verify that controls and control enclosure are accessible.
 - c. Verify that control connections are complete.
 - d. Verify that nameplate and identification tag are visible.
 - e. Verify that controls respond to inputs as specified.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain air terminal units. Refer to Division 1 Section Demonstration and Training."

ISSUED VIA ADDENDUM #01

END OF SECTION 23 36 00

SECTION 23 74 16
PACKAGED ROOFTOP UNITS

PART 1 - GENERAL

1. SECTION INCLUDES
 - A. Packaged Rooftop air conditioners
2. REFERENCES
 - A. AFBMA 9 - Load Ratings and Fatigue Life for Ball Bearings.
 - B. AMCA 99—Standards Handbook
 - C. AMCA 210—Laboratory Methods of Testing Fans for Rating Purposes
 - D. AMCA 500—Test Methods for Louver, Dampers, and Shutters.
 - E. AHRI 340/360 - Unitary Large Equipment
 - F. NEMA MG1—Motors and Generators
 - G. National Electrical Code.
 - H. NFPA 70—National Fire Protection Agency.
 - I. SMACNA—HVAC Duct Construction Standards—Metal and Flexible.
 - J. UL 900—Test Performance of Air Filter Units.
3. SUBMITTALS
 - A. Shop Drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, electrical characteristics and connection requirements.
 - B. Product Data:
 1. Provide literature that indicates dimensions, weights, capacities, ratings, fan performance, and electrical characteristics and connection requirements.
 2. Provide computer generated fan curves with specified operating point clearly plotted.
 3. Manufacturer's Installation Instructions.
4. OPERATION AND MAINTENANCE DATA
 - A. Maintenance Data: Provide instructions for installation, maintenance and service
5. QUALIFICATIONS
 - A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience, who issues complete catalog data on total product.
 - B. Startup must be done by trained personnel experienced with rooftop equipment.
 - C. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters and remote controls are in place, bearings lubricated, and manufacturers' installation instructions have been followed.
6. DELIVERY, STORAGE, AND HANDLING
 - A. Deliver, store, protect and handle products to site.
 - B. Accept products on site and inspect for damage.
 - C. Store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

PART 2 - PRODUCTS

7. MANUFACTURERS

ISSUED VIA ADDENDUM #01

A. Products shall be provided by the following manufacturers:

1. Aeon
2. Daikin
3. Trane
4. York

8. GENERAL DESCRIPTION

A. Unit performance and electrical characteristics shall be per the job schedule.

B. Configuration: Fabricate as detailed on prints and drawings:

1. Return plenum / economizer section
2. Filter section
3. Cooling coil section
4. Supply fan section
5. Gas heating section.
6. Condensing unit section

C. The complete unit shall be cETLus listed.

D. The unit shall be ASHRAE 90.1-2016 compliant and labeled.

E. Each unit shall be specifically designed for outdoor rooftop application and include a weatherproof cabinet. Each unit shall be completely factory assembled and shipped in one piece. Packaged units shall be shipped fully charged with R-410 Refrigerant and oil.

F. The unit shall undergo a complete factory run test prior to shipment. The factory test shall include a refrigeration circuit run test, a unit control system operations checkout, a unit refrigerant leak test and a final unit inspection.

G. All units shall have decals and tags to indicate caution areas and aid unit service. Unit nameplates shall be fixed to the main control panel door. Electrical wiring diagrams shall be attached to the control panels. Installation, operating and maintenance bulletins and start-up forms shall be supplied with each unit.

H. Performance: All scheduled EER, IEER, capacities and face areas are minimum accepted values. All scheduled amps, kW, and HP are maximum accepted values that allow scheduled capacity to be met.

I. Warranty: The manufacturer shall provide 12-month parts only warranty. Defective parts shall be repaired or replaced during the warranty period at no charge. The warranty period shall commence at startup or six months after shipment, whichever occurs first.

9. SEISMIC PERFORMANCE (Addendum #1)

A. Roof Top Unit system(s) RTU-03&03A shall withstand the effects of earthquake motions determined according to ASCE/SEI 7. (Addendum #1)

1. The term "withstand" means "the system will remain in place without separation of any parts when subjected to the seismic forces specified and the system will be fully operational after the seismic event." (Addendum #1)

- i. Component Importance Factor: 1.5. (Addendum #1)
- ii. Component Amplification Factor: 2.5 (Addendum #1)
- iii. Component Response Modification Factor: 6.0 (Addendum #1)

2. The term "withstand" means "the system will remain in place without separation of any parts when subjected to the seismic forces specified". (Addendum #1)

- i. Component Importance Factor: 1.0. (Addendum #1)

- ii. Component Amplification Factor: 2.5 (Addendum #1)
- iii. Component Response Modification Factor: 6.0 (Addendum #1)

10. CABINET, CASING, AND FRAME

- A. Panel construction shall be double-wall construction for all panels. All floor panels shall have a solid galvanized steel inner liner on the air stream side of the unit to protect insulation during service and maintenance. Insulation shall be a minimum of 1" thick with an R-value of 7.0, and shall be 2 part injected foam. Panel design shall include no exposed insulation edges. Unit cabinet shall be designed to operate at total static pressures up to 5.0 inches w.g.
- B. Panel construction shall be double-wall construction for all panels. All floor panels shall have a solid galvanized steel inner liner on the air stream side of the unit to protect insulation during service and maintenance. Insulation shall be a minimum of 2" thick with an R-value of 13.0, and shall be 2 part injected foam. Panel design shall include no exposed insulation edges. Unit cabinet shall be designed to operate at total static pressures up to 5.0 inches w.g.
- C. Exterior surfaces shall be constructed of painted galvanized steel, for aesthetics and long-term durability. Paint finish will include a base primer with a high-quality polyester resin topcoat. Finished, unabraded panel surfaces shall be exposed to an ASTM B117 salt spray environment and exhibit no visible red rust at a minimum of 3,000 hours exposure. Finished, abraded surfaces shall be tested per ASTM D1654, having a mean scribe creepage not exceeding 1/16" at 1,000 hours minimum exposure to an ASTM B117 salt spray environment. Measurements of results shall be quantified using ASTM D1654 in conjunction with ASTM D610 and ASTM D714 to evaluate blister and rust ratings.
- D. Service doors shall be provided on the fan section, filter section, control panel section, and heating vestibule in order to provide user access to unit components. All service access doors shall be mounted on multiple, stainless steel hinges and shall be secured by a latch system. Removable service panels secured by multiple mechanical fasteners are not acceptable.
- E. The unit base shall overhang the roof curb for positive water runoff and shall seat on the roof curb gasket to provide a positive, weathertight seal. Lifting brackets shall be provided on the unit base to accept cable or chain hooks for rigging the equipment.

11. OUTDOOR/RETURN AIR SECTION

- A. Unit shall be provided with an outdoor air economizer section. The economizer section shall include outdoor, return, and exhaust air dampers. The economizer operation shall be fully integral to the mechanical cooling and allow up to 100% of mechanical cooling if needed to maintain the cooling discharge air temperature. The outdoor air hood shall be factory installed and constructed from galvanized steel finished with the same durable paint finish as the main unit. The hood shall include moisture eliminator filters to drain water away from the entering air stream. The outside and return air dampers shall be sized to handle 100% of the supply air volume. The dampers shall be parallel blade design. Damper blades shall be gasketed with side seals to provide an air leakage rate of 1.5 cfm / square foot of damper area at 1" differential pressure in according with testing defined in AMCA 500. A barometric exhaust damper shall be provided to exhaust air out of the back of the unit. A bird screen shall be provided to prevent infiltration of rain and foreign materials. Exhaust damper blades shall be lined with vinyl gasketing on contact edges. Control of the dampers shall be by a factory installed direct coupled actuator. Damper actuator shall be of the modulating, spring return type. A comparative enthalpy control shall be provided to sense and compare

enthalpy in both the outdoor and return air streams to determine if outdoor air is suitable for "free" cooling. If outdoor air is suitable for "free" cooling, the outdoor air dampers shall modulate in response to the unit's temperature control system.

- B. Provide a field installed Duct/Space mounted CO2 sensor. Outside air damper position will modulate between the Demand Control Ventilation Limit (minimum position setpoint) and the Ventilation Limit (maximum non-economizer position setpoint) to satisfy the space requirements. Damper position will be controlled to the greater of the two command signals, either minimum outside air flow or space IAQ (CO2).

12. EXHAUST FAN

- A. Exhaust fan shall be a single width, single inlet (SWSI) airfoil centrifugal fan. The fan wheel shall be Class II construction with aluminum fan blades that are continuously welded to the hub plate and end rim. The exhaust fan shall be a direct drive fan mounted to the motor shaft. Belts and sheaves are not acceptable due to the additional maintenance.
- B. The fan motor shall be a totally enclosed EC motor that is speed controlled by the rooftop unit controller. The motor shall include thermal overload protection and protect the motor in the case of excessive motor temperatures. The motor shall have phase failure protection and prevent the motor from operation in the event of a loss of phase. Motors shall be premium efficiency.
- C. The unit DDC controller shall provide building static pressure control. The unit controller shall provide proportional control of the exhaust fans from 25% to 100% of the supply air fan designed airflow to maintain the adjustable building pressure setpoint. The field shall mount the required sensing tubing from the building to the factory mounted building static pressure sensor.

13. FILTERS

- A. Unit shall be provided with a draw-through filter section. The filter rack shall be designed to accept a 2" prefilter and a 4" final filter. The unit design shall have a hinged access door for the filter section. The manufacturer shall ship the rooftop unit with 2" MERV 8 construction filters. The contractor shall furnish and install, at building occupancy, the final set of filters per the contract documents.

14. COOLING COIL

- A. The indoor coil section shall be installed in a draw through configuration, upstream of the supply air fan. The coil section shall be complete with a factory piped cooling coil and an ASHRAE 62.1 compliant double sloped drain pan.
- B. The direct expansion (DX) cooling coils shall be fabricated of seamless high efficiency copper tubing that is mechanically expanded into high efficiency aluminum plate fins. Coils shall be a multi-row, staggered tube design with a minimum of 3 rows. All cooling coils shall have an interlaced coil circuiting that keeps the full coil face active at all load conditions. All coils shall be factory leak tested with high pressure air under water.
- C. The cooling coil shall have an electronic controlled expansion valve. The unit controller shall control the expansion valve to maintain liquid subcooling and the superheat of the refrigerant system.
- D. The refrigerant suction lines shall be fully insulated from the expansion valve to the compressors.
- E. The drain pan shall be stainless steel and positively sloped. The slope of the drain pan shall be in two directions and comply with ASHRAE Standard 62.1. The drain pan shall have a minimum slope of 1/8" per foot to provide positive draining. The drain pan shall extend

beyond the leaving side of the coil. The drain pan shall have a threaded drain connection extending through the unit base.

15. SUPPLY FAN

- A. Supply fan shall be a single width, single inlet (SWSI) airfoil centrifugal fan. The fan wheel shall be Class II construction with fan blades that are continuously welded to the hub plate and end rim. The supply fan shall be a direct drive fan mounted to the motor shaft. Belts and sheaves are not acceptable due to the additional maintenance.
- B. All fan assemblies shall employ solid steel fan shafts. Heavy-duty pillow block type, self-aligning, grease lubricated ball bearings shall be used. Bearings shall be sized to provide a L-50 life at 250,000 hours. The entire fan assembly shall be isolated from the fan bulkhead with a flexible collar and mounted on 1" spring isolators.
- C. All fan assemblies shall be statically and dynamically balanced at the factory, including a final trim balance, prior to shipment.
- D. Supply fan and motor assembly combinations larger than 8 hp or 22" diameter shall be internally isolated on 1" deflection, spring isolators and include removable shipping tie downs.
- E. The fan motor shall be a totally enclosed EC motor that is speed controlled by the rooftop unit controller. The motor shall include thermal overload protection and protect the motor in the case of excessive motor temperatures. The motor shall have phase failure protection and prevent the motor from operation in the event of a loss of phase. Motors shall be premium efficiency.
- F. The motor shall be T Frame and open drip proof. Overload protection and speed control is provided by the factory installed VFD and rooftop unit controller. The motor shall have phase failure protection and prevent the motor from operation in the event of a loss of phase. Motors shall be premium efficiency.
- G. The supply fan shall be capable of airflow modulation from 30% to 100% of the scheduled designed airflow. The fan shall not operate in a state of surge at any point within the modulation range.

16. VARIABLE AIR VOLUME CONTROL

- A. The unit controller shall proportional control the ECM motors on the supply fan based on space temperature. The unit controller shall increase/decrease the speed of the supply fan in order to maintain the space temperature within its setpoint and deadband. The unit controller shall provide discharge air temperature control with the compressor modulation.
- B. An electronic variable frequency drive shall be provided for the supply air fan. Each drive shall be factory installed out of the air stream in a conditioned cabinet. Drives shall meet UL Standard 95-5V. The completed unit assembly shall be listed by a recognized safety agency, such as ETL. Drives are to be accessible through a hinged door assembly. Mounting arrangements that expose drives to high temperature unfiltered ambient air are not acceptable.
- C. The unit manufacturer shall install all power and control wiring.
- D. The supply air fan drive output shall be controlled by the factory installed main unit control system and drive status and operating speed shall be monitored and displayed at the main unit control panel.

17. HEATING SECTION

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- A. The rooftop unit shall include a natural gas heating section. The gas furnace design shall be one natural gas fired heating module factory installed downstream of the supply air fan in the heat section. The heating module shall be a tubular design with in-shot gas burners.
- B. The module shall be complete with furnace controller and control valve capable of 10:1 modulating operation.
- C. Each module shall have two stages of heating control.
- D. Each module shall have four stages of heating control.
- E. The heat exchanger tubes shall be constructed of stainless steel.
- F. The module shall have an induced draft fan that will maintain a negative pressure in the heat exchanger tubes for the removal of the flue gases.
- G. Each burner module shall have two flame roll-out safety protection switches and a high temperature limit switch that will shut the gas valve off upon detection of improper burner manifold operation. The induced draft fan shall have an airflow safety switch that will prevent the heating module from turning on in the event of no airflow in the flue chamber.
- H. The factory-installed DDC unit control system shall control the gas heat module. Field installed heating modules shall require a field ETL certification. The manufacturer's rooftop unit ETL certification shall cover the complete unit including the gas heating modules.

18. **CONDENSING SECTION**

- A. Outdoor coils shall be cast aluminum, micro-channel coils. Plate fins shall be protected and brazed between adjoining flat tubes such that they shall not extend outside the tubes. A sub-cooling coil shall be an integral part of the main outdoor air coil. Each outdoor air coil shall be factory leak tested with high-pressure air under water.
- B. Fan motors shall be an ECM type motor for proportional control. The unit controller shall proportionally control the speed of the condenser fan motors to maintain the head pressure of the refrigerant circuit from ambient condition of 25~120°F. Mechanical cooling shall be provided to 25° F. The motor shall include thermal overload protection and protect the motor in the case of excessive motor temperatures. The motor shall have phase failure protection and prevent the motor from operation in the event of a loss of phase.
- C. Fan motors shall be an ECM type motor for proportional control. The unit controller shall proportionally control the speed of the condenser fan motors to maintain the head pressure of the refrigerant circuit from ambient condition of 0~120°F. Mechanical cooling shall be provided to 0° F. The motor shall include thermal overload protection and protect the motor in the case of excessive motor temperatures. The motor shall have phase failure protection and prevent the motor from operation in the event of a loss of phase.
- D. The condenser fan shall be low noise blade design. Fan blade design shall be a dynamic profile for low tip speed. Fan blade shall be of a composite materia
- E. The unit shall have scroll compressors. One of the compressors shall be an inverter compressor providing proportional control. The unit controller shall control the speed of the compressor to maintain the discharge air temperature. The inverter compressor shall have a separate oil pump and an oil separator for each compressor that routes oil back to the compressor instead of through the discharge line.
- F. The unit shall have scroll compressors. One of the compressors shall be an inverter compressor providing proportional control. The unit controller shall control the speed of the compressor to maintain the discharge air temperature. The inverter compressor shall have a separate oil pump and low oil safety protection.
- G. Pressure transducers shall be provided for the suction pressure and head pressure. Temperature sensor shall be provided for the suction temperature and the refrigerant

discharge temperature of the compressors. All of the above devices shall be an input to the unit controller and the values be displayed at the unit controller.

- H. Refrigerant circuit shall have a bypass valve between the suction and discharge refrigerant lines for low head pressure compressor starting and increased compressor reliability. When there is a call for mechanical cooling the bypass valve shall open to equalizing the suction and discharge pressures. When pressures are equalized the bypass valve shall close and the compressor shall be allowed to start.
- I. Each circuit shall be dehydrated and factory charged with R-410A Refrigerant and oil.

19. ELECTRICAL

- A. Unit wiring shall comply with NEC requirements and with all applicable UL standards. All electrical components shall be UL recognized where applicable. All wiring and electrical components provided with the unit shall be number and color-coded and labeled according to the electrical diagram provided for easy identification. The unit shall be provided with a factory wired weatherproof control panel. Unit shall have a single point power terminal block for main power connection. A terminal board shall be provided for low voltage control wiring. Branch short circuit protection, 115-volt control circuit transformer and fuse, system switches, and a high temperature sensor shall also be provided with the unit. Each compressor and condenser fan motor shall be furnished with contactors and inherent thermal overload protection. Supply fan motors shall have contactors and external overload protection. Knockouts shall be provided in the bottom of the main control panels for field wiring entrance.
- B. A single non-fused disconnect switch shall be provided for disconnecting electrical power at the unit. Disconnect switches shall be mounted internally to the control panel and operated by an externally mounted handle.

20. CONTROLS

- A. Provide a complete integrated microprocessor based Direct Digital Control (DDC) system to control all unit functions including temperature control, scheduling, monitoring, unit safety protection, including compressor minimum run and minimum off times, and diagnostics. This system shall consist of all required temperature sensors, pressure sensors, controller and keypad/display operator interface. All MCBs and sensors shall be factory mounted, wired and tested.
- B. The stand-alone DDC controllers shall not be dependent on communications with any on-site or remote PC or master control panel for proper unit operation. The microprocessor shall maintain existing set points and operate stand alone if the unit loses either direct connect or network communications. The microprocessor memory shall be protected from voltage fluctuations as well as any extended power failures. All factory and user set schedules and control points shall be maintained in nonvolatile memory. No settings shall be lost, even during extended power shutdowns.
- C. The DDC control system shall permit starting and stopping of the unit locally or remotely. The control system shall be capable of providing a remote alarm indication. The unit control system shall provide for outside air damper actuation, emergency shutdown, remote heat enable/disable, remote cool enable/disable, heat indication, cool indication, and fan operation.
- D. All digital inputs and outputs shall be protected against damage from transients or incorrect voltages. All field wiring shall be terminated at a separate, clearly marked terminal strip.
- E. The DDC controller shall have a built-in time schedule. The schedule shall be programmable from the unit keypad interface. The schedule shall be maintained in nonvolatile memory to

insure that it is not lost during a power failure. There shall be one start/stop per day and a separate holiday schedule. The controller shall accept up to sixteen holidays each with up to a 5-day duration. Each unit shall also have the ability to accept a time schedule via BAS network communications.

F. The keypad interface shall allow convenient navigation and access to all control functions.

The unit keypad/display character format shall be 4 lines x 20 characters. All control settings shall be password protected against unauthorized changes. For ease of service, the display format shall be English language readout. Coded formats with look-up tables will not be accepted. The user interaction with the display shall provide the following information as a minimum:

1. Return air temperature.
2. Discharge air temperature.
3. Outdoor air temperature.
4. Space air temperature.
5. Outdoor enthalpy, high/low.
6. Compressor suction temperature and pressure
7. Compressor head pressure and temperature
8. Expansion valve position
9. Condenser fan speed
10. Inverter compressor speed
11. Dirty filter indication.
12. Airflow verification.
13. Cooling status.
14. Control temperature (Changeover).
15. VAV box output status.
16. Cooling status/capacity.
17. Unit status.
18. All time schedules.
19. Active alarms with time and date.
20. Previous alarms with time and date.
21. Optimal start
22. Supply fan and exhaust fan speed.
23. System operating hours.

- a. Fan
- b. Exhaust fan
- c. Cooling
- d. Individual compressor
- e. Heating
- f. Economizer
- g. Tenant override

G. The user interaction with the keypad shall provide the following:

1. Controls mode
 - a. Off manual
 - b. Auto
 - c. Heat/Cool
 - d. Cool only
 - e. Heat only
 - f. Fan only
2. Occupancy mode

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- a. Auto
- b. Occupied
- c. Unoccupied
- d. Tenant override
- 3. Unit operation changeover control
 - a. Return air temperature
 - b. Space temperature
 - c. Network signal
 - 4. Cooling and heating change-over temperature with deadband
 - 5. Cooling discharge air temperature (DAT)
 - 6. Supply reset options
- a. Return air temperature
- b. Outdoor air temperature
- c. Space temperature
- d. Airflow (VAV)
- e. Network signal
- f. External (0-10 vdc)
- g. External (0-20 mA)
- 7. Temperature alarm limits
 - a. High supply air temperature
 - b. Low supply air temperature
 - c. High return air temperature
 - 8. Lockout control for compressors.
 - 9. Compressor interstage timers
 - 10. Night setback and setup space temperature.
 - 11. Building static pressure.
 - 12. Economizer changeover
- a. Enthalpy
- b. Drybulb temperature
 - 13. Currently time and date
 - 14. Tenant override time
 - 15. Occupied/unoccupied time schedule
 - 16. One event schedule
 - 17. Holiday dates and duration
 - 18. Adjustable set points
 - 19. Service mode
- a. Timers normal (all time delays normal)
- b. Timers fast (all time delays 20 sec)
- H. If the unit is to be programmed with a night setback or setup function, an optional space sensor shall be provided. Space sensors shall be available to support field selectable features. Sensor options shall include:
 - 1. Zone sensor with tenant override switch
 - 2. Zone sensor with tenant override switch plus heating and cooling set point adjustment. (Space Comfort Control systems only)
- I. To increase the efficiency of the cooling system the DDC controller shall include a discharge air temperature reset program for part load operating conditions. The discharge air temperature shall be controlled between a minimum and a maximum discharge air temperature (DAT) based on one of the following inputs:

1. Airflow
2. Outside air temperature
3. Space temperature
4. Return air temperature
5. External signal of 1-5 vdc
6. External signal of 0-20 mA
7. Network signal

21. ROOF CURB

- A. A prefabricated heavy gauge galvanized steel, mounting curb shall be provided for field assembly on the roof decking prior to unit shipment. The roof curb shall be a full perimeter type with complete perimeter support of the air handling section and condensing section. The curb shall be a minimum of 14" high and include a nominal 2" x 4" wood nailing strip. Gasket shall be provided for field mounting between the unit base and roof curb.

PART 3 – EXECUTION

1.1 GENERAL

- A. Contractor shall provide all material, equipment, labor, services, and supplies, required to execute all work shown on the mechanical drawings; described in these specifications; or made necessary by the work shown on the drawings and/or described in these specifications.
- B. Contractor shall schedule all work and furnish the required materials in such a manner that the work may progress from start to finish in an expeditious and efficient manner without undue interruption. This Contractor shall also schedule his work to coordinate with the construction staging for this project.
- C. Contractor shall hire the proper trades to accomplish the work described on the drawings or in the specifications.

1.2 COORDINATION OF TRADES

- A. Prior to the fabrication or installation of any materials, Contractor shall review the drawings indicating work to be performed by each trade. If conflicts occur, they shall be brought to the attention of the Engineer for resolution.
- B. If Contractor installs the work without coordinating with the other trades, then, if requested by the Owner, Architect, or Engineer, Contractor shall remove and rework some installed work to resolve a conflict, and such change shall be done at no change in contract price.
- C. The Contractor supplying the equipment shall furnish all motors and components which are part of the equipment.
- D. Control wiring is defined as that wiring which conducts electrical energy at a voltage of less than 100 volts. Interlock wiring is defined as that wiring which performs a control function, but at a voltage of 100 volts or greater. All other wiring shall be considered power wiring.
- E. The Electrical Contractor shall provide power wiring to, and including connection to the equipment. Unless specifically noted otherwise, all interlock wiring shall be provided by the Electrical Contractor. Unless noted otherwise, the control wiring shall be provided by the Contractor furnishing the controlled equipment.
- F. Unless noted otherwise, the Electrical Contractor shall provide all starters, disconnects, switches, push-button stations, etc., except those which are furnished with the equipment as a part of a factory-

assembled package. Heater elements for overload relays on magnetic motor starters (except the starters factory pre-wired with equipment) shall be sized, furnished and installed by the Electrical Contractor. Magnetic motor starters for mechanical equipment (except starters factory pre-wired with equipment such as chillers and packaged air conditioners) shall be provided by the Electrical Contractor. Magnetic motor starters will be provided with:

1. Auxiliary contacts as required by the interlocks defined on the drawings or in the specifications.
 2. Control Power Transformer - 120 volt secondary, minimum 40 Volt Amps.
- G. Each Contractor furnishing motor-operated equipment shall furnish a list of motor characteristics to the Electrical Contractor so that properly sized heater elements may be provided. The list shall include equipment identification by name and by number, the full load current, locked rotor current, voltage rating, and suggested service factor to compensate for operating duty cycle and ambient temperatures.
- H. Unless specifically noted otherwise, pilot controllers (pressure switches, etc.) shall be furnished and mounted by the Contractor furnishing the controlled equipment.
- I. Unless specifically noted otherwise, control dampers shall be furnished by the Temperature Control Contractor and installed by the Mechanical Contractor.
- J. Electrical Work For Mechanical Equipment: Electrical Contractor shall wire all mechanical equipment furnished by various contractors in accordance with the following general provisions:
1. Power wiring from panel to motor controllers, relays, etc., and from controller to motor terminals per equipment manufacturer's wiring diagram.
 2. Receive, unload, set and align all separately shipped motors. Adjust and align drive and adjust belt tension.
 3. Field lubricate all motors prior to initial operation of same.
 4. Install individual motor starters specifically called for to be furnished by other Contractors when not a factory pre-wired component.
- K. HVAC Contractor shall provide the following:
1. All motors, disconnect switches or control devices specifically called for.
 2. Automatic control and interlock wiring diagrams as called for in the specifications.
 3. Complete and accurate wiring diagrams to Electrical Contractor for all equipment requiring electrical power wiring including motor terminal connection diagrams.
 4. Adjustable motor bases and all bolts and nuts required for installation of base and motor.
 5. Supervision of Electrical Contractor in lubrication of motors to eliminate possibility of motor starting or operating without proper lubrication and control systems.

1.3 PROTECTION OF EQUIPMENT AND WORK

- A. This Contractor shall, at all times, protect and preserve all materials, supplies, equipment, piping, etc., from damage due to weather, corrosion, dirt, vandalism, theft, etc., and shall further provide all enclosures or special protection as indicated by circumstances.
- B. Should any of the materials, equipment, etc., be damaged as a result of his negligence, then this Contractor shall be held responsible for all such damage and costs incurred for repair or replacement.

1.4 CONSTRUCTION STAGING

- A. See schedule in Division 0 and Division 1. This Contractor shall cooperate with and coordinate to plan and schedule the work to satisfy the schedule.

1.5 CLEANING AND CLEANUP

- A. Upon completion of this work, the Contractor shall clean all pipe, ductwork, fixtures, and equipment. Contractor shall leave all work in a finished, clean, and satisfactory working condition.
- B. Each contractor shall be responsible for his own cleanup to a central location designated by the Construction Manager. Contractor shall periodically remove all rubbish, crating, unused material, outfall, and any other debris created by him during the course of the work.

1.6 OWNER TRAINING

- A. Provide Owner training where indicated in the specifications.

1.7 FILTER CHANGE OUT SCHEDULE

- A. Provide a list and quantity of all filters provided with the equipment on the project. Indicate a recommended schedule for Owner to replace the filters.

END OF SECTION

ISSUED VIA ADDENDUM #01

LIFE SAFETY PLAN LEGEND	
SYMBOL	DESCRIPTION
	DOOR EGRESS TAG # OF OCCUPANTS ALLOWED TO EGRESS THRU OPENING PER CODE WIDTH REQUIRED WIDTH PROVIDED
	FIRE EXTINGUISHER ON WALL MOUNTED BRACKET.
	FIRE EXTINGUISHER IN CABINET.
	EXIT SIGN - SEE ELECTRICAL DRAWINGS.
	EXIT SIGN WITH EMERGENCY LIGHTS - SEE ELECTRICAL DRAWINGS.
	EMERGENCY LIGHT - SEE ELECTRICAL DRAWINGS.
	EGRESS PATH DISTANCE OF PATH
EMERGENCY LIGHTS ARE LOCATED OVER ALL EXTERIOR EXIT DOORS - SEE ELEC. DRAWINGS.	

2015 IECC TABLE		
OPAQUE ASSEMBLIES - ZONE 4	REQUIRED	PROVIDED
ROOF - INSUL. ENTIR. ABOVE DECK	R30 CI	R30 CI
ROOF - ATTIC AND OTHER	R38	R38
WALLS - METAL FRAMED	R13 + R7.5 CI	R13 + R7.5 CI
BELOW GRADE WALLS	R7.5 CI	R7.5 CI
MASS WALLS	R9.5 CI	R9.5 CI
UNHEATED SLABS	R10 FOR 2" BELOW	R10 FOR 2" BELOW
OPAQUE DOORS	U-0.61 MAX	U-0.61 MAX
FENESTRATION ASSEMBLIES - ZONE 4	REQUIRED	PROVIDED
CURTAINWALL / STOREFRONT	U-0.38 MAX	U-0.38 MAX
ENTRANCE DOOR	U-0.77 MAX	U-0.77 MAX
SHGC	0.40 MAX	0.40 MAX

CODE INFORMATION

APPLICABLE CODES

- 2015 INTERNATIONAL BUILDING CODE
- 2015 INTERNATIONAL PLUMBING CODE
- 2015 INTERNATIONAL MECHANICAL CODE
- 2015 NATIONAL ELECTRICAL CODE
- 2015 INTERNATIONAL FIRE CODE
- 2015 INTERNATIONAL FUEL GAS CODE
- 2015 INTERNATIONAL PROPERTY MAINTENANCE CODE
- 2015 INTERNATIONAL ENERGY CONSERVATION CODE
- 2015 NFPA (SPRINKLERS)
- 2015 ICC/ANSI A117.1 ACCESSIBILITY CODE

MEANS OF EGRESS

OCCUPANT LOADS: (IBC 2015 TABLE 1004.1.2)

100 SF PER OCCUPANT (B)

11,904 SF (NEW) / 100 = 120 'B' OCCUPANTS

7 NET SF PER OCCUPANT (ASSEMBLY (CONCENTRATION - CHAIRS ONLY - NOT FIXED))

1,800 SF (NEW) / 7 = 256 'A' OCCUPANTS

EXIT TRAVEL DISTANCE: (IBC 2015 TABLE 1016.1)

(B) 300 FT MAX (WITH SPRINKLER SYSTEM)

CORRIDOR RATING: (IBC 2015 TABLE 1018.1)

NOT REQUIRED WITH A (NFPA 13) SPRINKLER SYSTEM

DEAD END CORRIDOR: (IBC 2015 SECTION 1018.4)

50 FT MAX ALLOWED WITH BUSINESS OCCUPANCY AND A (NFPA 13) SPRINKLER SYSTEM

EXIT REQUIREMENTS: (IBC 2009 TABLE 1021.1)

2 REQUIRED

4 PROVIDED

FIRE RESISTANCE RATING REQUIREMENTS

TYPE IIB CONSTRUCTION (PER IBC TABLE 601):

STRUCTURAL FRAME: 0 HR

BEARING WALLS: 0 HR

EXTERIOR: 0 HR

INTERIOR: 0 HR

NON-BEARING WALL & PARTITION: 0 HR

FLOOR CONSTRUCTION: 0 HR

INCLUDING SUPPORTING BEAMS & JOISTS: 0 HR

ROOF CONSTRUCTION: 0 HR

INCLUDING SUPPORTING BEAMS & JOISTS: 0 HR

ENTIRE COMPLEX (INCLUDING EXISTING BUILDING AND NEW ADDITIONS) FULLY SPRINKLERED THROUGHOUT IN ACCORDANCE WITH SECTION 903.3.1.1 (NFPA 13 SPRINKLER SYSTEM) AND 903.2.10.1

ICC 500 STORM SHELTER: (SEE SHEET G-004)

2 HR ENCLOSURE (PER ICC 500 601.1)

FIRE WALLS FIRE-RESISTANCE:

2 HR (PER IBC 706.4)

NO OPENINGS WITHIN 4' OF FIRE WALL ROOF

EXTERIOR WALLS FOR HORIZONTAL DISTANCE OF 4' BEYOND FIRE WALL SHALL HAVE 1 HR RATING.

ALLOWABLE BUILDING HEIGHTS & AREAS

• USE GROUP: A-3 (PER IBC SECTION 303.4)

B (PER IBC SECTION 304.1)

S-2 (PER IBC SECTION 311.3)

I-3 (PER IBC SECTION 308.5)

• CONSTRUCTION TYPE: IIB (PER IBC SECTION 602.2)

EXISTING CONSTRUCTION - RENOVATED

USE GROUP S-2

BASEMENT

LEVEL 1

1,361 SF

5,071 SF

1,902 SF

TOTAL EXISTING AREA S-2: 3,263 SF

USE GROUP B:

BASEMENT

LEVEL 1

3,750 SF

5,071 SF

8,821 SF

TOTAL EXISTING AREA B: 8,821 SF

USE GROUP I-3:

LEVEL 1

459 SF

AREA TOTAL: (EXISTING CONSTRUCTION) 12,543 SF

NEW CONSTRUCTION

USE GROUP A-3:

LEVEL 1

1,910 SF

USE GROUP B:

LEVEL 1:

5,562 SF

LEVEL 2:

6,267 SF

LEVEL 2 (ALT #1):

1,591 SF

TOTAL AREA B:

13,420 SF

AREA TOTAL (NEW CONSTRUCTION):

15,330 SF

GROSS SF OF BUILDING (NOT INCLUDING ALT #1)

BASEMENT:

5,111 SF

LEVEL 1:

14,904 SF

LEVEL 2:

6,270 SF

TOTAL GROSS BUILDING:

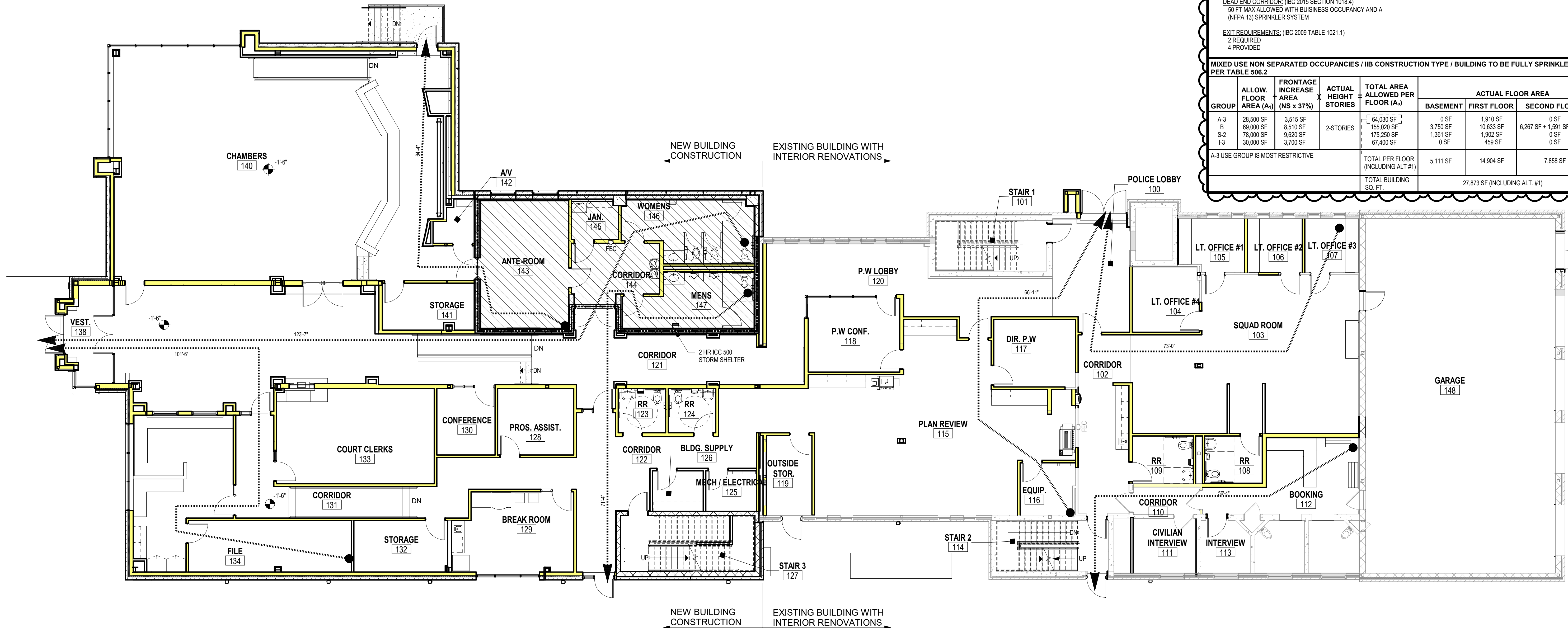
26,285 SF

ALLOWABLE HEIGHT: 75' - 0" (PER IBC TABLE 504.3)

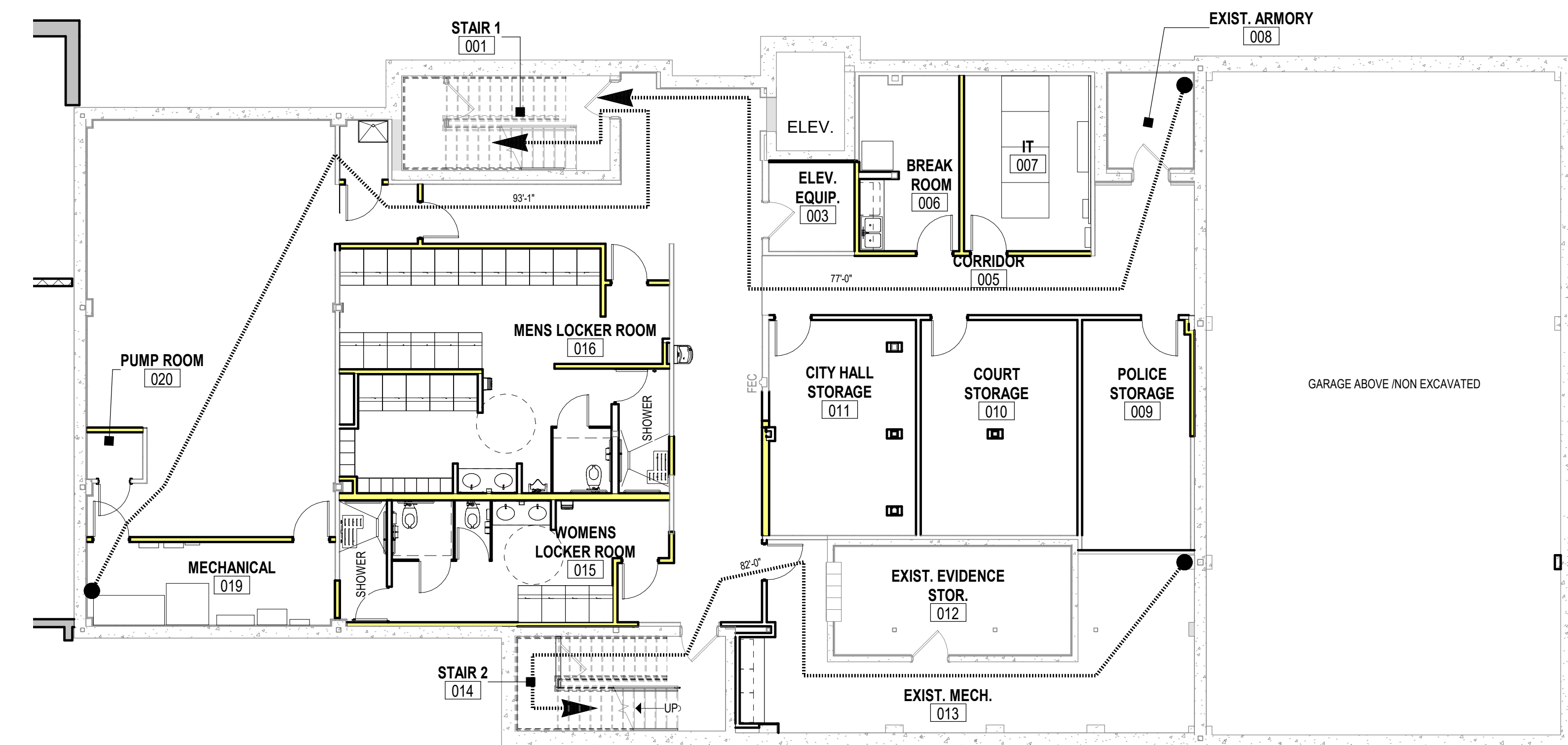
ACTUAL HEIGHT: 28'-0"

MIXED USE NON SEPARATED OCCUPANCIES / IIB CONSTRUCTION TYPE / BUILDING TO BE FULLY SPRINKLERED PER TABLE 506.2

GROUP	ALLOW. FLOOR AREA (A)	FRONTAGE INCREASE AREA (NS x 37%)	ACTUAL HEIGHT STORIES	TOTAL AREA ALLOWED PER FLOOR (A)	BASEMENT	FIRST FLOOR	SECOND FLOOR	ALLOW. HEIGHT STORIES IBC 504.4	
A-3	28,500 SF	3,515 SF	2-STORIES	64,000 SF	0 SF	1,910 SF	0 SF	3	
B	69,000 SF	8,510 SF		155,000 SF	3,750 SF	10,833 SF	6,267 SF + 1,591 SF (ALT. 1)	4	
S-2	78,000 SF	9,620 SF		175,250 SF	1,361 SF	1,902 SF	0 SF	4	
I-3	30,000 SF	3,700 SF		67,400 SF	0 SF	459 SF	0 SF	2	
A-3 USE GROUP IS MOST RESTRICTIVE					TOTAL PER FLOOR (INCLUDING ALT #1)	5,111 SF	14,904 SF	7,858 SF	
					TOTAL BUILDING SQ. FT.	27,873 SF (INCLUDING ALT. #1)			



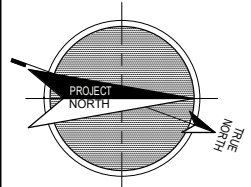
B1 LIFE SAFETY LEVEL 1 FLOOR PLAN
1/8" = 1'-0"



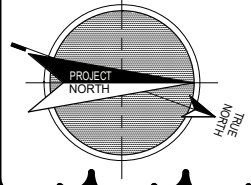
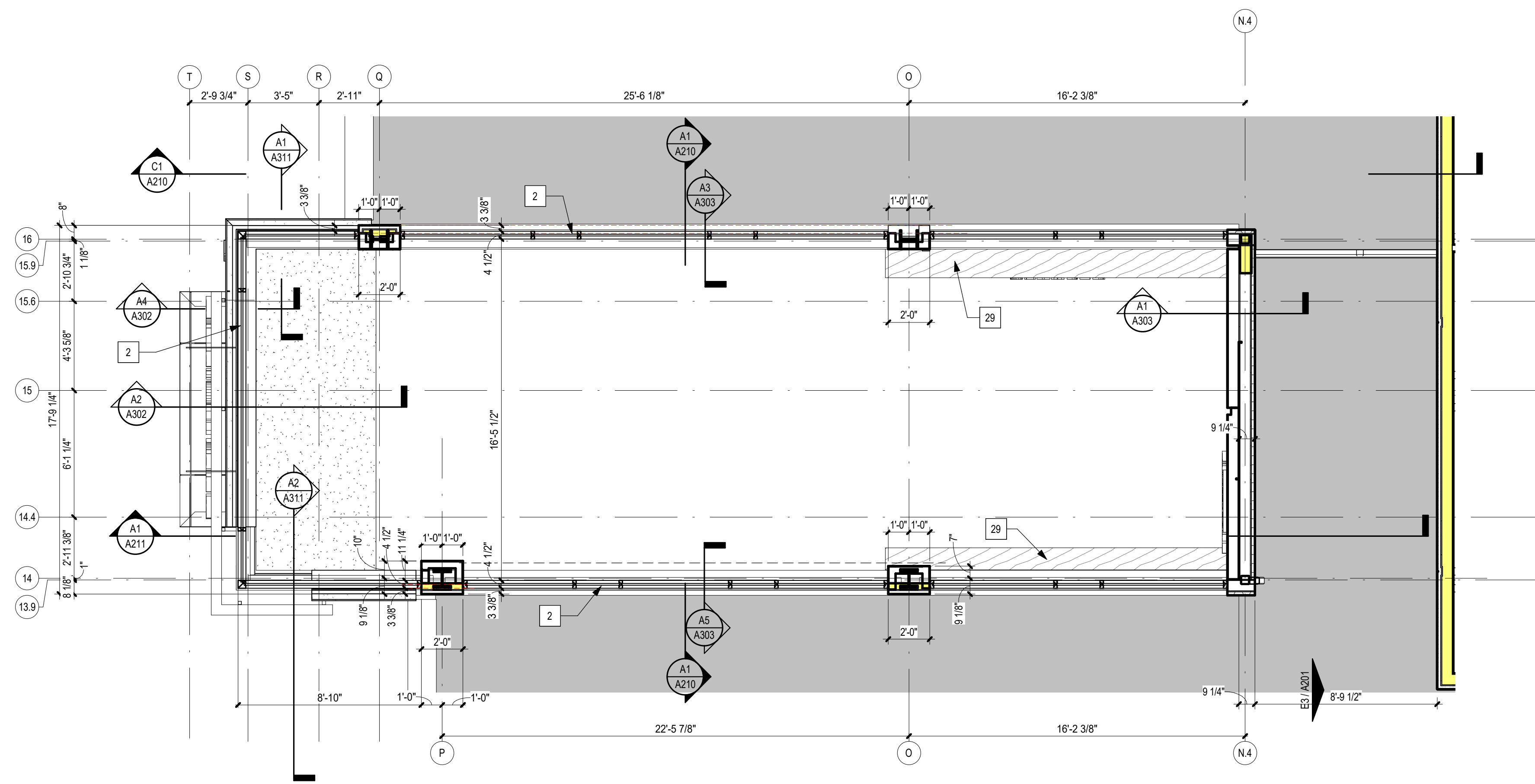
A3 LIFE SAFETY BASEMENT FLOOR PLAN
1/8" = 1'-0"

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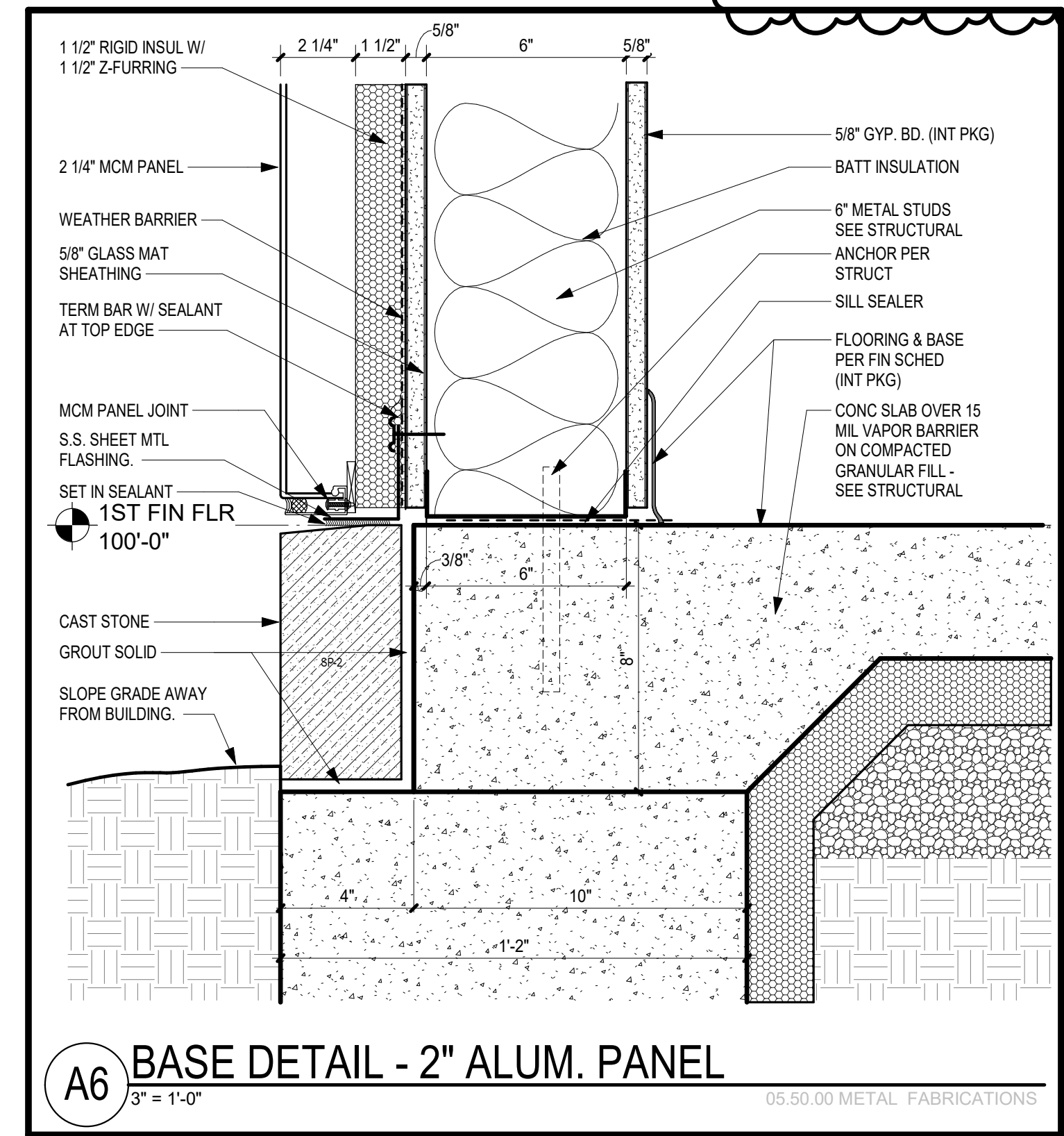
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C1 CLERESTORY REFLECTED CEILING PLAN
1/4" = 1'-0"



A1 ENLARGED CLERESTORY PLAN
1/4" = 1'-0"



KEYED NOTE RCP

MARK	DESCRIPTION
1	NEW TECHZONE LAY-IN CEILING - SEE FINISH SCHEDULE
2	NEW 2X4 SECOND LOOK LAY-IN CEILING - SEE FINISH SCHEDULE
3	NEW GYP. BD. CEILING - PAINT P3 UNLESS NOTED OTHERWISE
4	NEW 2X4 LIGHT TROFFER
5	NEW DOWN LIGHT CAN LIGHT - SEE ELECTRICAL FOR SPECIFIC PRODUCT INFORMATION
6	NEW EXPANSION JOINT IN CEILING WHERE EXISTING BUILDING MEETS NEW BUILD
7	EXISTING CEILING TO REMAIN - PATCH/REPAIR CEILING AS REQ'D DUE TO NEW CONSTRUCTION EITHER ACTS OR TOUCH UP PAINT EXISTING GYP BOARD P3
8	EXISTING LIGHT FIXTURE TO REMAIN - PROTECT FIXTURE DURING CONSTRUCTION
10	EXTERIOR WALL SCONCE - SEE ELECTRICAL DRAWINGS FOR SPECIFICATION
11	NEW INTERIOR WALL SCONCE - SEE ELECTRICAL DRAWINGS FOR SPECIFICATION
12	LINEAR LED LIGHT ATTACHED TO CEILING GRID OR GYP BOARD AS INDICATED
13	NEW 2X2 LIGHT TROFFER
14	NO CEILING - OPEN TO STRUCTURE ABOVE
15	SURFACE MOUNTED FIXTURE - SEE ELECTRICAL FOR FIXTURE SPECIFICATIONS
16	NEW 1X4 LIGHT TROFFER
17	ACCENT COLOR GYP BOARD SOFFIT, COLOR AS NOTED
18	RECESSED LIGHT COVE IN UNDERSIDE OF CHAMBERS ENTRY PORTAL, LAMINATE FINISH ALL SIDES OF PORTAL
19	NEW GYP. BD. CEILING - PAINT EPOXY PAINT P6
20	FEATURE LIGHT PENDANT CLUSTERS INTERLOCKING, HEIGHTS VARY, REF. ELECTRICAL
21	ROLLER SHADE AND ROLLER SHADE POCKET - VERIFY POCKET SIZE W/ MFR. PRIOR TO INSTALLATION - SEE INTERIOR DWGS. FOR ADDITIONAL INFORMATION
22	EXTERIOR MCM SOFFIT - SEE APPLICABLE WALL SECTIONS & DETAILS FOR ADDITIONAL INFORMATION
23	ROOF LADDER TO ROOF SCUTTLE
24	WALL MOUNTED WALL WASHING LIGHT FIXTURE - SEE MEP FOR SPECIFICATIONS
25	STRUCTURE/METAL DECK TO BE PROFESSIONALLY CLEANED PRIOR TO PAINTING STRUCTURE. CEILING AREA / STRUCTURE TO BE PROFESSIONALLY CLEANED AFTER CONSTRUCTION IS COMPLETE AND BEFORE I.T EQUIPMENT INSTALLED
26	ACCESS PANEL TO MECHANICAL EQUIPMENT - COORDINATE LOCATION WITH MECHANICAL SYSTEM INSTALLER
27	RECESSED GYP BOARD LIGHT CHANNEL WITH LINEAR LIGHT FIXTURE - PAINT P3

KEYED NOTE FLOOR PLAN

MARK	DESCRIPTION
1	NEW 8' CMU WALL CONSTRUCTION
2	NEW WINDOW/DOOR STOREFRONT
3	NEW STEEL LADDER TO ROOF
4	EXISTING WALL TO REMAIN - PATCH/REPAIR ANY DAMAGE TO WALL
5	NEW INTERIOR DOOR AND FRAME
6	EXISTING STAIRS TO REMAIN - PATCH/REPAIR ANY DAMAGE TO STAIRS CAUSED DURING CONSTRUCTION
7	EXISTING DOOR AND FRAME TO REMAIN - PROTECT DURING CONSTRUCTION
9	NEW STAIR CONSTRUCTION
10	NEW RAMP CONSTRUCTION
11	NEW EXTERIOR DOOR AND FRAME
12	NEW ALUMINUM WINDOW - SEE WINDOW TYPES
13	2" D. MCM WRAP SYSTEM
14	NEW 9' WIDE GARAGE DOOR - SEE DEMO PLAN FOR PORTION OF EXISTING WALL TO BE REMOVED
15	NEW INTERIOR FIRE-RATED DOOR AND FRAME - SEE DOOR SCHEDULE
16	NEW HIGH-LOW DRINKING FOUNTAINS WITH BOTTLE FILLER, SEE PLUMBING
17	NEW IN WALL BOTTLE FILLER - SEE PLUMBING
18	NEW FLOORING ON EXISTING SLAB - ENSURE CONCRETE SLAB IS FREE OF DEBRIS, PATCHED TO LEVEL - SEE FINISH PLAN FOR FLOORING SPECIFICATIONS
19	NEW CASEWORK - SEE INTERIOR ELEVATIONS FOR SPECIFICATIONS
20	SEE FURNITURE PLANS FOR OFFICE WORK STATIONS, CONFERENCE TABLES
22	INSTALL TILE WANSLOT ON WET WALL AND ADJACENT WALLS OF TOILET - SEE INTERIOR FINISH PLANS FOR SPECIFICATIONS
23	NEW OWNER PROVIDED FULL SIZE REFRIGERATOR WITH WATERLINE, ICEMAKER IN FREEZER. CONTRACTOR TO COORDINATE MILLWORK OPENING SIZE WITH OWNER SELECTION. PROVIDE POWER.
24	NEW METAL LOCKERS - SEE PLAN AND SPECS
25	2" EXPANSION JOINT BETWEEN NEW AND EXISTING WALL STRUCTURE
26	BULLET RESISTANT SECURITY WINDOW LEVEL 3 ALUMINUM FRAME WITH BULLET RESISTANT STAINLESS SPEAKER AND DEAL TRAY
27	BULLET RESISTANT SECURITY WINDOW LEVEL 3 ALUMINUM FRAMED WITH BULLET RESISTANT STAINLESS SPEAKER WITH 3" OPEN PASS THRU GAP AT BOTTOM
28	NEW SOLID SURFACE WINDOW SILL - SEE INTERIOR SPECIFICATIONS
29	SPECIALTY WOOD LOOK WALL FINISH - SEE INTERIOR SPECIFICATIONS FOR INFORMATION
30	NEW WALL MONITOR - OWNER PROVIDED
31	BULLET RESISTANT SECURITY WINDOW WITH TALK BOX - NO TRANSACTION TRAY
32	URINAL & TOILET PARTITIONS - SEE INTERIOR ELEVATIONS AND SPECIFICATIONS FOR INFORMATION
33	NEW 3" CONCRETE SLAB POUR - ALIGN WITH LEVEL 1 FLOOR SLAB
34	NEW 8' WIDE GARAGE DOOR
35	SPECIALTY WALL COVERING ON IMPACT RESISTANT DRYWALL
36	STACKED STONE VENER - SEE INTERIOR SPECIFICATIONS FOR PRODUCT INFORMATION
37	LOOK EXPANSION JOINT - SEE SPECIFICATIONS
38	NEW WALL MOUNTED HEAVY DUTY SHEDDING ON ADJUSTABLE STANDARDS AND BRACKETS (5) HIGH X 12" DEEP - SEE FINISH PLAN
39	NEW LOCKER ROOM BENCH - SEE PLAN AND SPECS
40	NEW MCM SW - REF. PLUMBING DWGS
41	RE USED BOOKING BENCH
42	INFILL DRYWALL PARTITION AT DEMO'D DOOR OPENING - MATCH EXISTING CONSTRUCTION.
43	PATCH EXISTING WALL WHERE DEMO'D PARTITION WAS REMOVED
44	INFILL MASONRY WALL AT DEMO'D DOOR LOCATION. TOOTH IN MASONRY TO MATCH EXIST. CONSTRUCTION.
45	AFTER REMOVAL OF EXISTING WINDOW SYSTEM INFILL W/ METAL STUD & DW (B6A) - FLUSH DRYWALL WITH SURROUNDING SURFACES.
46	PATCH EXIST. D.W. PARTITION AFTER PLUMBING HAS BEEN REMOVED.
47	ADD ALT. R6 REPLACE REMAINING EXISTING WINDOWS WITH NEW STOREFRONT WINDOW SYSTEM - MATCHING EXISTING SIZE OF WINDOW.
48	ADD ALT. R6 REPLACE REMAINING EXISTING CELL WINDOWS WITH NEW STOREFRONT WINDOW SYSTEM - MATCHING EXISTING SIZE OF WINDOW - INSTALL LAMINATE GLASS

Proposed: RENOVATION & ADDITION

ELLISVILLE CITY HALL &
POLICE STATION

1 WEB AVE

No. 1 Date 3-17-23 PRE-BID ADDENDUM #1

Revision

Project No.
20016

Sheet No.

A102D

Date
02/23/23

LOBBY CLERESTORY PLAN & RCP

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Roy A. Marston
MO Architect License No. A-6661
Expires: 12/31/24

[Consultants]

GENERAL NOTE:
DIMENSIONS OF EXISTING CONSTRUCTION ARE APPROXIMATE BASED ON HISTORICAL DRAWINGS AND ARE FOR REFERENCE ONLY. ALL
DIMENSIONS ARE TO BE FIELD VERIFIED PRIOR TO NEW CONSTRUCTION. NOTIFY ARCHITECT OF ANY DISCREPANCIES FOR CLARIFICATION.

KEYED NOTE FLOOR PLAN

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1	NEW 8" CMU WALL CONSTRUCTION
2	NEW WINDOW/DOOR STOREFRONT
3	NEW STEEL LADDER TO ROOF
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5	NEW INTERIOR DOOR AND FRAME
6	EXISTING STAIRS TO REMAIN - PATCH REPAIR ANY DAMAGE TO STAIRS CAUSED DURING CONSTRUCTION
7	EXISTING DOOR AND FRAME TO REMAIN, PROTECT DURING CONSTRUCTION
9	NEW STAIR CONSTRUCTION
10	NEW RAMP CONSTRUCTION
11	NEW EXTERIOR DOOR AND FRAME
12	NEW ALUMINUM WINDOW - SEE WINDOW TYPES
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19	NEW CASEWORK - SEE INTERIOR ELEVATIONS FOR SPECIFICATIONS
20	SEE FURNITURE PLANS FOR OFFICE WORK STATIONS, CONFERENCE TABLES
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29	SPECIALTY WOOD LOOK WALL FINISH - SEE INTERIOR SPECIFICATIONS FOR INFORMATION
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40	NEW MOP SINK - REF PLUMBING DWGS
41	RE USED BOOKING BENCH
42	INFILL DRYWALL PARTITION AT DEMO DOOR OPENING. MATCH EXISTING CONSTRUCTION.
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45	AFTER REMOVAL OF EXISTING WINDOW SYSTEM INFILL W/ METAL STUD & DW (BBA) - FLUSH DRYWALL WITH SURROUNDING SURFACES.
46	PATCH EXIST. D.W. PARTITION AFTER PLUMBING HAS BEEN REMOVED.
47	ADD ALT #8 REPLACE REMAINING EXISTING WINDOWS WITH NEW STOREFRONT WINDOW SYSTEM - MATCHING EXISTING SIZE OF WINDOW
48	ADD ALT #8 REPLACE REMAINING EXISTING CELL WINDOWS WITH NEW STOREFRONT WINDOW SYSTEM - MATCHING EXISTING SIZE OF WINDOW - INSTALL LAMINATE GLASS

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Proposed: RENOVATION & ADDITION

**ELLISVILLE CITY HALL &
POLICE STATION**

ELLISVILLE, MO 63011

ENLARGED BASEMENT PLAN - POLICE

No. 1 Date 3/17/23 PRE-BID ADDENDUM #1 Revision

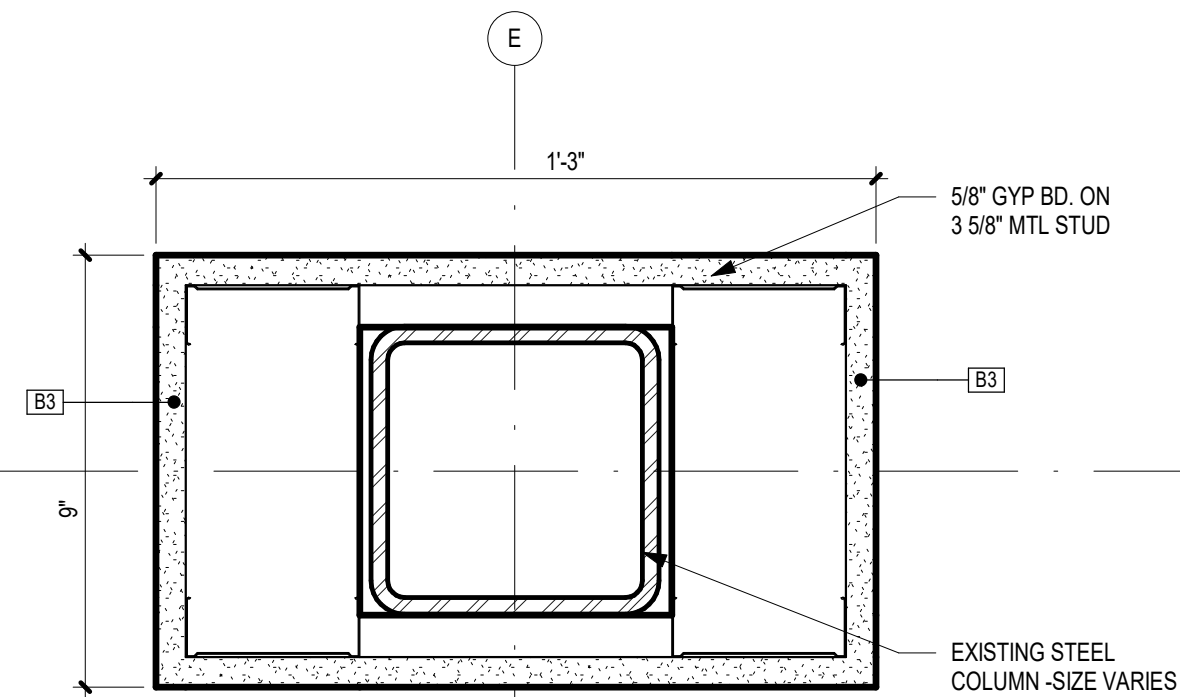
Project No.
20016

Sheet No.
A104

Date
02/23/23

D1 COLUMN WRAP DETAIL

3" = 1'-0"

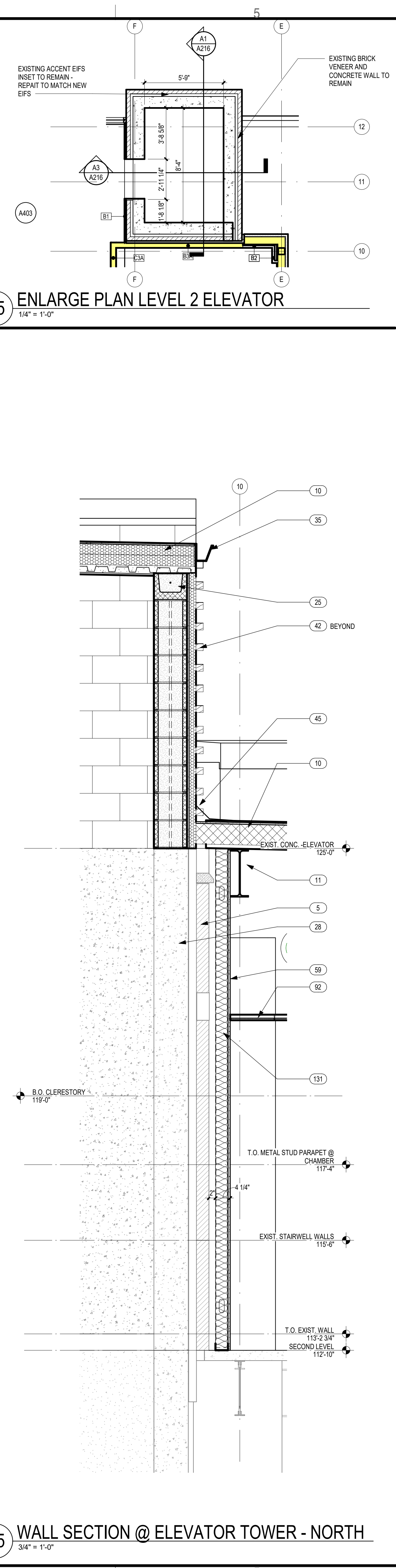
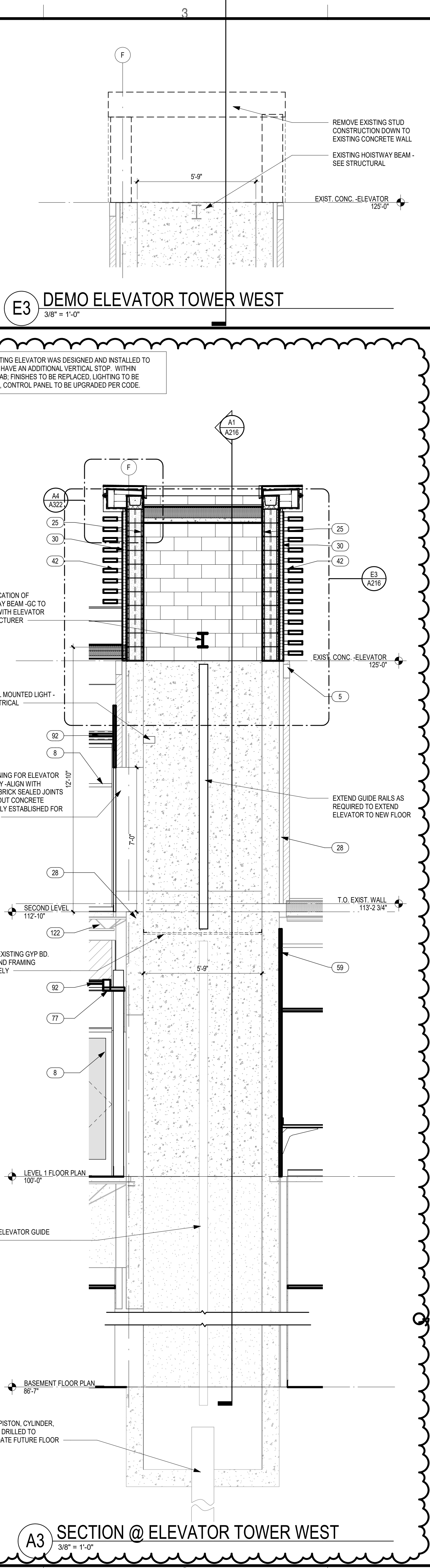
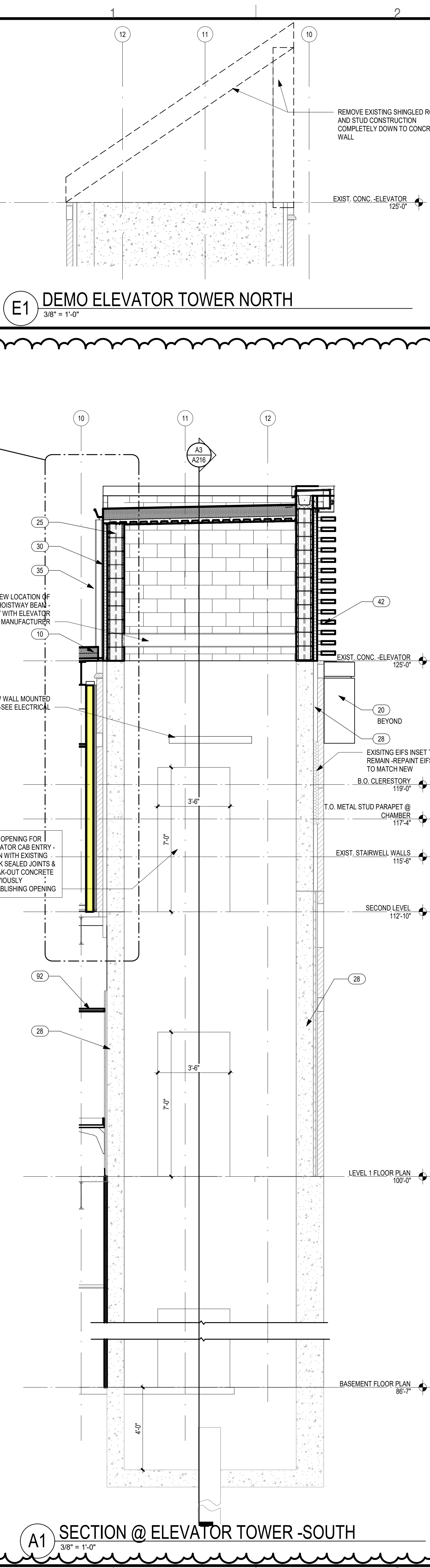


A1 BASEMENT FLOOR PLAN - POLICE

1/4" = 1'-0"

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KEYED NOTE WALL SECTION	
MARK	DESCRIPTION
1	NEW MODULAR BRICK VENEER TO MATCH EXIST. BRICK
2	2" MIN. AIR SPACE - KEEP CLEAR OF MORTAR AND DEBRIS
3	2" THK. (R-10 MIN.) EXTRUDED POLYSTYRENE (XPS) RIGID BOARD INSULATION
4	5/8" EXTERIOR FIBERGLASS MAT FACED GYPSUM WALL BOARD SHEATHING
5	EXISTING BRICK VENEER TO REMAIN. INFILTRATION POINT. REPLACE ANY BRICK DAMAGED DURING CONSTRUCTION
6	STONE SILL
7	1 1/8" COLD-FORMED METAL STUD FRAMING @ 16" O.C. (MAX.)
8	NEW STOREFRONT WINDOW/DOOR SYSTEM - SEE DOOR SCHEDULE OR WINDOW/DOOR TYPES
9	EXISTING ROOF STRUCTURE
10	NEW ROOF STRUCTURE: METAL DECK - SEE STRUCTURAL, MIN. R30 R" ROOF INSULATION MIN. - MULTIPLE LAYERS, STAGGERED JOINTS, 1/2" COVERBOARD, TPO - SEE SPEC
11	STRUCTURAL STEEL BEAM - SEE STRUCTURAL DRAWINGS
12	PREFABRICATED METAL CORNICE - SEE SPEC FOR PRODUCT INFORMATION
13	GYP. BD. CEILING - SEE FINISH PLAN FOR PAINT INFORMATION
14	4" THK. CAST-IN-PLACE CONCRETE RAMP ON COMPACTED GRANULAR BASE - SEE STRUCT. DWGS.
15	NEW WALL BASE AS SCHEDULED - SEE FINISH PLANS & INT. FINISH SCHED.
16	EXISTING CEILING TO REMAIN
17	WEATHER BARRIER
18	METAL COMPOSITE MATERIAL SHEET RAISCREEN
19	EXISTING FOUNDATION WALL AND FOOTING TO REMAIN
20	EXISTING CONCRETE FLOOR SLAB
21	3 1/2" STONE VENEER
22	NEW CAST-IN-PLACE CONCRETE FLOOR SLAB OVER 15 MIL. VAPOR BARRIER OVER 4" (MIN.) COMPACTED GRANULAR BASE - SEE STRUCTURAL DRAWINGS
23	CMU WALL - SEE STRUCTURAL
24	2" EXPANSION JOINT BETWEEN NEW AND EXISTING CONSTRUCTION
25	2X F.T. WOOD BLOCKING/NAILER OR 2" LAYERS OF TYPE 100K PLYWOOD
26	EXISTING WALL SYSTEM TO REMAIN - PROTECT DURING CONSTRUCTION
27	R-30 R" INSULATION CONTINUOUS IN STUD CAVITY TO UNDERSIDE OF ROOFING
28	NEW 2" THK. EXTERIOR INSULATION AND FINISH SYSTEM (DRAINAGE TYPE) - REFERENCE EXTERIOR BUILDING MATERIAL LEGEND
29	SPECIALTY WALL FINISH - SEE INTERIOR SPECIFICATIONS FOR PRODUCT INFO
30	NEW CONCRETE FLOOR SLAB ON METAL DECKING - SEE STRUCTURAL
31	F.T. 5/8" PLYWOOD
32	RECESSED ACCENT BRICK
33	PREFINISHED ALUMINUM GUTTER AND DOWNSPOUT - 4X4 DS. SEE PLUMBING FOR D.S. LOCATIONS
34	EXISTING PARAPET DEMOLISHED DOWN TO EXISTING ROOF DECK
35	REMOVE EXISTING EPS OVERHANG
36	8" STRUCT. COLD-FORMED METAL STUD FRAMING @ 16" O.C. W/ R-25 BATT INSULATION - SEE STRUCT. DWGS.
37	F.T. 2X WOOD BLOCKING/NAILER
38	3/4" THK. NONCOMBUSTIBLE STRUCTURAL PANEL ROOF DECK
39	SIGNAGE
40	2" W. SUNSHADE LOUVER - SEE SPECIFICATION FOR PRODUCT INFORMATION
41	NEW CAST-IN-PLACE CONCRETE FOUNDATION WALL - SEE STRUCT. DWGS.
42	STONE CAP - MATCH COLOR TO STONE SILL
43	EXTEND ROOF FLASHING UP VERTICAL FACE MIN. 8"
44	NEW 6" STRUCTURAL COLD-FORMED METAL STUD TRUSSES @ 16" O.C. SISTER TO EXTERIOR WALL VERTICAL STUD FRAMING - SEE STRUCT. DWGS.
45	CONT. TERMINATION BAR, FASTENERS AND SEALANT
46	CARLISLE CCW-105 40 MIL. THK. COMPOSITE MEMBRANE AIR & VAPOR BARRIER OR ARCHITECT APPROVED EQ.
47	MCM RAISCREEN ROOF PANEL. PROVIDE BACKER ROD & SEALANT IN ALL SKYWARD JOINTS. SEALANT COLOR TO MATCH MCM COLOR UNLESS OTHERWISE INDICATED.
48	2" THK. (R-4 MIN.) EXTRUDED POLYSTYRENE (XPS) RIGID BOARD PERIMETER INSULATION
49	NEW CAST-IN-PLACE CONCRETE FOOTING - SEE STRUCTURAL DRAWINGS
50	CLEAN CRUSHED GRANULAR (COMPACTED) BASE - REFERENCE GEO/TECHNICAL REPORT AND/OR STRUCT. DWGS. FOR ADDITIONAL INFO
51	NEW 4" (MIN.) PERFORATED DRAIN PIPE SURROUNDED BY 1" CLEAN CRUSHED ROCK PLACED A MINIMUM OF 6 INCHES IN ALL DIRECTIONS AROUND PIPE. ENCASED IN A MIFAFI 140N SYNTHETIC FILTER FABRIC OR ARCHITECT APPROVED EQUAL. REFERENCE CIVIL AND/OR PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION.
52	1/2" STRUCTURAL COLD-FORMED METAL STUD FRAMING @ 16" O.C. W/ R-19 (MIN.) BATT INSULATION - SEE STRUCTURAL DRAWINGS
53	TPO SINGLE PLY MEMBRANE ROOFING INSTALLED UP & OVER TOP OF PARAPET
54	CAVITY MORTAR CONTROL MORTAR DIVERTER
55	RUBBERIZED ASPHALT FLASHING. INSTALL IN ACCORDANCE W/ MANUFACTURER'S INSTALLATION INSTRUCTIONS
56	POLYESTER MESH CAVITY VENTS @ 24" O.C.
57	5/8" THK. PAPER FACED GYPSUM WALL BOARD
58	CONT. NO. 20X1 1/2" TRIM TYP.
59	CONT. CORNER BEAD TYP.
60	CONT. BACKER ROD & SEALANT
61	PROVIDE 10 1/4" R38 (MIN.) THERMAL BATT INSUL. IN SOFFIT
62	CONT. 2" X 2" METAL TRIM ANGLE
63	CONTINUOUS METAL STUD "C" RUNNER TRACK
64	STRUCTURAL STEEL COLUMN - SEE STRUCTURAL DRAWINGS
65	(3) SIDED ALUM. SHADE POCKET & ROLLER SHADE - SEE APPLICABLE DETAILS AND INTERIOR DWGS. ELEC. CONTRACTOR TO PROVIDE POWER PER MFR. REQUIREMENTS
66	STRUCTURAL STEEL BAR JOIST - SEE STRUCTURAL DRAWINGS
67	STRUCTURAL STEEL ANGLE - SEE STRUCTURAL DRAWINGS
68	1 1/2" STEEL DECKING - SEE STRUCTURAL DRAWINGS
69	CONT. PRESERVATIVE TREATED WOOD BLOCKING/NAILER CUT FROM 2X12 (NOM.)
70	CONT. PRESERVATIVE TREATED WOOD BLOCKING/NAILER CUT FROM 2X8 (NOM.)
71	CONT. METAL COUNTER FLASHING. COLOR TO MATCH MCM COLOR
72	STAINLESS STEEL MASONRY ANCHORS @ 24" O.C. (MAX.) MIN. 2" ANCHORS PER STONE PANEL
73	EXTERIOR WALL MOUNTED LIGHT FIXTURE - SEE ELECTRICAL DRAWINGS
74	RECESSED LIGHT FIXTURE - SEE ELECTRICAL DRAWINGS
75	SUSPENDED GYPSUM BOARD CEILING SYSTEM. 5/8" GYPSUM BOARD ATTACHED TO DRYWALL GRID SYSTEM
76	12 GA. HANGER WIRE TYP.
77	STAINLESS STEEL DOVE TAIL ANCHOR SLOTS @ 24" O.C.
78	STAINLESS STEEL STONE DOVE TAIL SPLIT TAIL ANCHORS @ 24" O.C.
79	CONT. STAINLESS STEEL FLASHING/DRIPE EDGE
80	INSULATED HOLLOW METAL DOOR & FRAME - REFERENCE DOOR SCHEDULE AND DOOR TYPE ELEVATIONS
81	1/2" W. ASPHALT IMPREGNATED JOINT FILLER
82	CONT. RUBBER WATERSTOP
83	3 1/2" METAL STUD CLIP SUPPORT BRACKET @ 48" O.C. (MAX.) VERTICALLY SPACED. FABRICATED FROM SIMILAR STUD. CLIP AND BEND 90 DEGREES AND ATTACH TO ADJACENT WALL AND VERTICAL METAL STUD PARTITION FRAMING
84	CONT. STAINED WOOD TRIM W/MDI - SEE INT. & INTERIOR FINISH SCHEDULE
85	PRIMED AND PAINTED STEEL PIPE HANDRAIL AND/OR GUARDRAIL - SEE TYPICAL PIPE RAILING TYPES DETAILS SHEET A213
86	METAL SUSPENSION SYSTEM FOR FLAT GYPSUM BOARD CEILINGS. INSTALL PER MFR'S RECOMMENDATIONS
87	CONT. KNURLED ANGLE MOLDING. INSTALL PER MFR'S RECOMMENDATIONS
88	STRUCT. MTL. STUD BOX HOR. - SEE STRUCT. DWGS.
89	CONT. REHEIMED WALL ANGLE TRIM
90	LAY-IN ACOUSTICAL PANEL CEILING AND METAL TEE GRID SUSPENSION SYSTEM - SEE INTERIOR FINISH SCHEDULE
91	NEW 4" THK. CAST-IN-PLACE CONCRETE RAMP SLAB OVER 15 MIL. VAPOR BARRIER OVER 4" (MIN.) COMPACTED GRANULAR BASE - SEE STRUCTURAL DRAWINGS
92	COVE LIGHT FIXTURE - SEE ELECTRICAL DRAWINGS
93	4" THK. CAST-IN-PLACE CONCRETE SLAB ON METAL DECKING PER ICC 500 STORM SHELTER REQUIREMENTS - SEE STRUCTURAL DRAWINGS
94	PREFINISHED ALUMINUM GUTTER AND DOWNSPOUT - 5/8" X 4" - SEE DETAILS
95	TWO-PIECE STAINLESS STEEL MASONRY VENEER ANCHORS @ 16" O.C. VERT & 24" O.C. HOR. - SEE STRUCT. DWGS.
96	ALUM. SILL PAN & ENDMIS FINISH TO MATCH STOREFRONT SYSTEM
97	1/2" THK. SOLID SURFACE WINDOW SILL - REFERENCE INTERIOR FINISH SCHEDULE
98	3/4" THK. CONT. F.T. WOOD VAILER CUT FROM 1X8 (NOM.) STOCK
99	CONT. 4 1/2" X 4 1/2" X 10 GA. COLD ROLLED GALVANIZED METAL ANGLE TYP. @ OPENING PERIMETER
100	3/8" W. ASPHALT IMPREGNATED JOINT FILLER
101	15 MIL. VAPOR RETARDER BARRIER
102	PREFORMED PREFABRICATED END DAM (BEYOND). SET IN MASTIC IF FLASHING IS NOT SELF-ADHERING. END DAM TO BE PLACED PRIOR TO THROUGH WALL FLASHING
103	1/2" THK. CEMENTITIOUS BACKING BOARD
104	3 1/2" STRUCT. COLD-FORMED METAL STUD FRAMING @ 16" O.C. - SEE STRUCT. DWGS.
105	2 1/2" STRUCTURAL COLD-FORMED METAL STUD FRAMING @ 16" O.C. - SEE STRUCTURAL DRAWINGS
106	MFCELH CONCEALED FASTENED METAL CEILING CLIP BY MONARCH METAL FABRICATORS, OR ARCHITECT APPROVED EQUAL. ATTACHED TO PANEL SYSTEM @ 12" O.C. (MAX.) ATTACH CLIP TO CEILING SUBSTRATE PER MANUFACTURER'S RECOMMENDATIONS
107	MFR'S METAL 2" CLIP BY MONARCH METAL FABRICATORS, OR ARCHITECT APPROVED EQUAL. ATTACH TO WOOD PANEL @ 12" O.C.
108	CONT. MTL. STUD DEFLECTION HEAD TRACK - REF. APPLICABLE DET.
109	LAMINATE AND/OR VENEER AS SCHEDULED. ADHERED TO 3/4" THK. SOLID WOOD PANEL - SEE FINISH SCHEDULE
110	ADHERED 6"x24" TEXTURED STONE PANELS - SEE INTERIOR FINISH SCHEDULE FOR ADDITIONAL INFORMATION
111	RECESSED ELECTRIC MONITOR/PROJECTION SCREEN - SEE ELEC. DWGS.
112	FINISHED GRADE - SEE CIVIL DRAWINGS
113	MWUT50 MILLWORK U-CHANNEL BY FRY REGLET OR ARCH. APPROVED EQ. PROVIDE BLACK POWDER COAT FINISH UNLESS INDICATED OTHERWISE
114	6" THK. CAST-IN-PLACE STAIR LANDING ON COMPACTED GRANULAR BASE - SEE STRUCT. DWGS.
115	4" THK. (MIN.) CAST-IN-PLACE CONCRETE EXTERIOR STAIR. ON 4" (MIN.) COMPACTED GRANULAR BASE - SEE ARCH & STRUCT DWGS. FOR ADDITIONAL INFO
116	78" METAL FURRING CHANNELS @ 16" O.C. (MAX.)
117	EXISTING STEEL BEAM TO REMAIN
118	EXISTING STEEL JOIST TO REMAIN
119	CONCRETE INFILL ON TOP OF EXISTING FOUNDATION WALL - SEE STRUCTURAL
120	EXTRUDED ALUM. RETAINER CLIP BY WALL PANEL FABRICATOR TYPICAL
121	STRUCTURAL TUBULAR STEEL BEAM - SEE STRUCTURAL DRAWINGS
122	FILL TUBULAR STEEL BEAM W/ EXPANDING FOAM INSULATION
123	TPO SINGLE PLY MEMBRANE ROOFING INSTALLED UP FACE OF WALL & UNDER FLASHING
124	FULLY ADHERED TPO MEMBRANE ROOFING OVER 1/2" EXTERIOR FIBERGLASS MAT FACED IMPACT RATED GYPSUM ROOF COVER BOARD ON TAPERED RIGID ROOF INSULATION CRICKET ON 2 LAYERS OF 3 1/2" THK. (MIN. R-17.4) POLYSTYRENE/ANURETIC FOAM ROOF BOARD INSULATION
125	CONT. L 5" X 3" X 1/4" STEEL ANGLE (LH)
126	HSS 2 1/2" X 2 1/2" X 1/4" BETWEEN JOISTS
127	3 1/2" COLD-FORMED METAL STUD FRAMING @ 16" O.C.
128	3 1/2" SOUND ATTENUATION BARRIERS
129	CONT. 2X10 (NOM.) FIRE RETARDANT TREATED (FRT) WOOD BLOCKING/NAILER
130	CONT. 2X8 (NOM.) FIRE RETARDANT TREATED (FRT) WOOD BLOCKING/NAILER
131	CONT. 1" W. BACKER ROD AND SEALANT W/ WEEP TUBES @ 24" O.C. SEALANT COLOR TO MATCH E.I.F.S. COLOR
132	CONT. CORRUGATED POLYSTYRENE DRAINAGE STRIP. INSTALL IN ACCORDANCE TO E.I.F.S. MANUFACTURER'S RECOMMENDATIONS
133	STAINLESS STEEL FLASHING & COUNTER FLASHING
134	METAL CLIP ANGLE - SEE STRUCT. DWGS.
135	CONT. 10GA 1 1/2" X 3" GALV. STEEL COLD ROLLED ANGLE
136	#9 GYPSUM WALL BOARD CONTROL JOINT
137	NEW EXTERIOR RATIO PAVERS WITH DRAINAGE - SEE SPECIFICATION FOR INFORMATION
138	2" ROOF BELOW - SEE SPECIFICATION FOR INFORMATION
139	CONT. SEALANT. COLOR TO MATCH ADJACENT MATERIAL
140	CONT. PRESERVATIVE TREATED WOOD BLOCKING/NAILER CUT FROM 2X8 (NOM.)
141	3 1/2" COLD-FORMED METAL STUD FRAMING @ 48" O.C.
142	CONT. BENT STEEL PLATE - SEE STRUCT. DWGS.
143	2" X 6" RECTANGULAR ALUMINUM TUBE (SHARP CORNERS) SUNSHADE LOUVERS TYP. BY SPECIALTY VENDOR - REFERENCE SPECIFICATIONS AND/OR EXTERIOR ELEVATIONS FOR FINISH
144	2" X 2" RECTANGULAR ALUMINUM TUBE (SHARP CORNERS) SUNSHADE SUPPORT FRAMING TYP. BY SPECIALTY VENDOR - REFERENCE SPECIFICATIONS AND/OR EXTERIOR ELEVATIONS FOR FINISH
145	CONT. ALUMINUM CLIP ANGLE (SHARP CORNERS) TYP. BY SPECIALTY VENDOR - REFERENCE SPECIFICATIONS AND/OR EXTERIOR ELEVATIONS FOR FINISH
146	CONT. ALUMINUM CLIP ANGLE (SHARP CORNERS) TYP. BY SPECIALTY VENDOR - REFERENCE SPECIFICATIONS AND/OR EXTERIOR ELEVATIONS FOR FINISH
147	1/2" STRUCTURAL COLD-FORMED METAL JOIST FRAMING @ 16" O.C. (MAX.)

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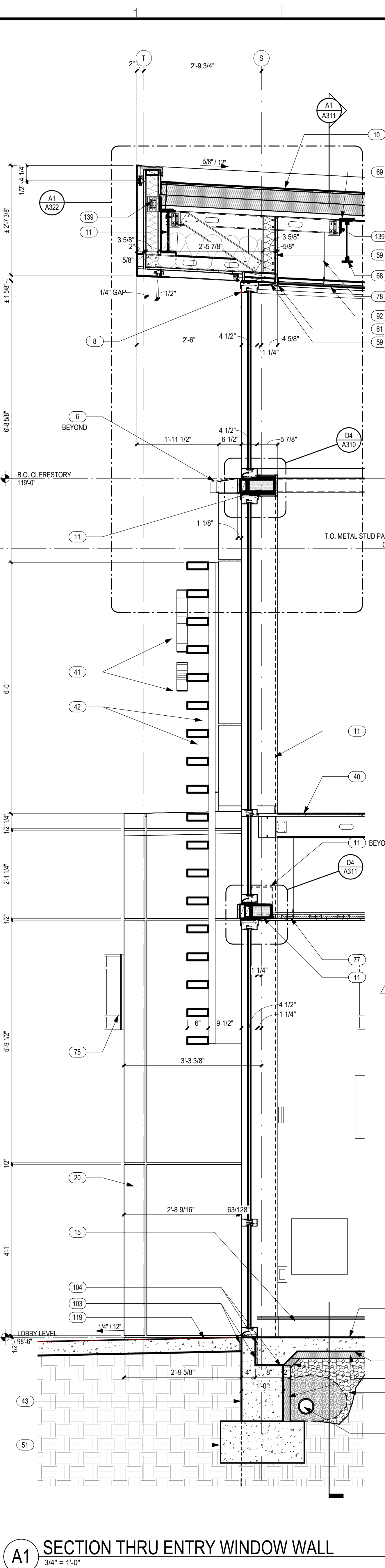
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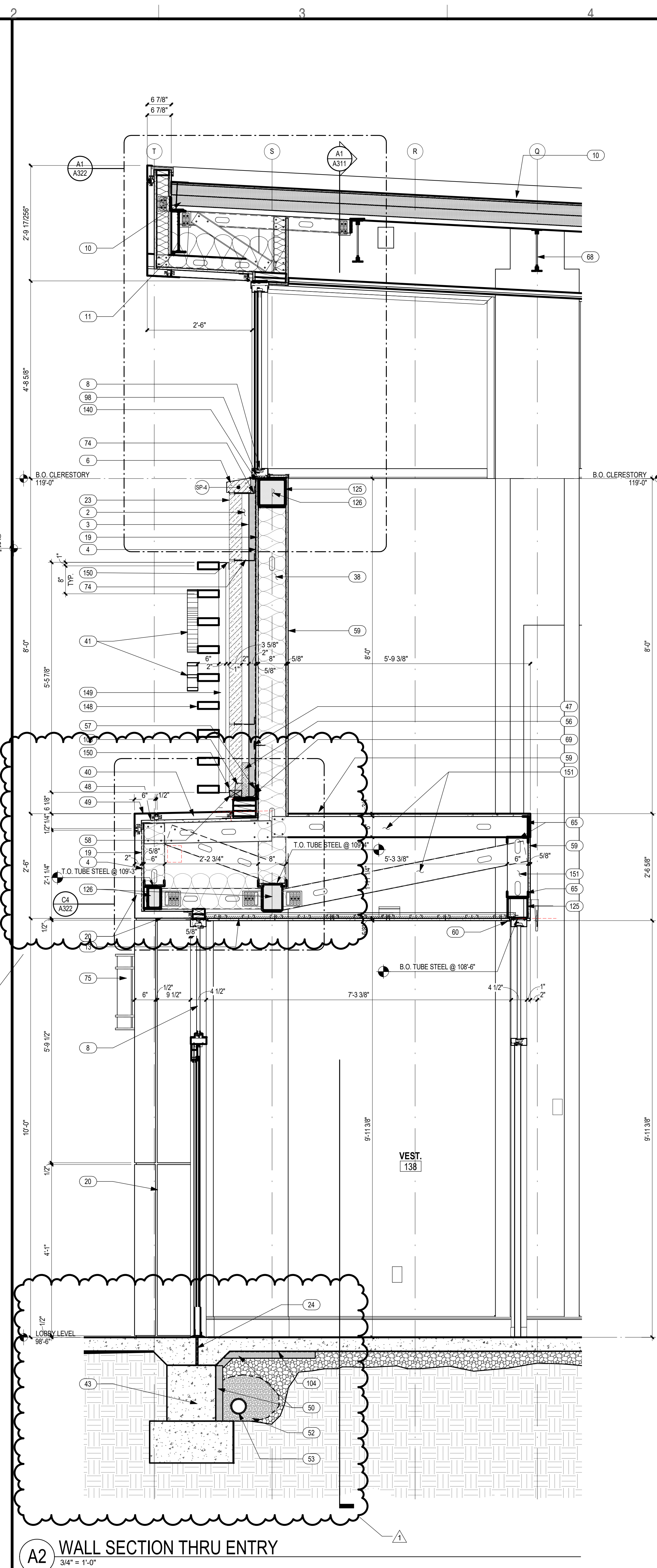
Revision
No. 1
Date 3-17-23
PRE-BID ADDENDUM #1

Project No. 20016
Sheet No. A216
Date 02/23/23

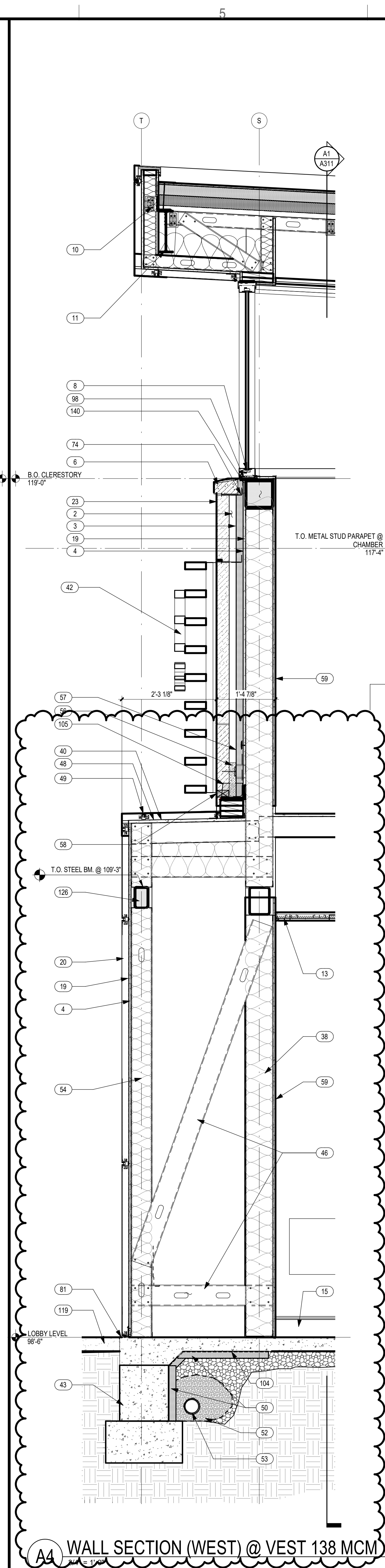
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A1 SECTION THRU ENTRY WINDOW WALL
3/4" = 1'-0"



A2 WALL SECTION THRU ENTRY
3/4" = 1'-0"



A4 WALL SECTION (WEST) @ VEST 138 MCM
3/4" = 1'-0"

KEYED NOTE WALL SECTION

MARK	DESCRIPTION
1	NEW MODULAR BRICK VENEER TO MATCH EXIST. BRICK
2	2" MIN. AIR SPACE - KEEP CLEAR OF MORTAR AND DEBRIS
3	2" THK. (R-10 MIN.) EXTRUDED POLYSTYRENE (XPS) RIGID BOARD INSULATION
4	5/8" EXTERIOR FIBERGLASS MAT FACED GYPSUM WALL BOARD SHEATHING
5	EXISTING BRICK VENEER TO REMAIN. INFILL/LOCKPOINT: REPLACE ANY BRICK DAMAGED DURING CONSTRUCTION
6	STONE SILL
7	1 1/2" COLD-FORMED METAL STUD FRAMING @ 16" O.C. (MAX.)
8	NEW STOREFRONT WINDOW/DOOR SYSTEM - SEE DOOR SCHEDULE OR WINDOW/STOREFRONT TYPES
9	EXISTING ROOF STRUCTURE
10	NEW ROOF STRUCTURE: METAL DECK - SEE STRUCTURAL, MIN. R30 R-ROOF INSULATION MIN. - MULTIPLE LAYERS, STAGGERED JOINTS, 1/2" COVERBOARD, TPO - SEE SPEC
11	STRUCTURAL STEEL BEAM - SEE STRUCTURAL DRAWINGS
12	PREFABRICATED METAL CORNER - SEE SPEC FOR PRODUCT INFORMATION
13	GYP. BD. CEILING - SEE FINISH PLAN FOR PAINT INFORMATION
14	4" THK. CAST-IN-PLACE CONCRETE RAMP ON COMPACTED GRANULAR BASE - SEE STRUCT. DWGS.
15	NEW WALL BASE AS SCHEDULED - SEE FINISH PLANS & INT. FINISH SCHED.
16	EXISTING CEILING TO REMAIN
17	WEATHER BARRIER
18	METAL COMPOSITE MATERIAL SHEET RAINTSREEN
19	EXISTING FOUNDATION WALL AND FOOTING TO REMAIN
20	EXISTING CONCRETE FLOOR SLAB
21	3 1/2" STONE VENEER
22	NEW CAST-IN-PLACE CONCRETE FLOOR SLAB OVER 15 MIL. VAPOR BARRIER OVER 4" (MIN.) COMPACTED GRANULAR BASE - SEE STRUCTURAL DRAWINGS
23	CMU WALL - SEE STRUCTURAL
24	2" EXPANSION JOINT BETWEEN NEW AND EXISTING CONSTRUCTION
25	2X6 F.T. WOOD BLOCKING/NAILER OR 2 LAYERS OF TYPE 'X' WOOD PLYWOOD
26	EXISTING WALL SYSTEM TO REMAIN - PROTECT DURING CONSTRUCTION
27	R-30 6" INSULATION CONTINUOUS IN STUD CAVITY TO UNDERSIDE OF ROOFING
28	NEW 2" THK. EXTERIOR INSULATION AND FINISH SYSTEM (DRAINAGE TYPE) - REFERENCE EXTERIOR BUILDING MATERIAL LEGEND
29	SPECIALTY WALL FINISH - SEE INTERIOR SPECIFICATIONS FOR PRODUCT INFO
30	NEW CONCRETE FLOOR SLAB ON METAL DECKING - SEE STRUCTURAL
31	F.T. 5/8" PLYWOOD
32	RECESSED ACCENT BRICK
33	PREFINISHED ALUMINUM GUTTER AND DOWNSPOUT - 4X4 DS - SEE PLUMBING FOR D.S. LOCATIONS
34	EXISTING PARAPET DEMO DOWN TO EXISTING ROOF DECK
35	REMOVE EXISTING EIFS OVERWALLS
36	8" STRUCT. COLD-FORMED METAL STUD FRAMING @ 16" O.C. W/ 8" R-25 BATT INSULATION - SEE STRUCT. DWGS.
37	F.T. 2X WOOD BLOCKING/NAILER
38	3/4" THK. NONCOMBUSTIBLE STRUCTURAL PANEL ROOF DECK
39	SIGNAGE
40	6" W. SUNSHADE LOUVER - SEE SPECIFICATION FOR PRODUCT INFORMATION
41	NEW CAST-IN-PLACE CONCRETE FOUNDATION WALL - SEE STRUCT. DWGS.
42	STONE CAP - MATCH COLOR TO STONE SILL
43	EXTEND ROOF FLASHING UP VERTICAL FACE MIN. 8"
44	NEW 6" STRUCTURAL COLD-FORMED METAL STUD TRUSSES @ 16" O.C. SISTER TO EXTERIOR WALL VERTICAL STUD FRAMING - SEE STRUCT. DWGS.
45	CONT. TERMINATION BAR, FASTENERS AND SEALANT
46	CARULISE COW-75 40 MIL THK COMPOSITE MEMBRANE AIR & VAPOR BARRIER OR ARCHITECT APPROVED EQ.
47	MCM RAINTSREEN ROOF PANEL. PROVIDE BACKER ROD & SEALANT IN ALL SKYWARD JOINTS. SEALANT COLOR TO MATCH MCM COLOR UNLESS OTHERWISE INDICATED.
48	2" THK. (R-4 MIN.) EXTRUDED POLYSTYRENE (XPS) RIGID BOARD PERIMETER INSULATION
49	NEW 6" STRUCTURAL COLD-FORMED METAL STUD FRAMING @ 16" O.C. W/ R-19 (MIN.) BATT INSULATION - SEE STRUCTURAL DRAWINGS
50	CLEAN CRUSHED GRANULAR COMPACTED BASE - REFERENCE GEOTECHNICAL REPORT AND/OR STRUCT. DWGS. FOR ADDITIONAL INFO
51	NEW 4" (MIN.) PERFORATED DRAIN PIPE SURROUNDED BY 1" CLEAN CRUSHED ROCK PLACED A MINIMUM OF 6 INCHES IN ALL DIRECTIONS AROUND PIPE, ENCASED IN A MIRAFL 140N SYNTHETIC FILTER FABRIC OR ARCHITECT APPROVED EQUIV. REFERENCE CIVIL AND PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION
52	6" STRUCTURAL COLD-FORMED METAL STUD FRAMING @ 16" O.C. W/ R-19 (MIN.) BATT INSULATION - SEE STRUCTURAL DRAWINGS
53	TPO SINGLE PLY MEMBRANE ROOFING INSTALLED UP & OVER TOP OF PARAPET
54	CAVITY MORTAR CONTROL MORTAR DIVERTER
55	RUBBERIZED ASPHALT FLASHING - INSTALL IN ACCORDANCE W/ MANUFACTURER'S INSTALLATION INSTRUCTIONS
56	POLYESTER MESH CAVITY VENTS @ 24" O.C.
57	5/8" THK. PAPER-FACED GYPSUM WALL BOARD
58	CONT. NO. 20 @ 1" TRIM TYP.
59	CONT. CORNER BEAD TYP.
60	CONT. BACKER ROD & SEALANT
61	PROVIDE 10 1/4" R-38 (MIN.) THERMAL BATT INSUL. IN SOFFIT
62	CONT. 2" X 2" METAL TRIM ANGLE
63	CONTINUOUS METAL STUD "C" RUNNER TRACK
64	STRUCTURAL STEEL COLUMN - SEE STRUCTURAL DRAWINGS
65	(3) SIDED ALUM. SHADE POCKET & ROLLER SHADE - SEE APPLICABLE DETAILS AND INTERIOR DWGS. ELEC. CONTRACTOR TO PROVIDE POWER PER MFR. REQUIREMENTS
66	STRUCTURAL STEEL BAR JOIST - SEE STRUCTURAL DRAWINGS
67	STRUCTURAL STEEL ANGLE - SEE STRUCTURAL DRAWINGS
68	1 1/2" STEEL DECKING - SEE STRUCTURAL DRAWINGS
69	CONT. PRESERVATIVE TREATED WOOD BLOCKING/NAILER CUT FROM 2X12 (NOM.)
70	CONT. PRESERVATIVE TREATED WOOD BLOCKING/NAILER CUT FROM 2X8 (NOM.)
71	CONT. METAL COUNTER FLASHING - COLOR TO MATCH MCM COLOR
72	STAINLESS STEEL MASONRY ANCHORS @ 24" O.C. (MAX.) MIN. 10" ANCHORS PER STONE PANEL
73	EXTERIOR WALL MOUNTED LIGHT FIXTURE - SEE ELECTRICAL DRAWINGS
74	RECESSED LIGHT FIXTURE - SEE ELECTRICAL DRAWINGS
75	SUSPENDED GYPSUM BOARD CEILING SYSTEM - 5/8" GYPSUM BOARD ATTACHED TO DRYWALL GRID SYSTEM
76	12 GA. HANGER WIRE TYP.
77	STAINLESS STEEL DOVE TAIL ANCHOR SLOTS @ 24" O.C.
78	STAINLESS STEEL STONE DOVE TAIL SPLIT TAIL ANCHORS @ 24" O.C.
79	CONT. STAINLESS STEEL FLASHING/DRIIP EDGE
80	INSULATED HOLLOW METAL DOOR & FRAME - REFERENCE DOOR SCHEDULE AND DOOR TYPE ELEVATIONS
81	1/2" W. ASPHALT IMPREGNATED JOINT FILLER
82	RUBBER WATERSTOP
83	5/8" METAL STUD CLIP SUPPORT BRACKET @ 48" O.C. (MAX.) VERTICALLY SPACED, FABRICATED FROM SIMILAR STUD, CLIP AND BEND 90 DEGREES AND ATTACH TO ADJACENT WALL AND VERTICAL STUD PARTITION FRAMING
84	CONT. STAINED WOOD TRIM W/ 1" - SEE INT. & EXTERIOR FINISH SCHEDULE
85	PRIMED AND PAINTED STEEL PIPE HANDRAIL AND/OR GUARDRAIL - SEE TYPICAL PIPE RAILING TYPES DETAILS SHEET A213
86	METAL SUSPENSION SYSTEM FOR FLAT GYPSUM BOARD CEILINGS - INSTALL PER MANUFACTURER'S RECOMMENDATIONS
87	CONT. KNUERLED ANGLE MOLDING - INSTALL PER MFR'S RECOMMENDATIONS
88	STRUCT. MTL. STUD BOX HDR - SEE STRUCT. DWGS.
89	CONT. REINFORCED WALL ANGLE TRIM
90	LAY-IN ACOUSTICAL PANEL CEILING AND METAL TIE GRID SUSPENSION SYSTEM - SEE INTERIOR FINISH SCHEDULE
91	NEW 4" THK. CAST-IN-PLACE CONCRETE RAMP SLAB OVER 15 MIL. VAPOR BARRIER OVER 4" (MIN.) COMPACTED GRANULAR BASE - SEE STRUCTURAL DRAWINGS
92	COVE LIGHT FIXTURE - SEE ELECTRICAL DRAWINGS
93	4" THK. CAST-IN-PLACE CONCRETE SLAB ON METAL DECKING - PER ICC 600 STORM SHELTER REQUIREMENTS - SEE STRUCTURAL DRAWINGS
94	PREFINISHED ALUMINUM SCUPPER AND DOWNSPOUT - 17 1/2" X 4" - SEE DETAILS
95	TWO-PIECE STAINLESS STEEL MASONRY VENEER ANCHORS @ 16" O.C. VERT & 24" O.C. HOR. - SEE STRUCT. DWGS.
96	ALUM. SILL PAN & ENDMIS FINISH TO MATCH STOREFRONT SYSTEM
97	1/2" THK. SOLID SURFACE WINDOW SILL - REFERENCE INTERIOR FINISH SCHEDULE
98	3/4" THK. CONT. F.T. WOOD NAILED CUT FROM 1X8 (NOM.) STOCK
99	CONT. 4 1/2" X 4 1/2" X 1/8" GA. COLD-ROLLED GALVANIZED METAL ANGLE TYP. @ OPENING PERIMETER
100	3/8" W. ASPHALT IMPREGNATED JOINT FILLER
101	15 MIL. VAPOR RETARDER BARRIER
102	PREFORMED/PREFABRICATED END DAM (BEYOND) - SET IN MASTIC IF FLASHING IS NOT SELF-ADHERING - END DAM TO BE PLACED PRIOR TO THROUGH WALL FLASHING
103	1/2" THK. CEMENTITIOUS BACKING BOARD
104	3 1/2" STRUCT. COLD-FORMED METAL STUD FRAMING @ 16" O.C. - SEE STRUCT. DWGS.
105	2 1/2" STRUCTURAL COLD-FORMED METAL STUD FRAMING @ 16" O.C. - SEE STRUCTURAL DRAWINGS
106	MFCBL-H CONCEALED FASTENED METAL CEILING CLIP BY MONARCH METAL FABRICATORS, OR ARCHITECT APPROVED EQUIV. ATTACHED TO PANEL SYSTEM @ 12" O.C. (MAX.) ATTACH CLIP TO CEILING SUBSTRATE PER MANUFACTURER'S RECOMMENDATIONS
107	MFCBL-H METAL "Z" CLIP BY MONARCH METAL FABRICATORS, OR ARCHITECT APPROVED EQUIV. ATTACH TO WOOD PANEL @ 12" O.C.
108	CONT. MTL. STUD DEFLECTION HEAD TRACK - REF. APPLICABLE DET.
109	LAMINATE AND/OR VENEER AS SCHEDULED, ADHERED TO 3/4" THK. SOLID WOOD PANEL - SEE FINISH SCHEDULE
110	ADHERED 6"X24" TEXTURED STONE PANELS - SEE INTERIOR FINISH SCHEDULE FOR ADDITIONAL INFORMATION
111	RECESSED ELECTRIC MOTOR/DRYER PROTECTION SCREEN - SEE ELEC. DWGS.
112	FINISHED GRADE - SEE CIVIL DRAWINGS
113	MMU7550 MILLWORK U-CORNER BY FRY REGLET OR ARCH. APPROVED EQ. PROVIDE BLACK POWDER COAT FINISH UNLESS OTHERWISE INDICATED
114	6" THK. CAST-IN-PLACE STAIR LANDING ON COMPACTED GRANULAR BASE - SEE STRUCT. DWGS.
115	4" THK. MIN. CAST-IN-PLACE CONCRETE WALKWAY 1' W BROOM FINISH - SEE CIVIL DWGS.
116	7/8" METAL FLUERING CHANNELS @ 16" O.C. (MAX.)
117	EXISTING STEEL BEAM TO REMAIN
118	EXISTING STEEL JOIST TO REMAIN
119	CONCRETE INFILL ON TOP OF EXISTING FOUNDATION WALL - SEE STRUCTURAL
120	EXTRUDED ALUM. RETAINER CLIP BY WALL PANEL FABRICATOR TYPICAL
121	STRUCTURAL TUBULAR STEEL BEAM - SEE STRUCTURAL DRAWINGS
122	FILL TUBULAR STEEL BEAM W/ EXPANDING FOAM INSULATION
123	TPO SINGLE PLY MEMBRANE ROOFING INSTALLED UP FACE OF WALL & UNDER FLASHING
124	FULLY ADHERED TPO MEMBRANE ROOFING OVER 1/2" EXTERIOR FIBERGLASS MAT FACED IMPACT RATED GYPSUM ROOF COVER BOARD ON TAPERED RIGID ROOF INSULATION CRICKET ON (2) LAYERS OF 3/4" THK. (MIN. R-17.4) POLYSTYRENE/ANALOGY FOAM ROOF BOARD INSULATION
125	CONT. 1 1/2" X 3" X 1/4" STEEL ANGLE (LH)
126	HSS 2 1/2" X 2 1/2" X 1/4" BETWEEN JOISTS
127	3 1/2" COLD-FORMED METAL STUD FRAMING @ 16" O.C.
128	3 1/2" SOUND ATTENUATION BLANKETS
129	CONT. 2X10 (NOM.) FIRE RETARDANT TREATED (FRT) WOOD BLOCKING/NAILER
130	CONT. 2X6 (NOM.) FIRE RETARDANT TREATED (FRT) WOOD BLOCKING/NAILER
131	CONT. 1" W. BACKER ROD AND SEALANT W/ WEEP TUBES @ 24" O.C. SEALANT COLOR TO MATCH E.I.F.S. COLOR
132	CONT. CORRUGATED POLYSTYRENE DRAINAGE STRIP - INSTALL IN ACCORDANCE TO E.I.F.S. MANUFACTURER'S RECOMMENDATIONS
133	STAINLESS STEEL FLASHING & COUNTER FLASHING
134	METAL CLIP ANGLE - SEE STRUCT. DWGS.
135	CONT. 10GA 1 1/2" X 3" GALV. STEEL COLD-ROLLED ANGLE
136	#93 GYPSUM WALL BOARD CONTROL JOINT
137	NEW EXTERIOR RATIO PAVERS WITH DRAINAGE - SEE SPECIFICATION FOR INFORMATION
138	2" ROOF BELOW - SEE SPECIFICATION FOR INFORMATION
139	CONT. SEALANT - COLOR TO MATCH ADJACENT MATERIAL
140	CONT. PRESERVATIVE TREATED WOOD BLOCKING/NAILER CUT FROM 2X6 (NOM.)
141	3 1/2" COLD-FORMED METAL STUD FRAMING @ 16" O.C.
142	CONT. BENT STEEL PLATE - SEE STRUCT. DWGS.
143	2" X 6" RECTANGULAR ALUMINUM TUBE (SHARP CORNERS) SUNSHADE LOUVERS TYP. BY SPECIALTY VENDOR - REFERENCE SPECIFICATIONS AND/OR EXTERIOR ELEVATIONS FOR FINISH
144	2" X 2" RECTANGULAR ALUMINUM TUBE (SHARP CORNERS) SUNSHADE SUPPORT FRAMING TYP. BY SPECIALTY VENDOR - REFERENCE SPECIFICATIONS AND/OR EXTERIOR ELEVATIONS FOR FINISH
145	CONT. ALUMINUM CLIP ANGLE (SHARP CORNERS) TYP. BY SPECIALTY VENDOR - REFERENCE SPECIFICATIONS AND/OR EXTERIOR ELEVATIONS FOR FINISH
146	6" STRUCTURAL COLD-FORMED METAL JOISTS FRAMING @ 16" O.C. (MAX.)

Roy A. Marston

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**ELLISVILLE CITY HALL &
POLICE STATION**

ELLSVILLE, MO 63011

1 WEBAVE

Revision

No.

Date

3-17-23

PRE-BID ADDENDUM #1

Project No.
20016

Sheet No.

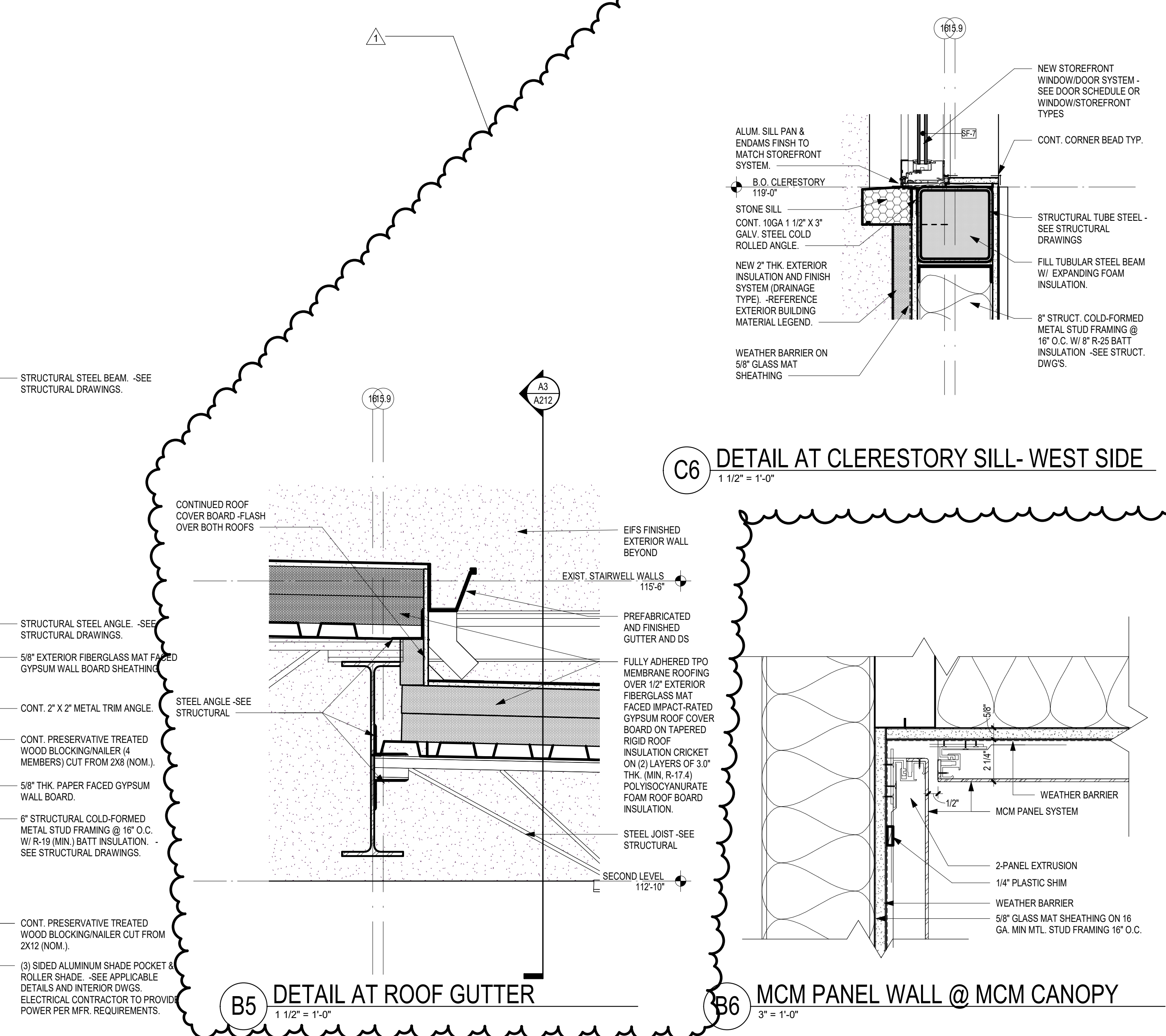
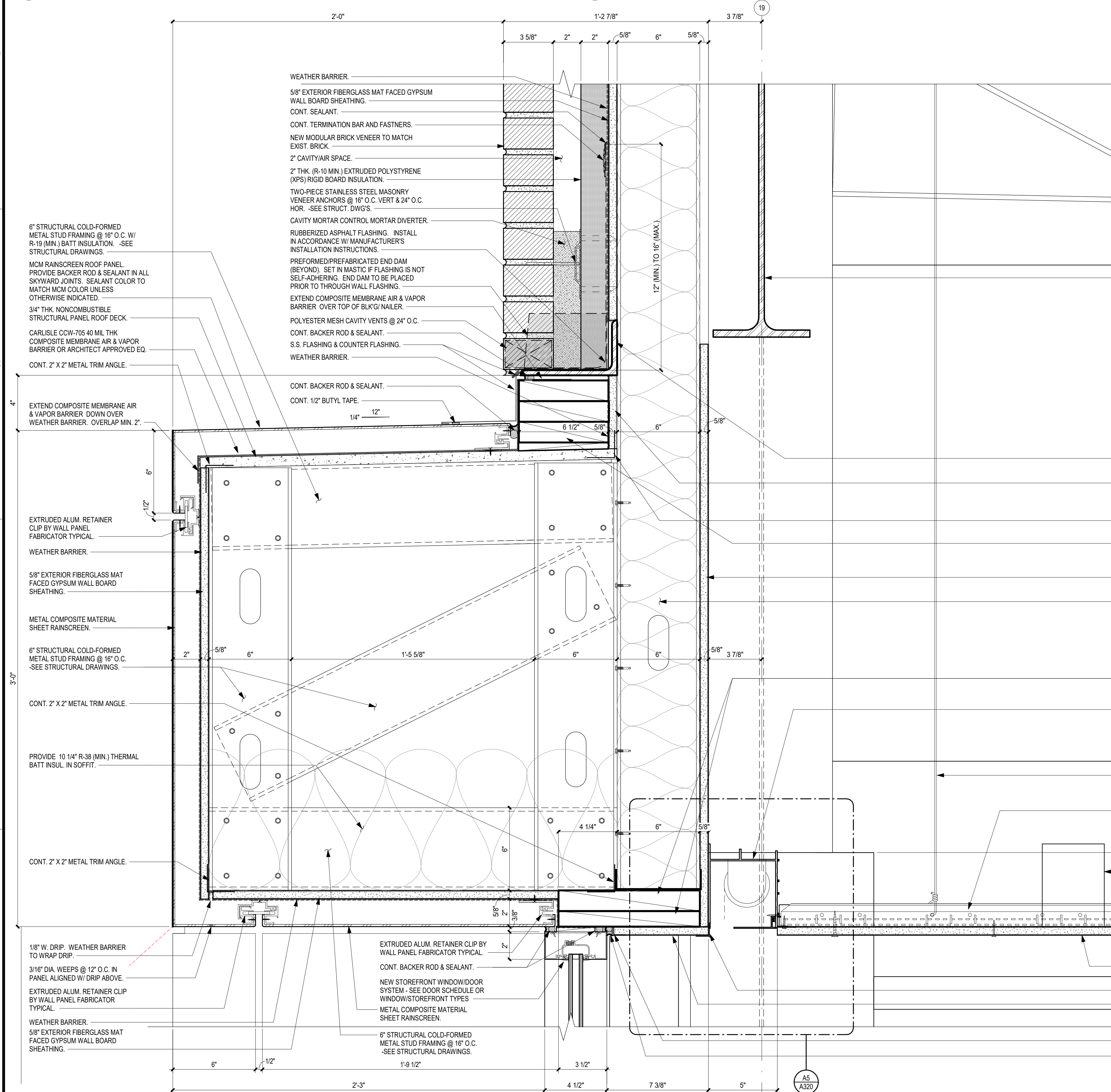
A302

Date
02/23/23

WALL SECTIONS

PARTIAL WALL SECT. @ LOBBY FDN. TURNED DOWN SLAB EDGE
(SOUTH)

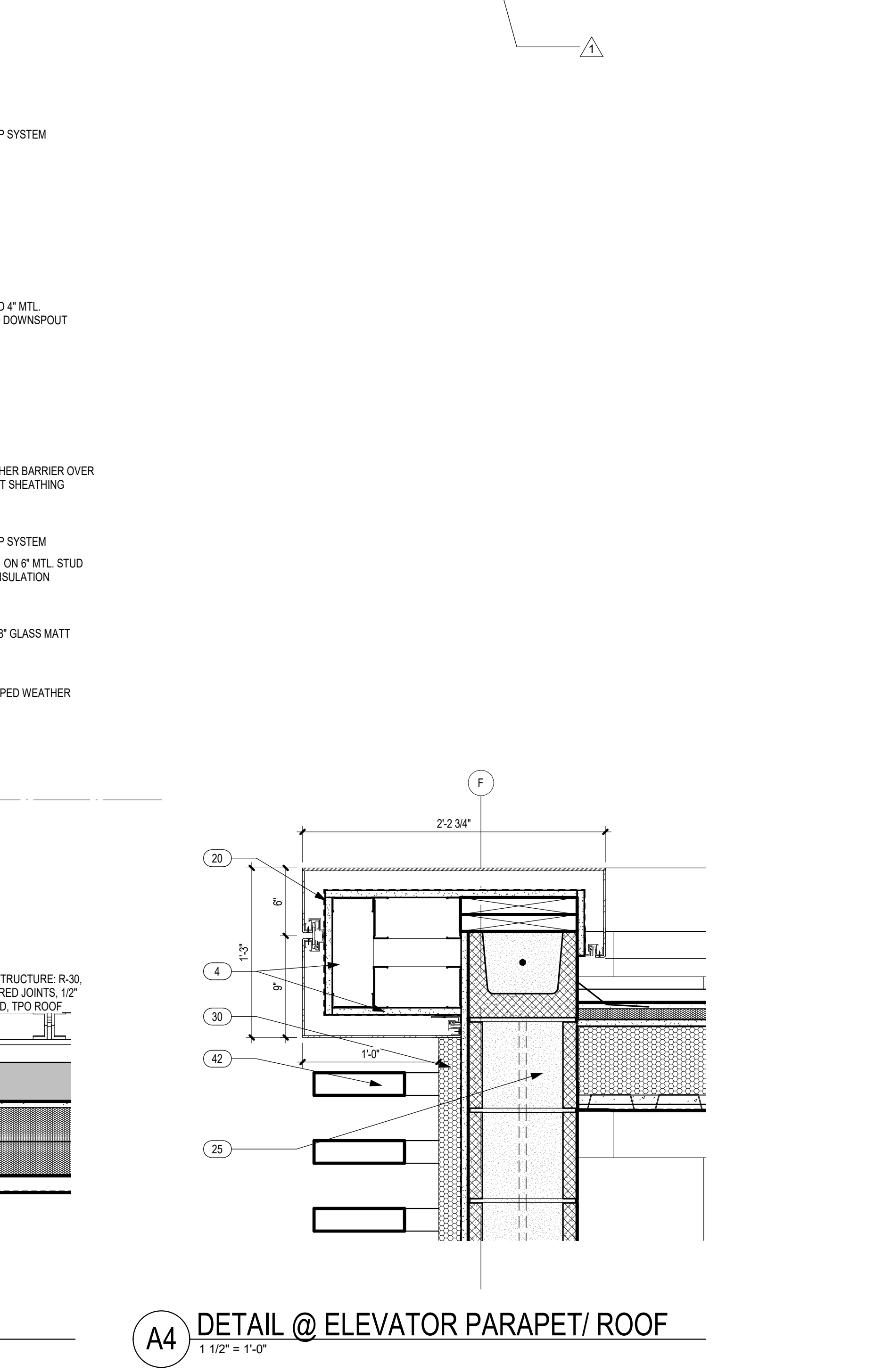
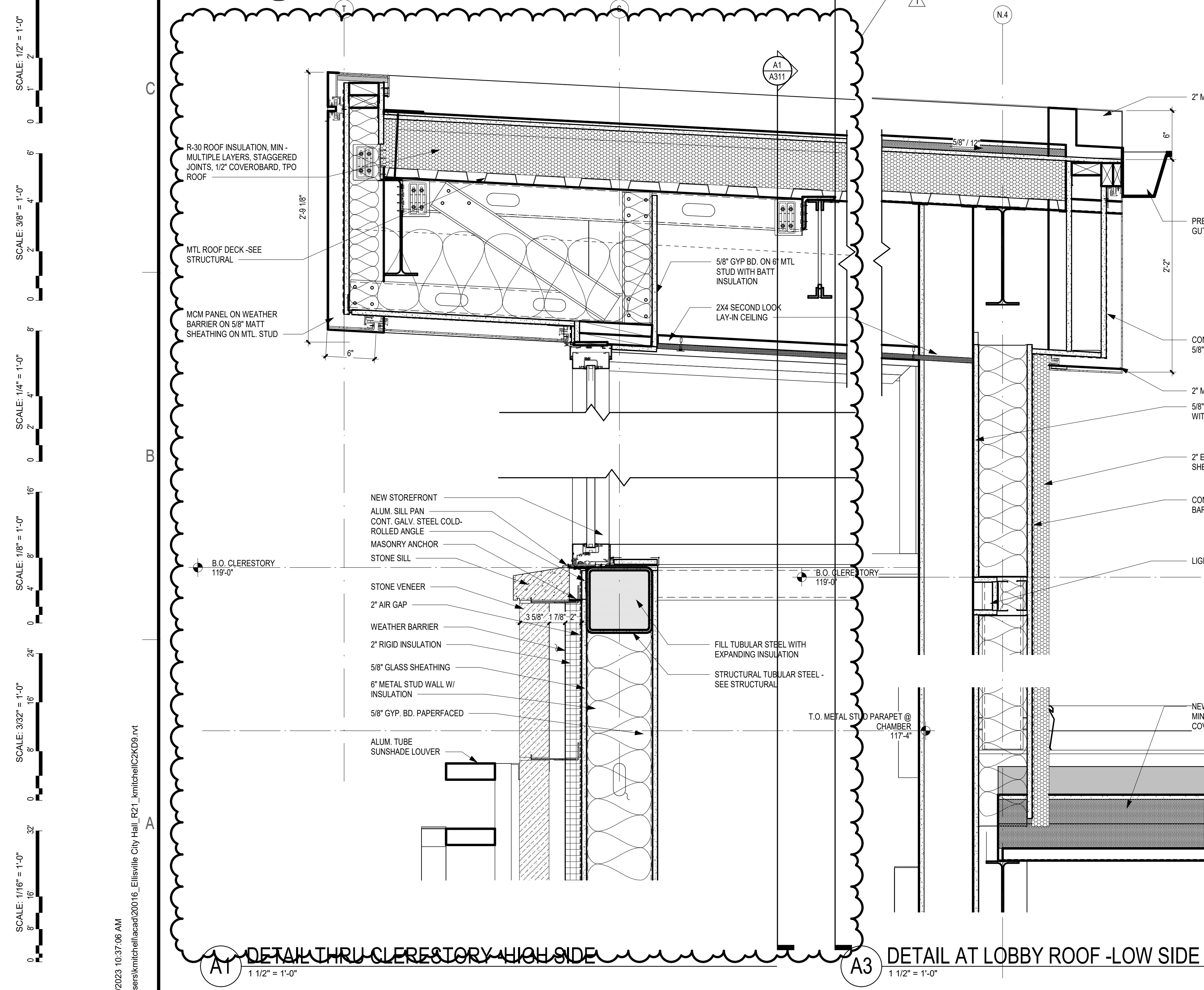
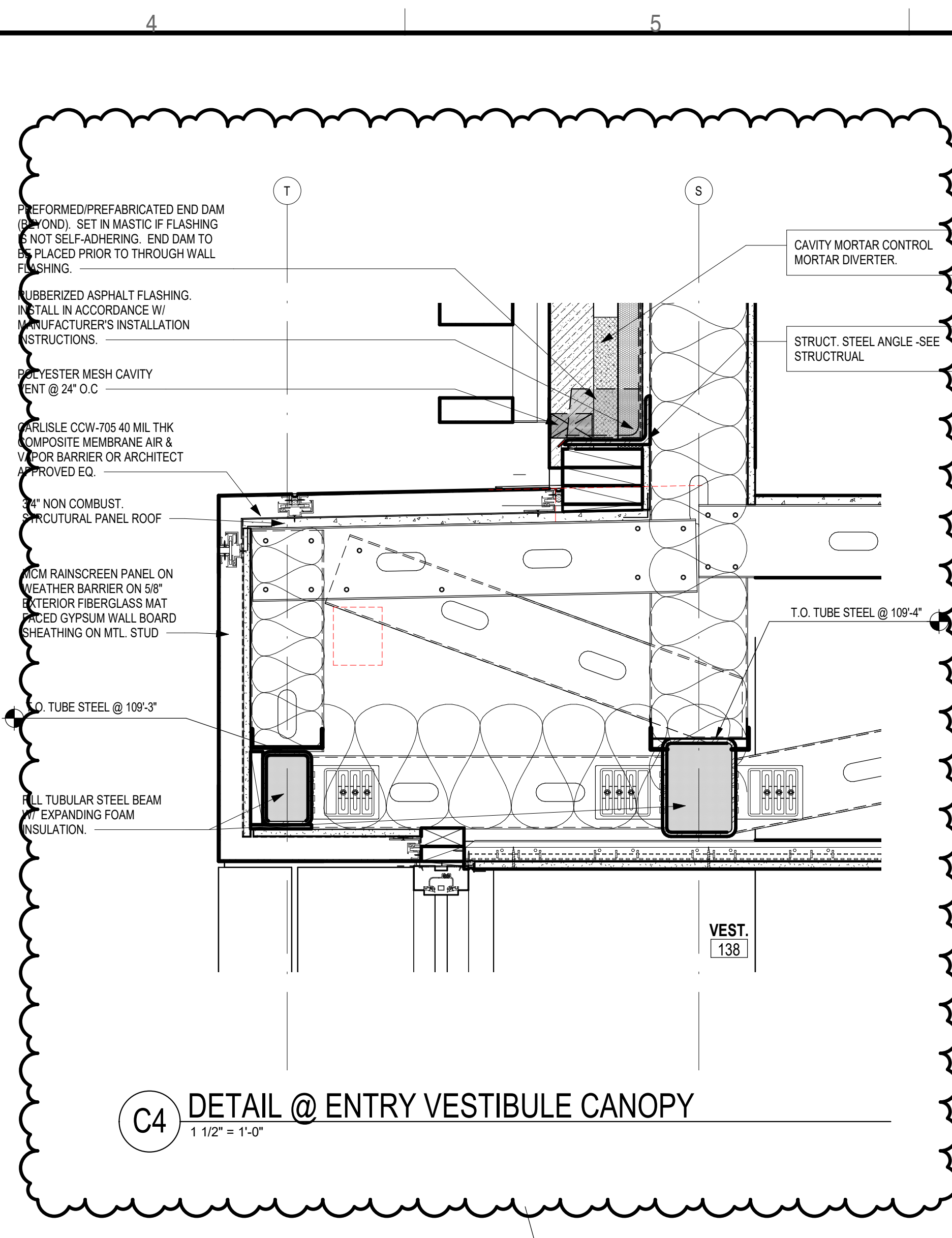
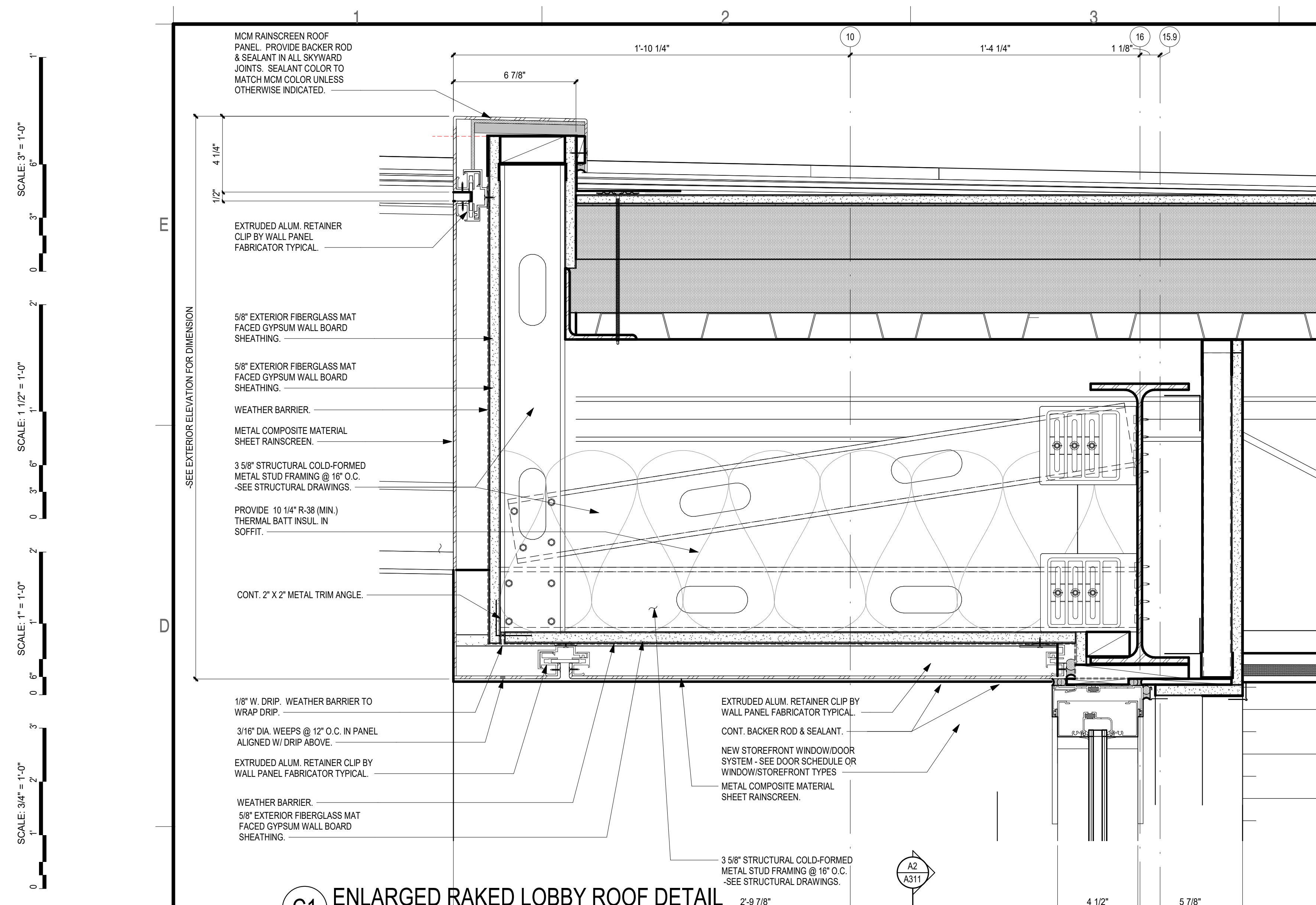
E3 PARTIAL WALL SECT. @ LOBBY FDN. TURNED DOWN SLAB EDGE (WEST)



A1 DETAIL THRU STOREFRONT @ MCM METAL PANEL
3" = 1'-0"

A5 AXIOM SHADE POCKET
3" = 1'-0"

A6 MCM TYP. SOFFIT EDGE DTL.
3" = 1'-0"



KEYED NOTE WALL SECTION	
MARK	DESCRIPTION
1	NEW MODULAR BRICK VENEER TO MATCH EXIST. BRICK.
2	2\"/>
3	2\"/>
4	5/8\"/>
5	EXISTING BRICK VENEER TO REMAIN. INFILL/LOCKPOINT. REPLACE ANY BRICK DAMAGED DURING CONSTRUCTION.
6	STONE SILL.
7	1\"/>
8	NEW STOREFRONT WINDOW/DOOR SYSTEM - SEE DOOR SCHEDULE OR WINDOWSTOREFRONT TYPES.
9	EXISTING ROOF STRUCTURE.
10	NEW ROOF STRUCTURE: METAL DECK - SEE STRUCTURAL. MIN. R30 R\"/>
11	STRUCTURAL STEEL BEAM - SEE STRUCTURAL DRAWINGS.
12	PREFABRICATED METAL CORNICE - SEE SPEC FOR PRODUCT INFORMATION.
13	GYP. BD. CEILING - SEE FINISH PLAN FOR PAINT INFORMATION.
14	4\"/>
15	NEW WALL BASE AS SCHEDULED - SEE FINISH PLANS & INT. FINISH SCHED.
16	EXISTING CEILING TO REMAIN.
17	WEATHER BARRIER.
18	METAL COMPOSITE MATERIAL SHEET RAINSCREEN.
19	EXISTING FOUNDATION WALL AND FOOTING TO REMAIN.
20	EXISTING CONCRETE FLOOR SLAB.
21	3\"/>
22	NEW CAST-IN PLACE CONCRETE FLOOR SLAB OVER 15 MIL. VAPOR BARRIER OVER 4\"/>
23	CMU WALL - SEE STRUCTURAL.
24	2\"/>
25	2\"/>
26	2\"/>
27	2\"/>
28	EXISTING WALL SYSTEM TO REMAIN - PROTECT DURING CONSTRUCTION.
29	R-30 R\"/>
30	NEW 2\"/>
31	SPECIALTY WALL FINISH - SEE INTERIOR SPECIFICATIONS FOR PRODUCT INFO.
32	NEW CONCRETE FLOOR SLAB ON METAL DECKING - SEE STRUCTURAL.
33	F.F.T. 5/8\"/>
34	RECESSED ACCENT BRICK.
35	PREFINISHED ALUMINUM GUTTER AND DOWNSPOUT - 4X4 DS - SEE PLUMBING FOR D.S. LOCATIONS.
36	EXISTING PARAPET DEMOED DOWN TO EXISTING ROOF DECK.
37	REMOVE EXISTING EIFS OVERHANG.
38	8\"/>
39	F.F.T. 2X WOOD BLOCKINGNAILER.
40	3/4\"/>
41	SIGNAGE.
42	6\"/>
43	NEW CAST-IN PLACE CONCRETE FOUNDATION WALL - SEE STRUCT. DWGS.
44	STONE CAP - MATCH COLOR TO STONE SILL.
45	EXTEND ROOF FLASHING UP VERTICAL FACE MIN. 8\"/>
46	NEW 6\"/>
47	CONT. TERMINATION BAR, FASTENERS AND SEALANT.
48	CARLISLE COW-75 40 MIL THK COMPOSITE MEMBRANE AIR & VAPOR BARRIER OR ARCHITECT APPROVED EQ.
49	MCM RAINSCREEN ROOF PANEL. PROVIDE BACKER ROD & SEALANT IN ALL SKYWARD JOINTS. SEALANT COLOR TO MATCH MCM COLOR UNLESS OTHERWISE INDICATED.
50	2\"/>
51	NEW CAST-IN PLACE CONCRETE FOOTING - SEE STRUCTURAL DRAWINGS.
52	CLAY CRUSET BASE - REFERENCE GEOTECHNICAL REPORT AND/OR STRUCT. DWGS. FOR ADDITIONAL INFO.
53	NEW 4\"/>
54	140N SYNTHETIC FILTER FABRIC OR ARCHITECT APPROVED EQUAL. REFERENCE CIVIL AND/OR PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION.
55	TPO SINGLE PLY MEMBRANE ROOFING INSTALLED UP & OVER TOP OF PARAPET.
56	CAVITY MORTAR CONTROL MORTAR DIVERTER.
57	RUBBERIZED ASPHALT FLASHING. INSTALL IN ACCORDANCE W/ MANUFACTURER'S INSTALLATION INSTRUCTIONS.
58	POLYESTER MESH CAVITY VENTS @ 24\"/>
59	5/8\"/>
60	CONT. NO. 20B 1\"/>
61	CONT. CORNER BEAD TYP.
62	CONT. BACKER ROD & SEALANT.
63	PROVIDE 10 1/4\"/>
64	CONT. 2\"/>
65	CONTINUOUS METAL STUD 1/2\"/>
66	STRUCTURAL STEEL COLUMN - SEE STRUCTURAL DRAWINGS.
67	(3) SIDED ALUM. SHADE POCKET & ROLLER SHADE - SEE APPLICABLE DETAILS AND INTERIOR DWGS. ELEC. CONTRACTOR TO PROVIDE POWER PER MFR. REQUIREMENTS.
68	STRUCTURAL STEEL BAR JOIST - SEE STRUCTURAL DRAWINGS.
69	STRUCTURAL STEEL ANGLE - SEE STRUCTURAL DRAWINGS.
70	1 1/2\"/>
71	CONT. PRESERVATIVE TREATED WOOD BLOCKINGNAILER CUT FROM 2X12 (NOM.).
72	CONT. PRESERVATIVE TREATED WOOD BLOCKINGNAILER CUT FROM 2X8 (NOM.).
73	CONT. METAL COUNTER FLASHING. COLOR TO MATCH MCM COLOR.
74	STAINLESS STEEL MASONRY ANDORS @ 24\"/>
75	EXTERIOR WALL MOUNTED LIGHT FIXTURE - SEE ELECTRICAL DRAWINGS.
76	RECESSED LIGHT FIXTURE - SEE ELECTRICAL DRAWINGS.
77	SUSPENDED GYPSUM BOARD CEILING SYSTEM: 5/8\"/>
78	12 GA. HANGER WIRE TYP.
79	STAINLESS STEEL DOVE TAIL ANCHOR SLOTS @ 24\"/>
80	STAINLESS STEEL STONE DOVE TAIL SPLIT TAIL ANCHORS @ 24\"/>
81	CONT. STAINLESS STEEL FLASHING/GRIP EDGE.
82	INSULATED HOLLOW METAL DOOR & FRAME - REFERENCE DOOR SCHEDULE AND DOOR TYPE ELEVATIONS.
83	1/2\"/>
84	CONT. RUBBER WATERSTOP.
85	3/8\"/>
86	CONT. STAINED WOOD TRIM W/ D1 - SEE INT. EL. & INTERIOR FINISH SCHEDULE.
87	PRIMED AND PAINTED STEEL PIPE HANDRAIL AND/OR GUARDRAIL - SEE TYPICAL PIPE RAILING TYPES DETAILS SHEET A213.
88	METAL SUSPENSION SYSTEM FOR FLAT GYPSUM BOARD CEILINGS. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
89	CONT. KNURLED ANGLE MOLDING. INSTALL PER MFR'S RECOMMENDATIONS.
90	STRUCT. MTL. STUD BOX HDR - SEE STRUCT. DWGS.
91	CONT. REINFORCED WALL ANGLE FRM.
92	LAY-IN ACOUSTICAL PANEL CEILING AND METAL TEE GRID SUSPENSION SYSTEM - SEE INTERIOR FINISH SCHEDULE.
93	NEW 4\"/>
94	COVE LIGHT FIXTURE - SEE ELECTRICAL DRAWINGS.
95	4\"/>
96	PREFINISHED ALUMINUM SCUPPER AND DOWNSPOUT - SIZE 1\"/>
97	TWO-PIECE STAINLESS STEEL MASONRY VENEER ANCHORS @ 18\"/>
98	ALUM. SILL PAN & ENDGUS FINISH TO MATCH STOREFRONT SYSTEM.
99	1/2\"/>
100	3/4\"/>
101	CONT. 4 1/2\"/>
102	3/8\"/>
103	15 MIL. VAPOR RETARDER BARRIER.
104	PREFORMED/PREFABRICATED END DAM (BEYOND). SET IN MASTIC IF FLASHING IS NOT SELF-ADHERING. END DAM TO BE PLACED PRIOR TO THROUGH WALL FLASHING.
105	1/2\"/>
106	2 1/2\"/>
107	2 1/2\"/>
108	2 1/2\"/>
109	MFCEL-H CONCEALED FASTENED METAL CEILING CLIP BY MONARCH METAL FABRICATORS, OR ARCHITECT APPROVED EQUAL. ATTACHED TO PANEL SYSTEM @ 12\"/>
110	MFCEL-H CONCEALED FASTENED METAL CEILING CLIP BY MONARCH METAL FABRICATORS, OR ARCHITECT APPROVED EQUAL. ATTACH TO WOOD PANEL @ 12\"/>
111	CONT. MTL. STUD DEFLECTION HEAD TRACK - REF. APPLICABLE DET.
112	LAMINATE AND/OR VENEER AS SCHEDULED. ADHERED TO 3/4\"/>
113	ADHERED 6\"/>
114	RECESSED ELECTRIC MOTORIZED PROJECTION SCREEN - SEE ELEC. DWGS.
115	FINISHED GRADE - SEE CIVIL DRAWINGS.
116	MMU750 MILLWORK (U-CHANNEL) BY FRY REGLET OR ARCH. APPROVED EQ. PROVIDE BLACK POWDER COAT FINISH UNLESS OTHERWISE INDICATED.
117	6\"/>
118	CAST-IN PLACE MONOLITHIC EXTERIOR CONCRETE STAIR - ON 4\"/>
119	4\"/>
120	1/8\"/>
121	EXISTING STEEL JOIST TO REMAIN.
122	CONCRETE INFILL ON TOP OF EXISTING FOUNDATION WALL - SEE STRUCTURAL.
123	EXTRUDED ALUM. RETAINER CLIP BY WALL PANEL FABRICATOR TYPICAL.
124	STRUCTURAL TUBULAR STEEL BEAM - SEE STRUCTURAL DRAWINGS.
125	FILL TUBULAR STEEL BEAM W/ EXPANDING FOAM INSULATION.
126	TPO SINGLE PLY MEMBRANE ROOFING INSTALLED UP FACE OF WALL & UNDER FLASHING.
127	FULLY ADHERED TPO MEMBRANE ROOFING OVER 1/2\"/>
128	CONT. 1 1/2\"/>
129	CONT. 1 1/2\"/>
130	HSS 2 1/2\"/>
131	3/8\"/>
132	3 1/2\"/>
133	CONT. 2X10 (NOM.) FIRE RETARDANT TREATED (FRT) WOOD BLOCKINGNAILER.
134	CONT. 2X6 (NOM.) FIRE RETARDANT TREATED (FRT) WOOD BLOCKINGNAILER.
135	CONT. 1\"/>
136	CONT. CORRUGATED POLYSTYRENE DRAINAGE STRIP. INSTALL IN ACCORDANCE TO E.I.F.S. MANUFACTURER'S RECOMMENDATIONS.
137	STAINLESS STEEL FLASHING & COUNTER FLASHING.
138	METAL CLIP ANGLE - SEE STRUCT. DWGS.
139	CONT. 10GA 1 1/2\"/>
140	#3 GYPSUM WALL BOARD CONTROL JOINT.
141	NEW EXTERIOR PATIO PAVERS WITH DRAINAGE - SEE SPECIFICATION FOR INFORMATION.
142	2\"/>
143	CONT. SEALANT. COLOR TO MATCH ADJACENT MATERIAL.
144	CONT. PRESERVATIVE TREATED WOOD BLOCKINGNAILER CUT FROM 2X6 (NOM.).
145	3/8\"/>
146	CONT. BENT STEEL PLATE - SEE STRUCT. DWGS.
147	2\"/>
148	2\"/>
149	2\"/>
150	CONT. ALUMINUM CLIP ANGLE (SHARP CORNERS) SUNSHADE LOUVERS TYP. BY SPECIALTY VENDOR - REFERENCE SPECIFICATIONS AND/OR EXTERIOR ELEVATIONS FOR FINISH.
151	6\"/>

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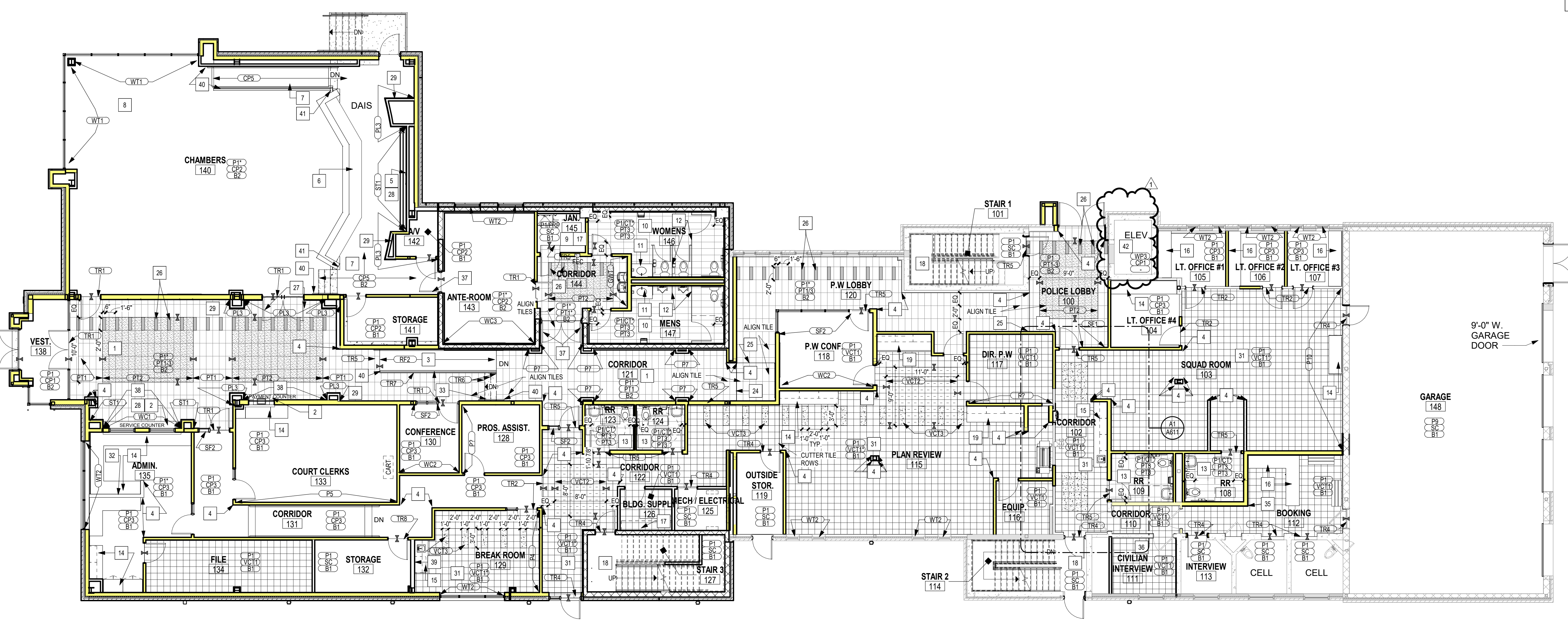
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No.	Date	Revision
1.	3/17/23	FREE-BID ADDENDUM #1

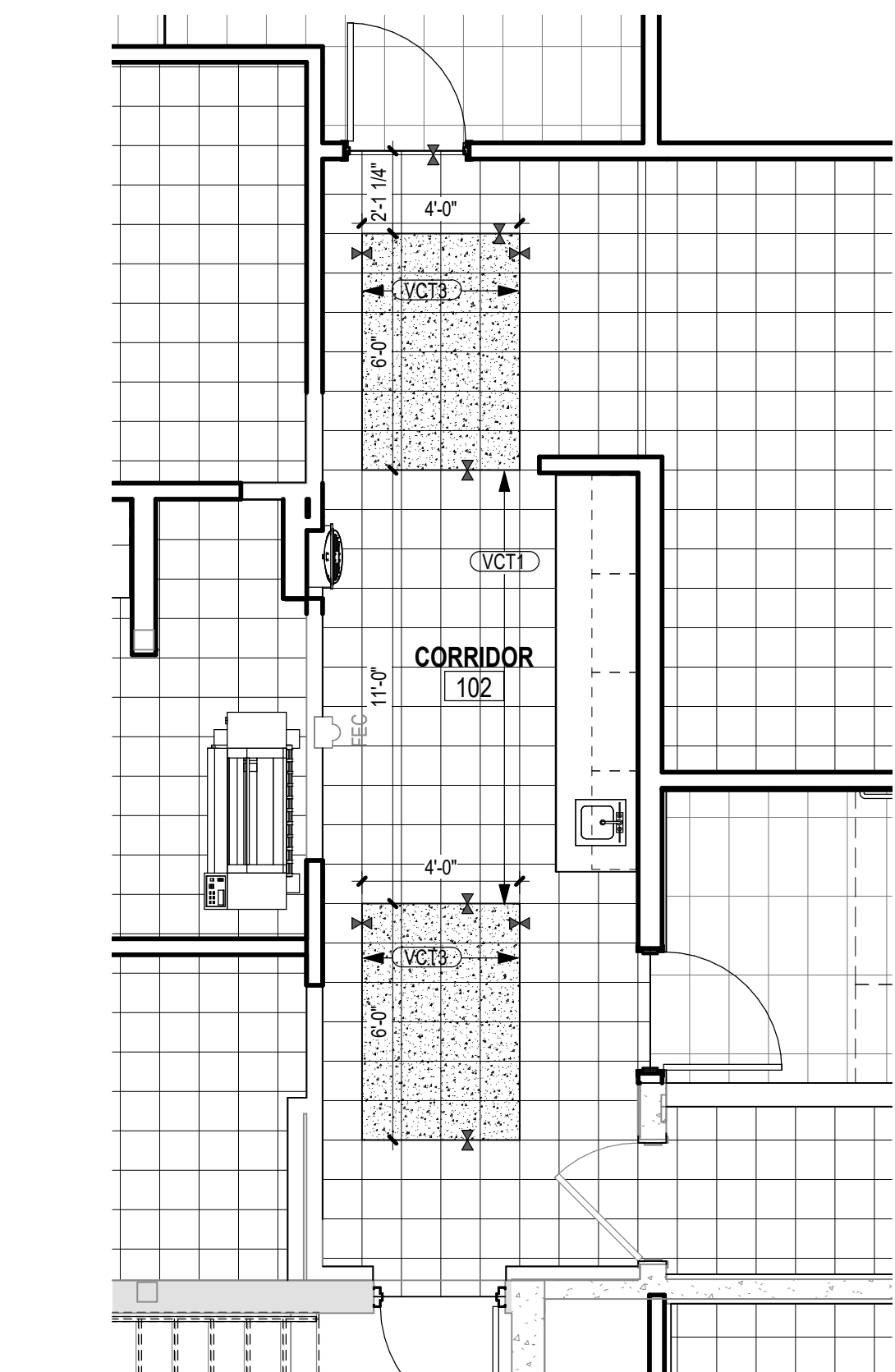
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20016

Sheet No.
A322

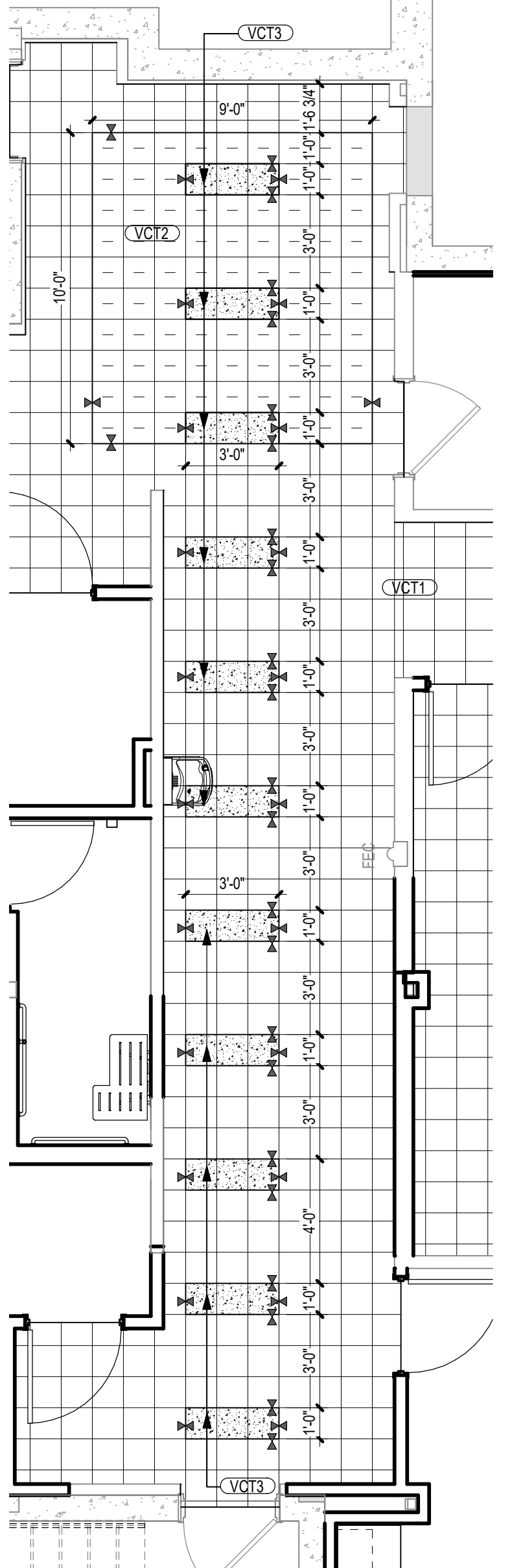
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02/23/23



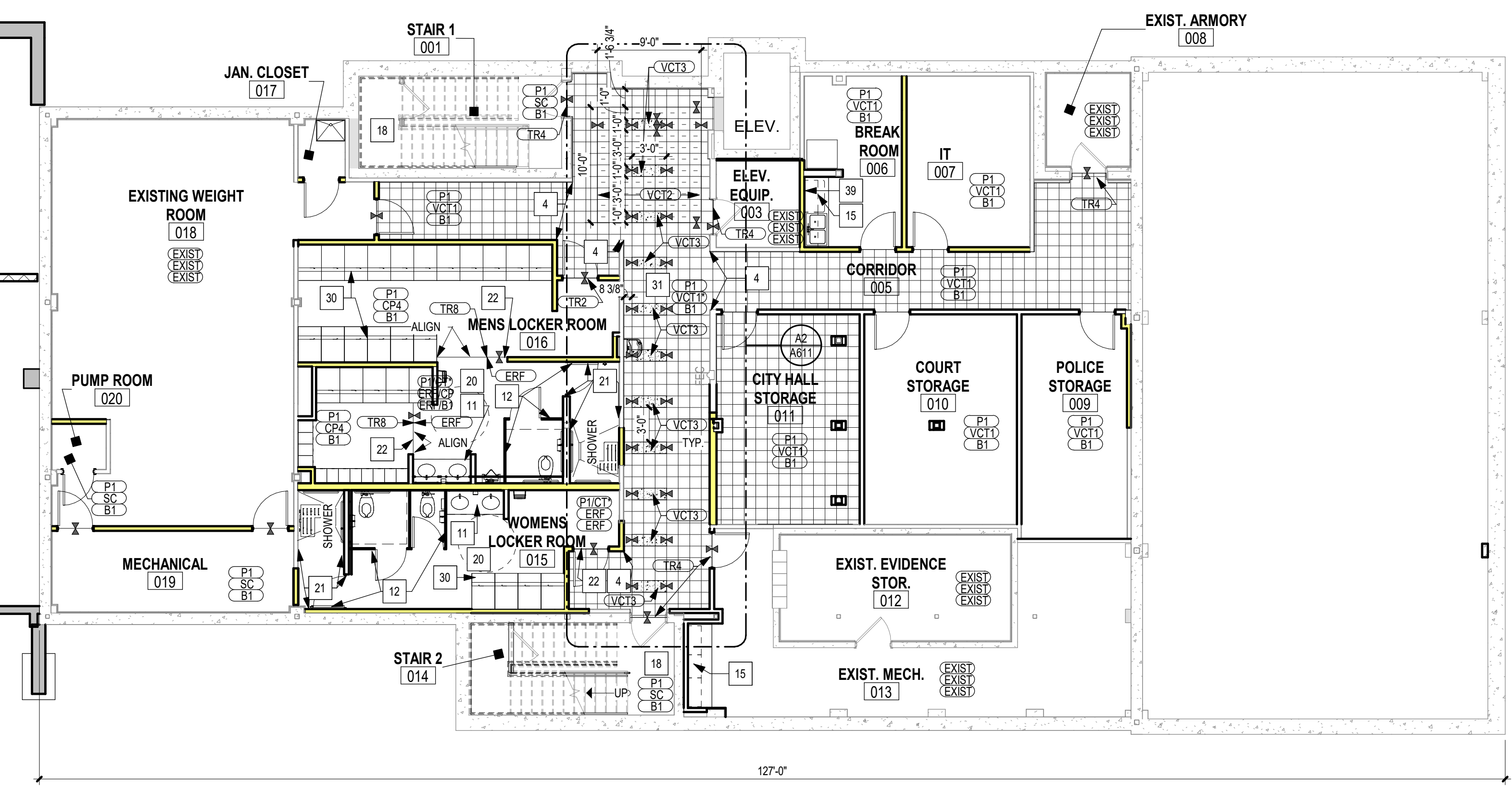
C1 LEVEL 1 FLOOR FINISH PLAN
1/8" = 1'-0"



A1 ENLARGED PARTIAL LVL 1 FLOOR FINISH
1/4" = 1'-0"



A2 ENLARGED PARTIAL BASEMENT FLOOR FINISH
1/4" = 1'-0"



A3 BASEMENT FLOOR FINISH PLAN
1/8" = 1'-0"

FINISH SCHEDULE LEGEND

SYMBOL DENOTES:

WALL FINISH
FLOOR FINISH
BASE FINISH

FLOOR MATERIAL CHANGE
CARPET PATTERN/TILE LVT
DIRECTION

NOTE: * INDICATES THAT FINISH VARIES. REF. ELEVATIONS AND FINISH PLAN FOR ADD'L INFO

EACH ROOM SHALL HAVE A ROOM FINISH TAG. SEE FLOOR FINISH PLAN. REFER TO FINISH PLAN/NOTES FOR CASEWORK FINISH AND REFLECTED CEILING PLAN FOR CEILING FINISHES.

INTERIOR FINISH GENERAL NOTES

- INTERIOR FINISH MATERIALS SHALL COMPLY WITH THE FLAME SPREAD & SMOKE DEVELOPMENT LIMITATION USED IN CHAPTER 6 OF THE IBC.
- ALL INTERIOR WALL COVERINGS MUST COMPLY WITH THE FOLLOWING: CLASS 1, FLAME SPREAD RATING 0-25 ASTM-E-84 PER FINISH SHEET.
- G.C. TO SUBMIT ALL FINISHES IN MATERIAL SAMPLE FORM TO DESIGNER FOR APPROVAL PRIOR TO ORDER OF MATERIALS - NO INTERNET OR COPY FORM SUBMITTALS WILL BE APPROVED.
- G.C. TO SUBMIT SHOP DRAWINGS FOR ALL NEW WINDOW TREATMENTS TO DESIGNER FOR APPROVAL PRIOR TO ORDER OF MATERIALS. INCLUDE ALL INSTALLATION, FREIGHT, TAX, HARDWARE, FITTINGS, FASTENERS AND FABRICS. SUBMIT MANUFACT. WARRANTY & INSTRUCTIONS FOR CLEANING & MAINTENANCE OF PRODUCTS. NO SUBSTITUTIONS. CONTRACTOR TO COORDINATE ALL INSTALLATION INCLUDING ADD'L BLOCKING AS REQ'D. IF ANY MODIFICATION TO DESIGN DUE TO EXISTING FIELD CONDITIONS, PLEASE CONTACT DESIGNER.
- G.C. TO REFLECTED CEILING PLAN FOR ACoustICAL CLG TYPES AND SOFFIT ACCENT COLOR LOCATIONS. ALL FACES OF SOFFITS TO BE PAINTED INCLUDING UNDER SIDE.
- REFER TO FLOOR FINISH PLAN FOR ACCENT PAINT LOCATIONS. ALL PAINTED WALLS & DOOR FRAMES TO RECEIVE TWO COATS PER FINISH PAINT COLOR. HW DOORS TO BE PAINTED TO MATCH ADJACENT WALL L.I.N.G.
- ADJUSTABLE SHELVING IS NOTED ON FLOOR PLAN, TO HAVE HEAVY DUTY WHITE MELAMINE SHELVES WITH WHITE PVC EDGES, MOUNTED ON WHITE HEAVY DUTY KV STANDARDS AND BRACKETS.
- ALL BUILT-IN CASEWORK TO BE VERIFIED AND COORDINATED WITH OWNER, G.C. TO SUBMIT SHOP DRAWINGS TO DESIGNER FOR APPROVAL PRIOR TO ORDER OF MATERIALS. ALL COUNTERTOPS TO HAVE BACKSPLASH UNLESS NOTED OTHERWISE. ALL OUTSIDE CORNERS OF COUNTERTOP TO BE RADUSED. ALL PLASTIC LAMINATE DOOR AND DRAWERS TO RECEIVE 1MM PVC EDGEBAND AND ALL COUNTERTOPS TO RECEIVE 3MM PVC OR 1-MOLD EDGEBAND COLOR TO BE DETERMINED.
- FLOORING SUB-CONTRACTOR TO ORDER TWO (2) BOXES OF EXTRA CARPET TILE EACH PATTERN FOR OWNERS FUTURE MAINTENANCE/STOCK COORDINATE DELIVERY/STORAGE OF BOX STOCK WITH OWNER.
- ALL INTERIOR DIMENSIONS ARE TO FINISHED FACE OF GYP. BD. UNLESS NOTED OTHERWISE.

KEYED NOTE FINISH PLAN	
MARK	DESCRIPTION
1	INSTALL FLOORING PORCELAIN TILE IN SQUAD ROOM AS INDICATED
2	1/2" QUARTZ TRANSACTION LEDGE SIZES
3	RUBBER FLOORING TILES UP RAMP R.F.2. INCLUDE BASE BZ AT SIDE WALL AND TRANSITION STRIP TRT AT EXPOSED RAMP SIDE EDGE, AND SLOPED
4	PROVIDE & INSTALL CORNER GUARDS WP1
5	CUSTOM SIGNAGE PANEL ON STANDOFFS ON STONE WALL PANEL
6	CUSTOM WOOD VENEER DAVIS W22 ALL EXPOSED SIDES/CHASSIS WITH CONCEALED BULLET RESISTANT PANELS. INTERIOR TO HAVE REMOVABLE ACCESS PANELS PL4. TRANSACTION LEDGE SIZES. WORKSURFACE PL2. BLACK REVEALS. SEE DETAIL.
7	BROADLOOM CARPET AT DAIS PLATFORM. WRAP STAIRS ALL SIDES IN BROADLOOM CARPET. CARPET UP RAMP INCLUDE STAINED WOOD TRIM TOP CAP AT RAMP EDGE. PAINT EXPOSED SIDE OF GYP. BD. RAMP TO MATCH FIELD WALL COLOR. INCLUDE VINYL STRINGER AT SIDE WALL AT STAIR MATCH COLOR BD.
8	MOTORIZED ROLLER SHADES IN CHAMBERS. COORDINATE LOCATION OF WALL SWITCH WITH DESIGNER & PROVIDE SHOP DRAWINGS FOR REVIEW/APPROVAL
9	JANITORS. INSTALL FRP 3/4" OAW SHOWER AROUND ROOM ALL WALLS (W/TH FRP INSTALL ALONG TOP OF 4" H VINYL BASE. USE ALL COORDINATING PVC TRIM TOP, BOTTOM, & INSIDE CORNER PIECES. CLEAR BEAD OF SEALANT ALONG ALL EDGES OF MOP SINK.
10	PUBLIC RESTROOMS & LOCKER ROOMS. INSTALL CERAMIC TILE WAINSCOT CT1 WET WALL, SIDE WALLS AT TOILET AND VANITY. HEIGHT AS INDICATED, TOP CAP & OUTSIDE EDGES TRIM TR1. INCLUDE ACCENT RIBBON OF GLASS WALL TILE GWT. NOTE: BASE TO MATCH FLOOR TILE PTS OUT TO 4" H WITH TOP CAP SCHLUTER TRIM TR1 ALL WALLS. INCLUDE TRANSITION TR3 COVE TRIM WHERE WALLS MEET FLOOR TILE. PAINT ABOVE TILE ALL WALLS. CONCRETE BACKER BOARD AT TILE AND MOISTURE RESISTANT GYP BOARD ALL WALLS & CEILING. REFER TO ELEVATIONS FOR ADD'L INFORMATION.
11	PUBLIC RESTROOMS & LOCKER ROOMS VANITY. SOLID SURFACE VANITY TOP SIZES WITH PLASTIC LAMINATE ANGLED PANEL ENCLOSURE PL3. REFER TO DETAILS.
12	PUBLIC RESTROOMS & LOCKER ROOMS. SOLID PHENOLIC BLACK CORE TOILET PARTITIONS & URINAL SCREENS. ACCURATE OR APPROVED EQUAL. COLOR GRAPHITE GRAY/1602. FLOOR MOUNTED OVERHEAD BRACED.
13	INDIV. TOILET RMS. INSTALL CERAMIC TILE WAINSCOT CT1 WET WALL & SIDE WALL AT TOILET. HEIGHT AS INDICATED, TOP CAP TR1. INCLUDE ACCENT RIBBON OF GLASS WALL TILE GWT. NOTE: BASE TO MATCH FLOOR TILE PTS OUT TO 4" H WITH TOP CAP SCHLUTER TRIM TR1 ALL WALLS. INCLUDE TRANSITION TR3 COVE TRIM WHERE WALLS MEET FLOOR TILE. PAINT ABOVE TILE ALL WALLS. MOISTURE RESISTANT GYP BOARD ALL WALLS & CEILING. REFER TO ELEVATIONS FOR ADD'L INFORMATION.
14	25D PLAS LAMINATE WORKSURFACE & BACK & SIDE SPLASHES PL2. BASE/WALL CABINETS PL1
15	25D SOLID SURFACE COUNTER/TERTOP & BACK & SIDE SPLASHES SD33. BASE/WALL CABINETS PL1
16	25D PLAS LAMINATE WORKSURFACE & BACK & SIDE SPLASHES PL2. BASE/WALL CABINETS PL1
17	HEAVY DUTY SHELVES: WHITE MELAMINE WITH MATCHING 1MM PVC EDGEBANDING
18	STAIRS: FLOOR FINISH SEALED CONCRETE WITH BROOM FINISH. PAINT ALL EXPOSED METAL HANDRAILS, RAILINGS, STRINGERS, SUPPORTS, INCLUDING UNDERSIDE OF STAIR P2. SEE ALTERNATES TO PRICE RUBBER FLOORING FOR EACH STAIR SEPARATELY.
19	PLAN REVIEWERS 30D PLAS LAMINATE WORKSURFACE & 4" H BACK & SIDE SPLASHES PL2. BASE/WALL CABINETS PL1
20	LOCKER ROOMS. INSTALL CERAMIC TILE WAINSCOT CT1 WET WALL, SIDE WALLS AT TOILET AND VANITY. HEIGHT AS INDICATED, TOP CAP & OUTSIDE EDGES TRIM & AT LOWEST COURSE WHERE TILE MEETS ERF. INSTALL TR1 INCLUDE ACCENT RIBBON OF GLASS WALL TILE GWT. ERF FLOOR & 4" H INTEGRAL ERF BASE TO CONTINUE INTO SHOWERS AND IN LOCATIONS AS INDICATED. MENS KNETEX CARPET & VINYL BASE AT LOCATIONS AS INDICATED. PAINT ABOVE TILE ALL WALLS. MOISTURE RESISTANT GYP BOARD ALL WALLS & CEILING. REFER TO ELEVATIONS FOR ADD'L INFORMATION.
21	LOCKER ROOM SHOWERS: FULL HEIGHT VERTICAL WALL PANELS SD33 ALL WALLS & OUTSIDE FACE OF WING WALL. SEAL ALL PERIMETER EDGES W/WHITE SEALANT. SHOWER FLOORS: CONTINUE ERF & INTEGRAL BASE INTO SHOWER AREA. ASSURE SLOPE TO DRAIN AND ERF TO HAVE ADDED NO SLIP TEXTURE IN THIS AREA.
22	PROVIDE SAWCUT TERMINATION AT LEADING EDGE FOR SELF-LEVELING EPOXY RESIN SYSTEM TO CONCRETE FLOOR. REFER TO DETAIL.
23	1/2" SOLID SURFACE TRANSACTION LEDGE SD32. PDV WALL PAINT FIELD WALL COLOR.
24	PROVIDE SOFT JOINT IN FLOOR. COLOR TO MATCH GROUT.
25	CUTTER TILE LOCATION. ALIGN TILES AS INDICATED. NO CUTTERS LESS THAN 2" IN WIDTH.
26	SHADED AREAS INDICATE ACCENT TILE LOCATION OF PT3 DARK ACCENT TILES OUT TO 624.
27	COUNCIL CHAMBERS PAIR OF MAIN ENTRY DOORS W23
28	STONE WALL PANELS. SEE ELEVATIONS & FINISH SCHEDULE
29	CUSTOM MILLWORK WOOD-LOOK PLASTIC LAMINATE WALL PANELS WITH METAL OUTSIDE CORNER TRIMS. BLACK REVEALS. ALL EXPOSED SIDES OF PORTALS TO HAVE PLAS LAM. FINISH. SEE ELEVATIONS & FINISH SCHEDULE.
30	NEW STEEL LOCKERS. PROVIDE COLOR CHART TO DESIGNER FOR SELECTION.
31	VCT FLOORING INSTALLED IN A TWO TO THREE COLOR PATTERN AS INDICATED
32	6" WIDE SOLID SURFACE SILL SD32. EASED EDGES
33	EXPOSED SIDE OF RAMP: VERY SMOOTH CONCRETE FINISH RUBBED AND SEALED. PRIME & PAINTED TO MATCH FIELD WALL COLOR. INCLUDE VINYL BASE BD & ANGLE CUT BASE TO ALIGN WITH RAMP SLOPE. INCLUDE VINYL STRINGER AT SIDE WALLS AT STAIRS. MATCH COLOR BD.
34	OUTDOOR PATIO BUILD-OUT - SEE ALTERNATES FOR WORK IN THIS AREA
35	PROVIDE & INSTALL STAINLESS CORNER GUARD WP2
36	PROVIDE & INSTALL ACOUSTICAL PANELS SF3 ALL WALLS. SEE ELEVATIONS
37	STORM SHELTER METAL DOORS PAINT TO MATCH ADJACENT WALL COLOR (P1 LOBBY) 38: SEE ALTERNATES FOR BULLET RESISTANT PANEL 5/10 GAUGE & 8/10 CONCEALED BEHIND DRYWALL AT SERVICE AND PAYMENT COUNTERS WITHIN THE PORTAL SURROUND.
39	CERAMIC TILE BACKSPLASH CT1
40	STAINLESS HANDRAILS
41	WIPER PANEL AT DAIS PLATFORM (W/TH VINYL FINISH) W/TH TOP CAP W/4
42	ELEVATOR FINISH UPGRADE. INSTALL CARPET TILE FLOOR CP1. EXISTING WALL PANELS TO BE CLAD W/TH RIGID VINYL SHEET WP3. REMOVE HANDRAILS AND SECURELY ADHERE SHEET. VERIFY ALL WORK REQUIRED. REPAINT CAB DOOR AND FRAME (BOTH SIDES) P2.

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Proposed: RENOVATION & ADDITION
ELLISVILLE CITY HALL &
POLICE STATION

ELLSVILLE, MO 63011
1 WEB AVE

Revision
No. 1
Date 3-17-23
PRE-BID ADDENDUM #1

Project No.
20016

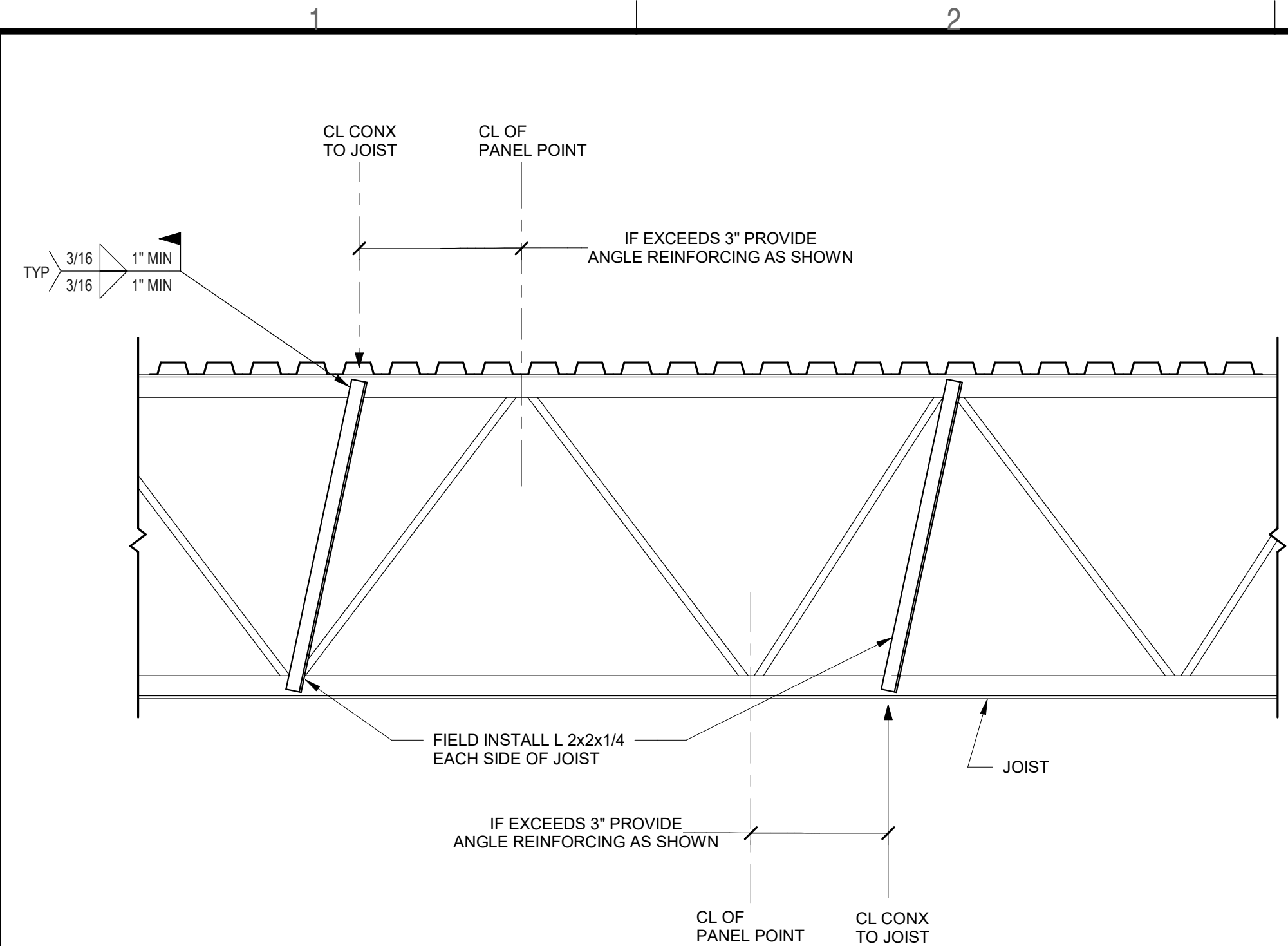
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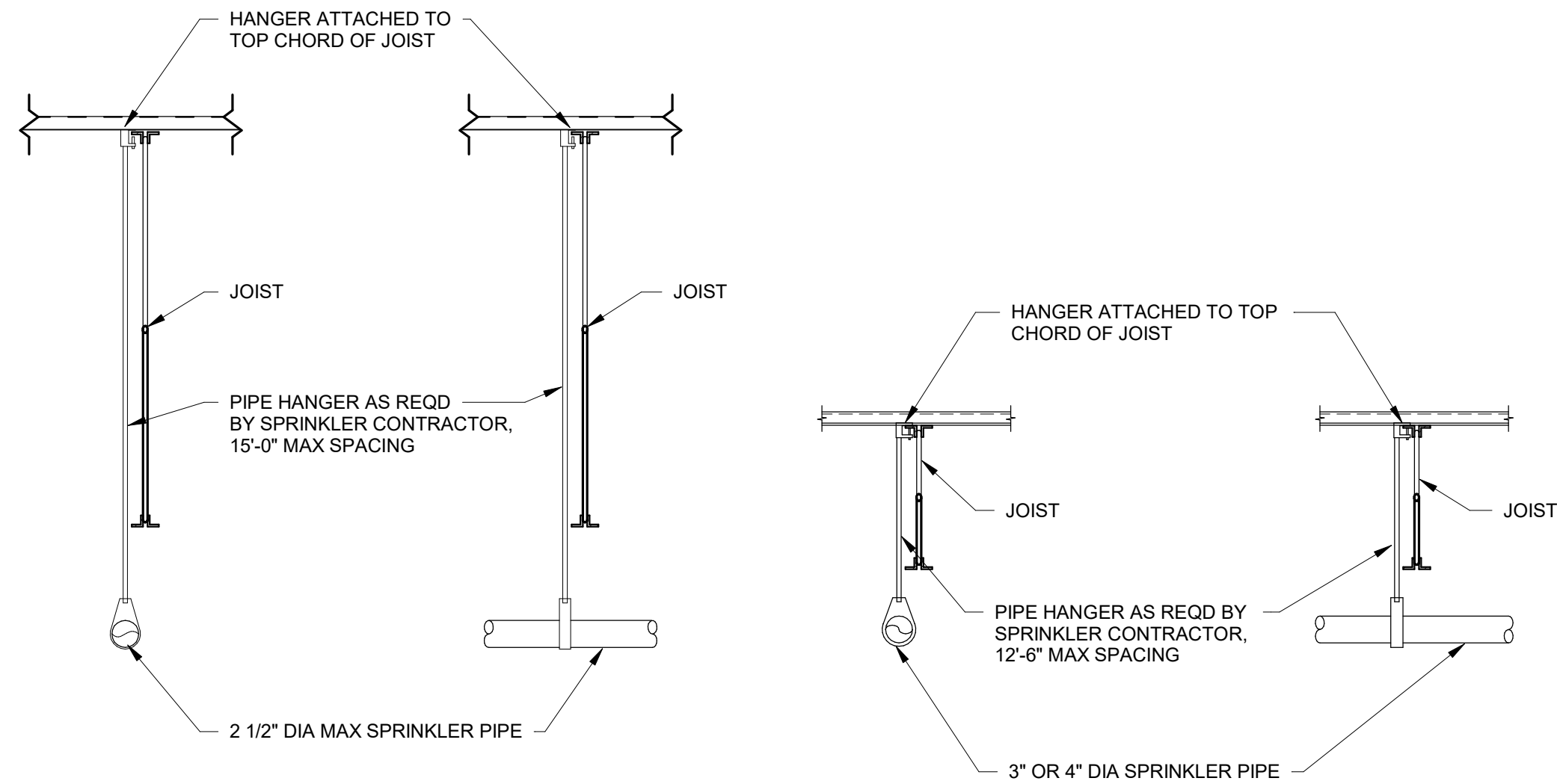
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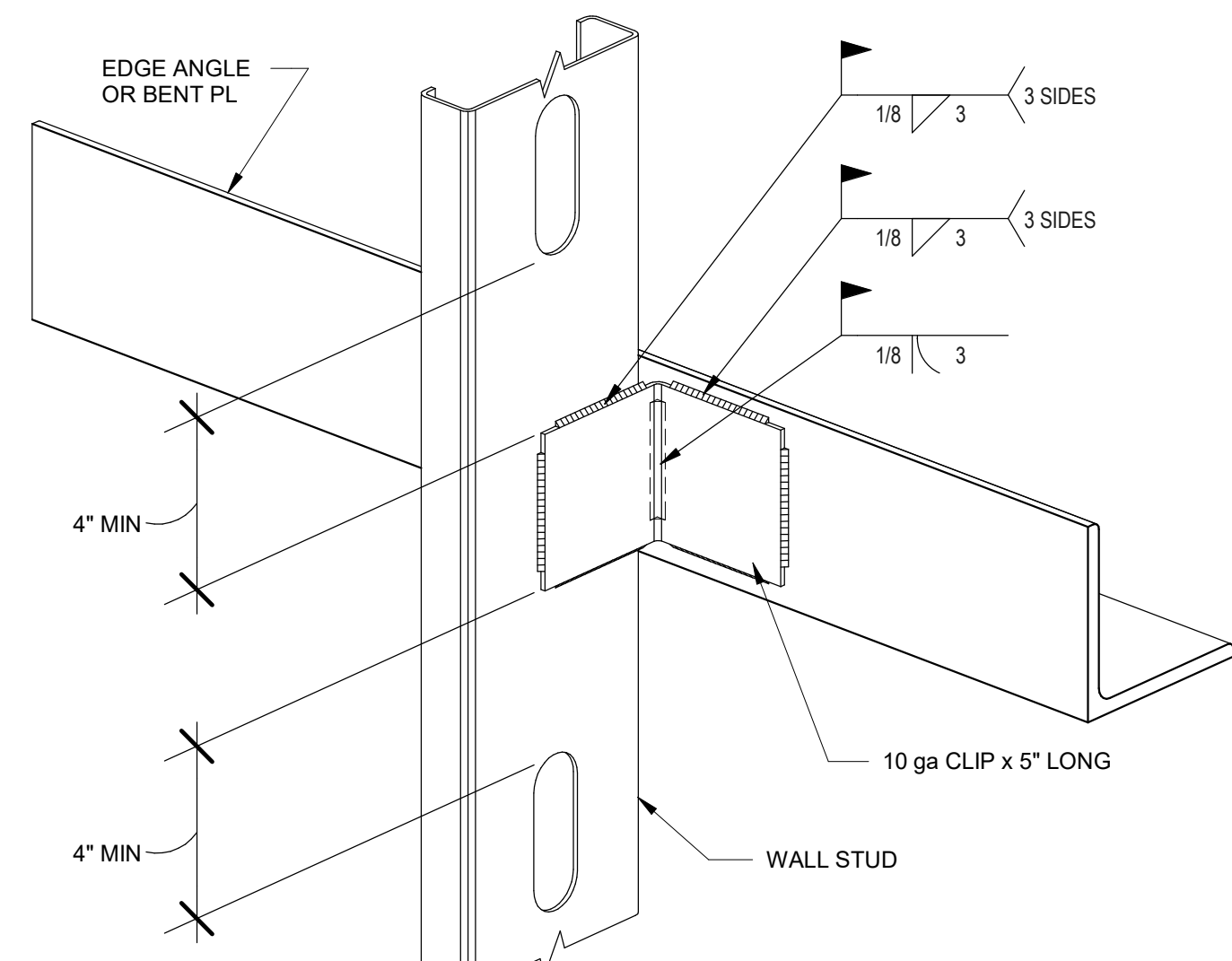


5 TYPICAL JOIST REINFORCING AT CONCENTRATED LOADS
S106 NTS

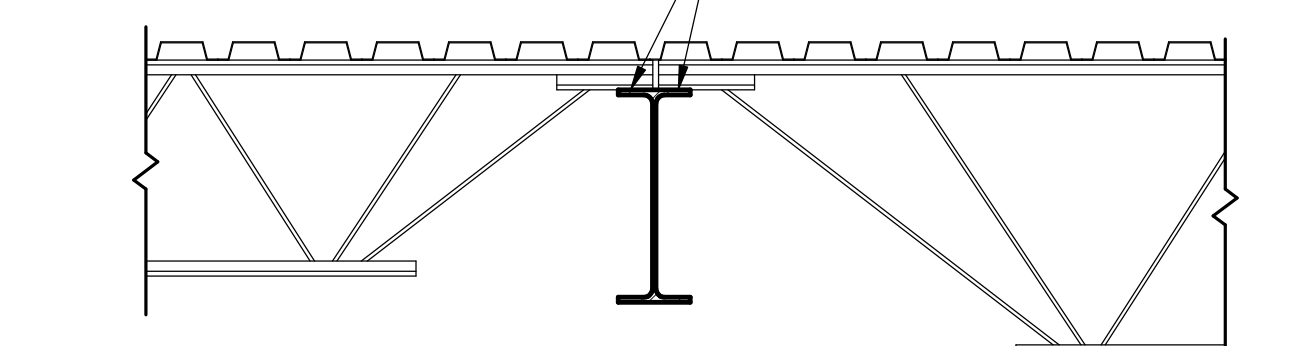


10 TYPICAL HANGER DETAIL FOR 2 1/2\"/>

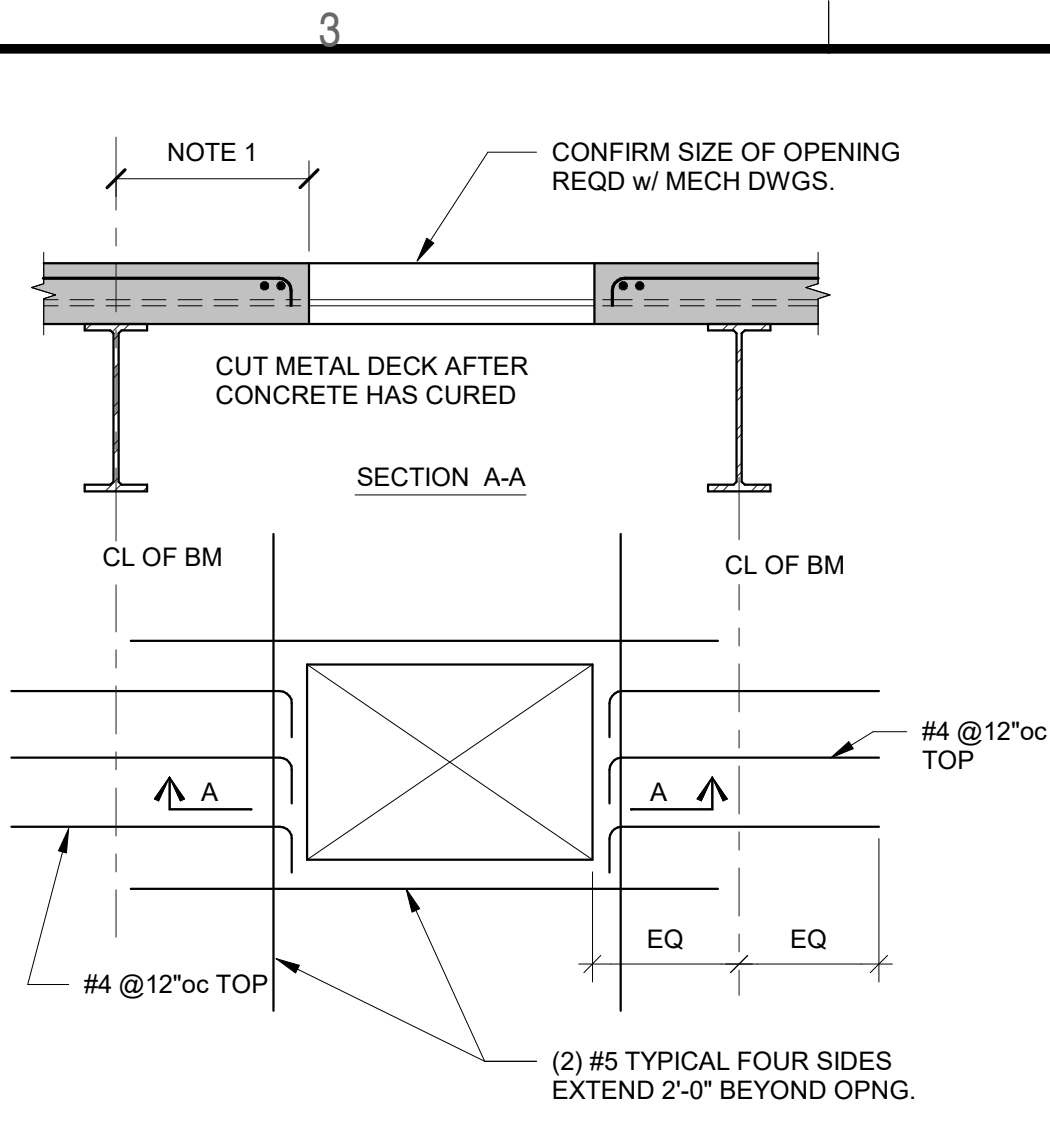
9 TYPICAL HANGER DETAIL FOR 3\"/>



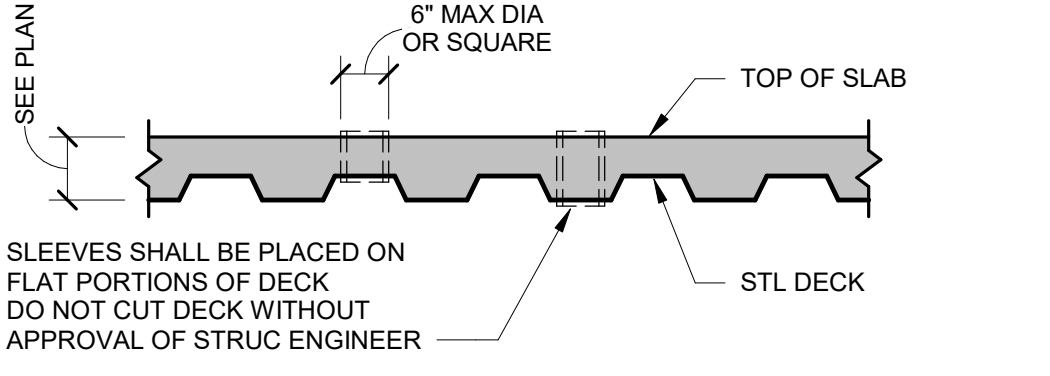
16 TYPICAL LIGHT GAUGE STUD CLIP ATTACHMENT DETAIL
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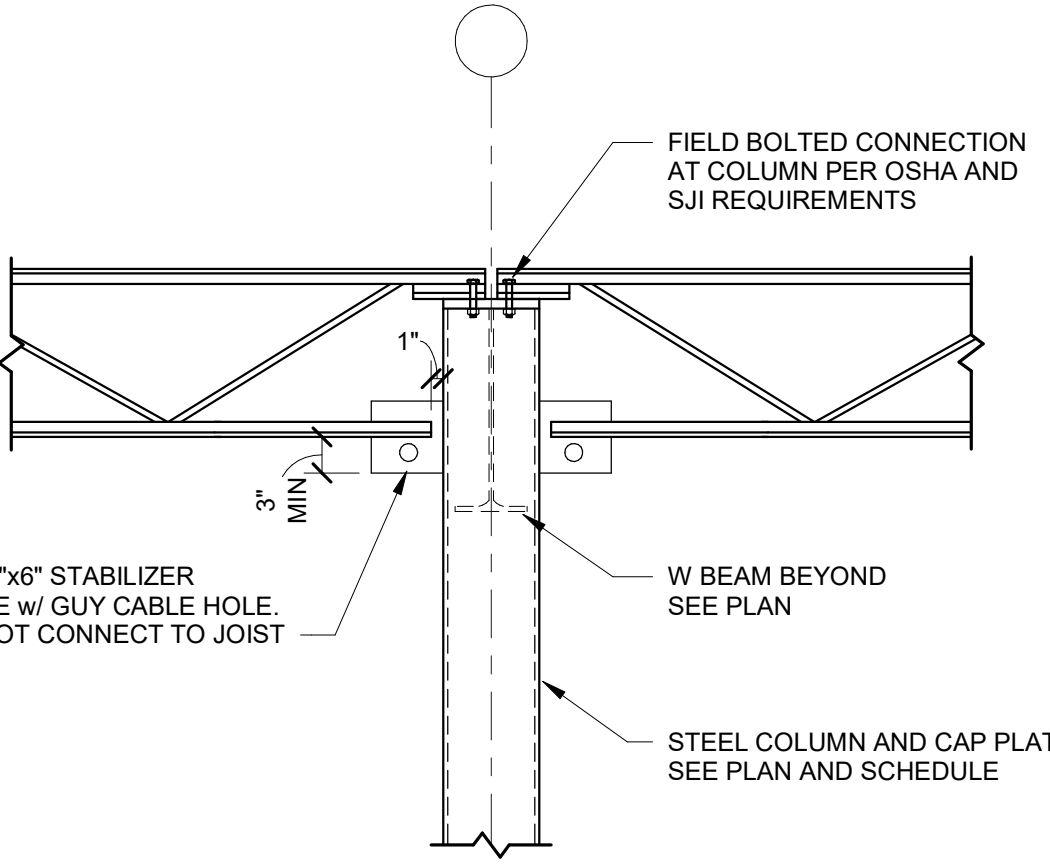
15 TYPICAL JOIST SEAT TO BEAM FLANGE CONNECTION DETAIL
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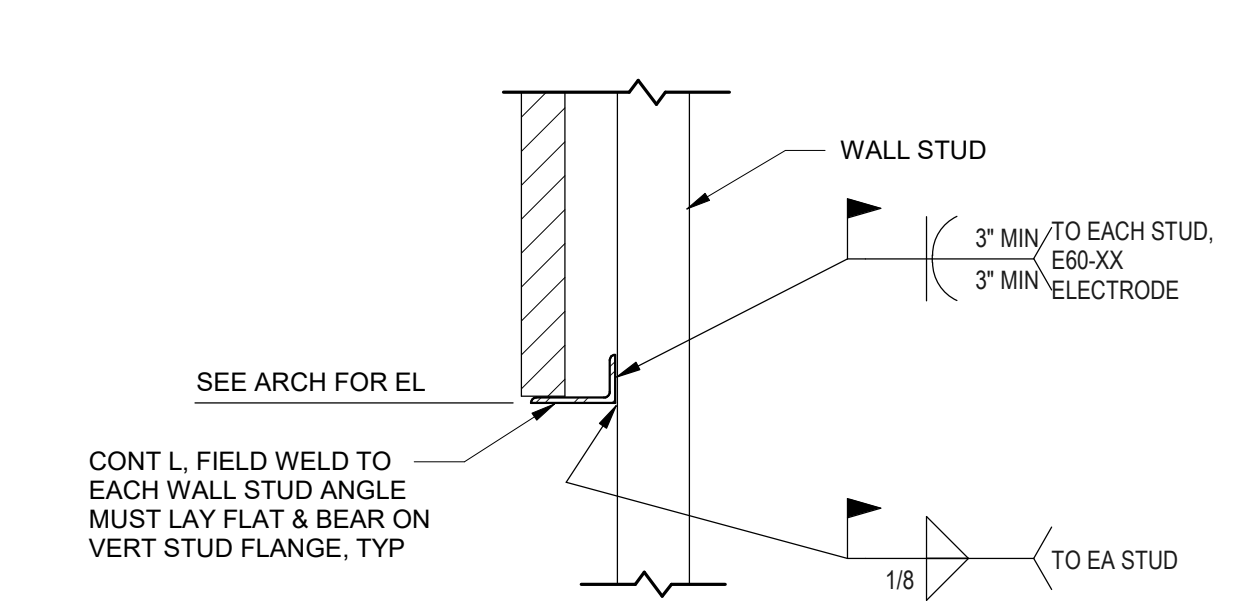
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S106 NTS



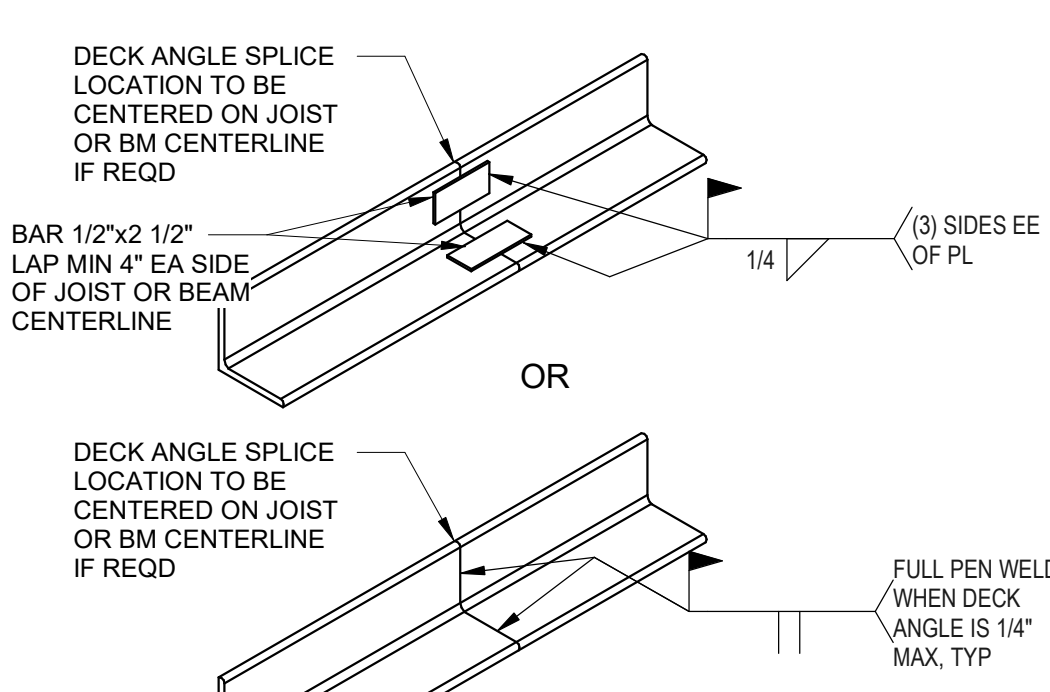
4 TYPICAL DECK SLEEVE DETAIL
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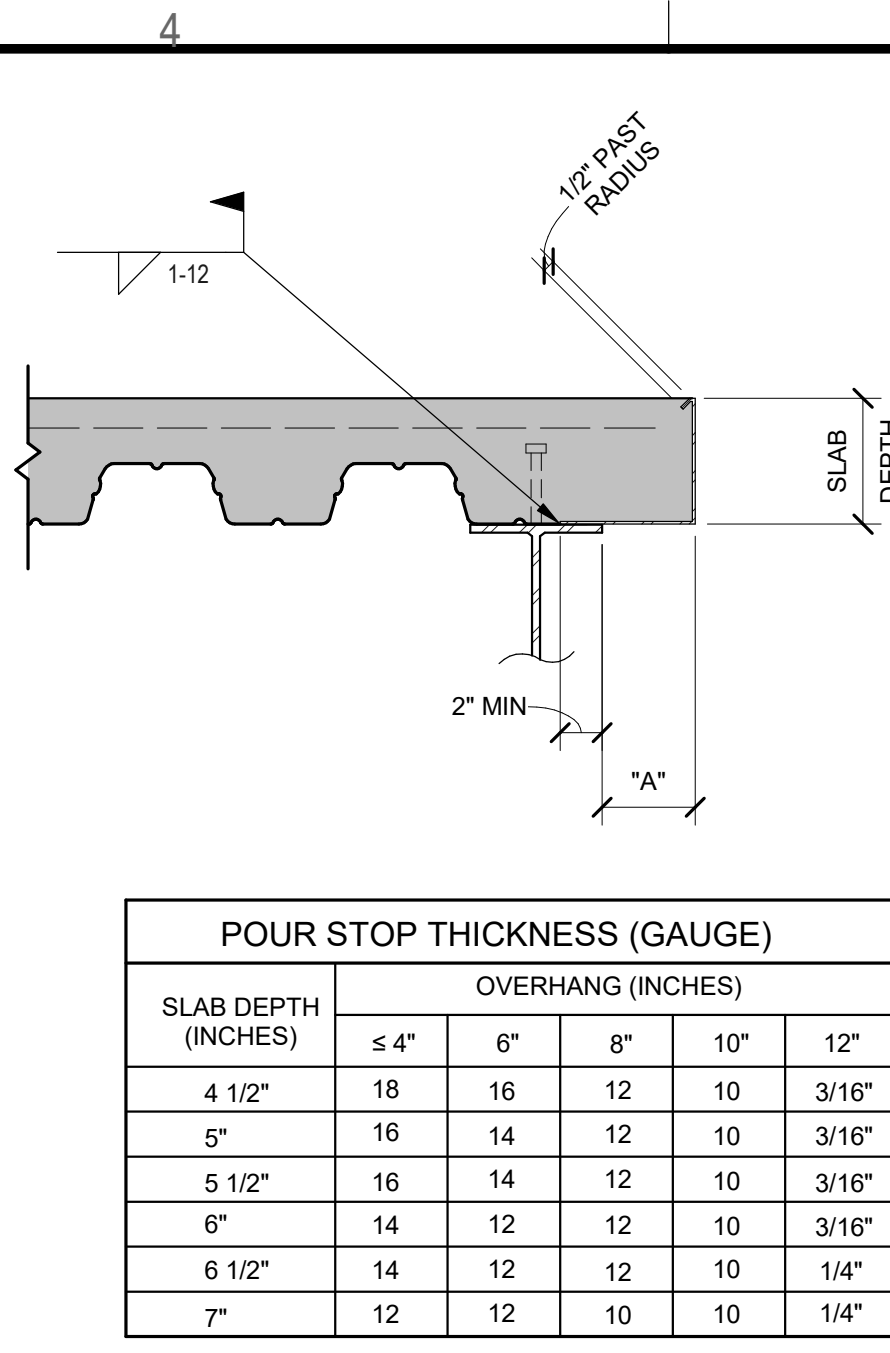
8 TYPICAL JOIST TO COLUMN CONNECTION
S106 N.T.S.



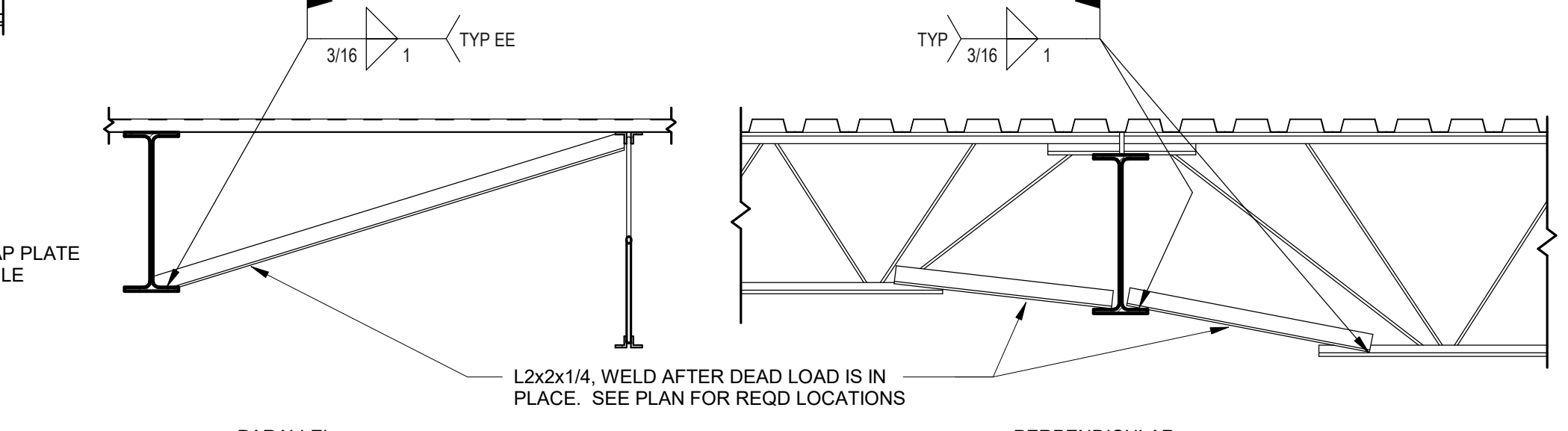
14 TYPICAL SHELF ANGLE AND STUD ATTACHMENT DETAIL
S106 NTS



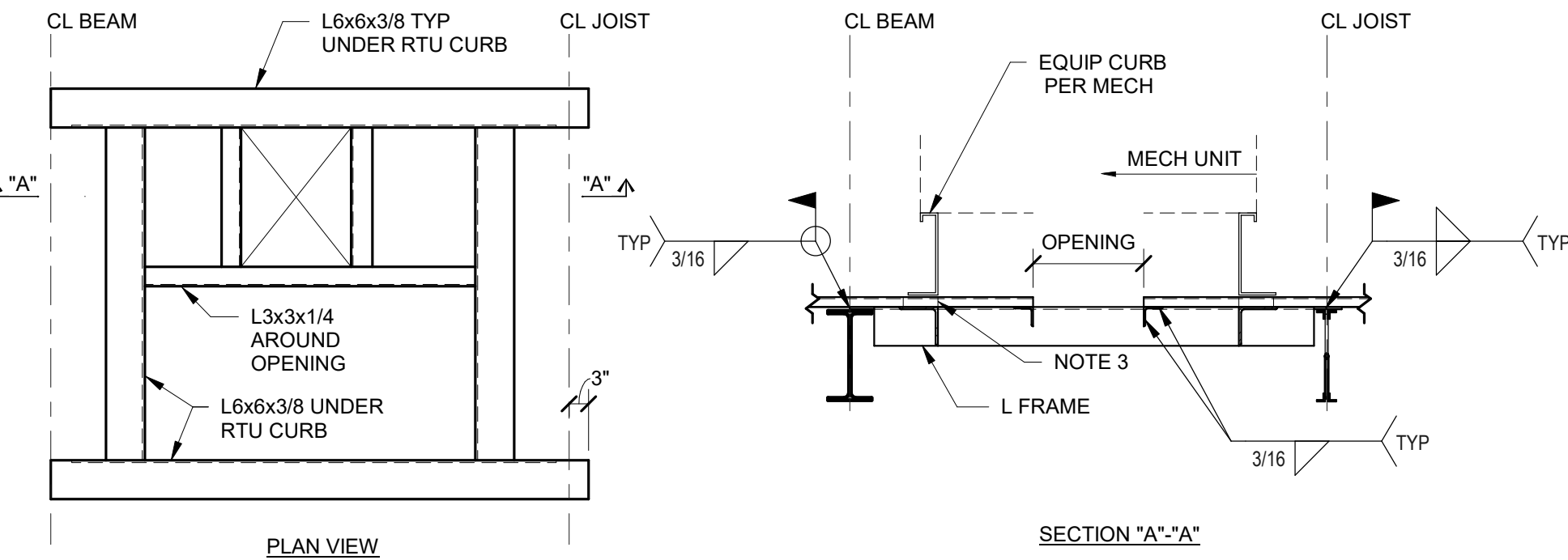
13 TYPICAL DECK ANGLE SPLICE DETAIL
S106 NTS



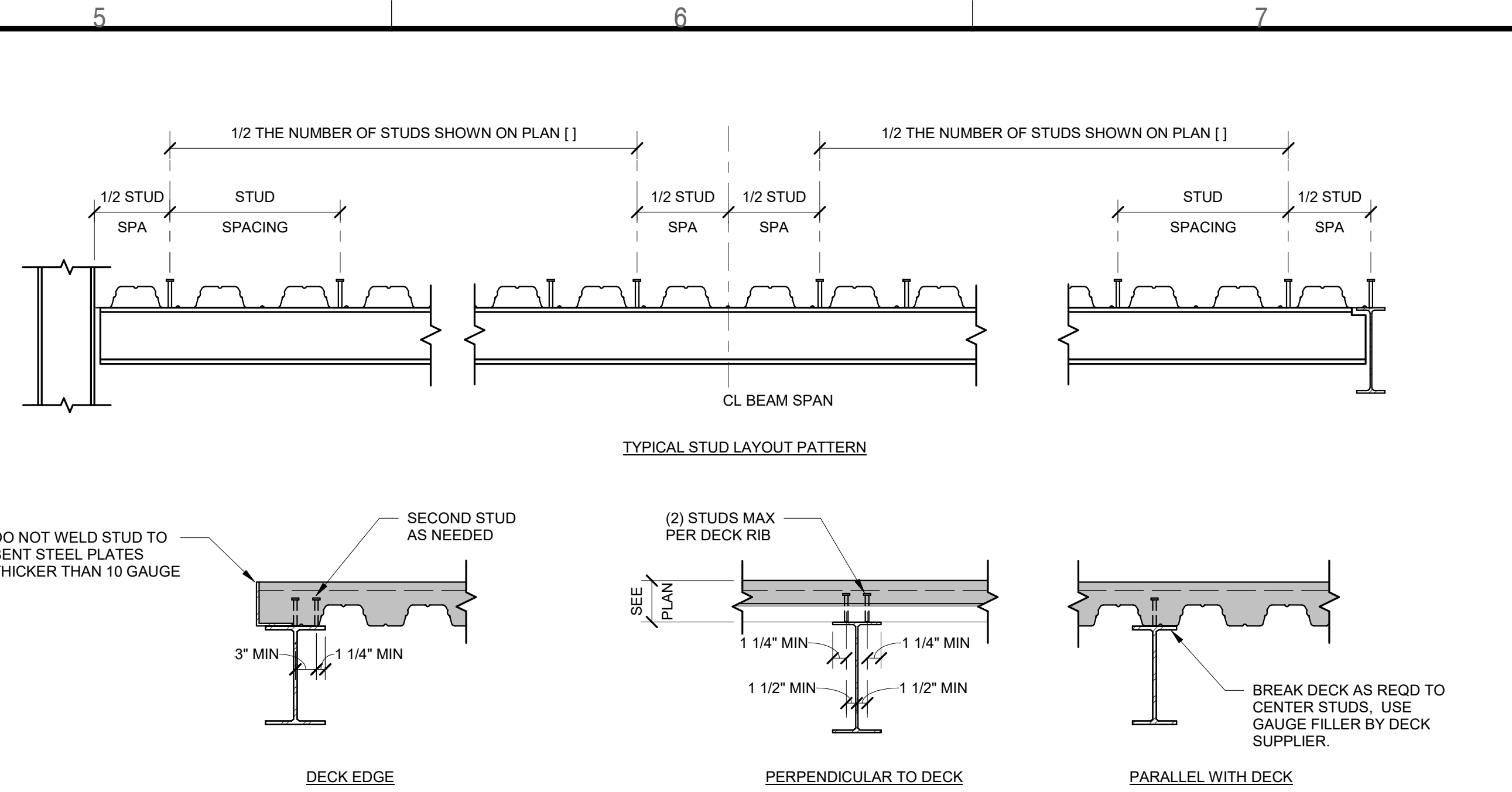
2 TYPICAL INTERIOR POUR STOP DETAIL
S106 NTS



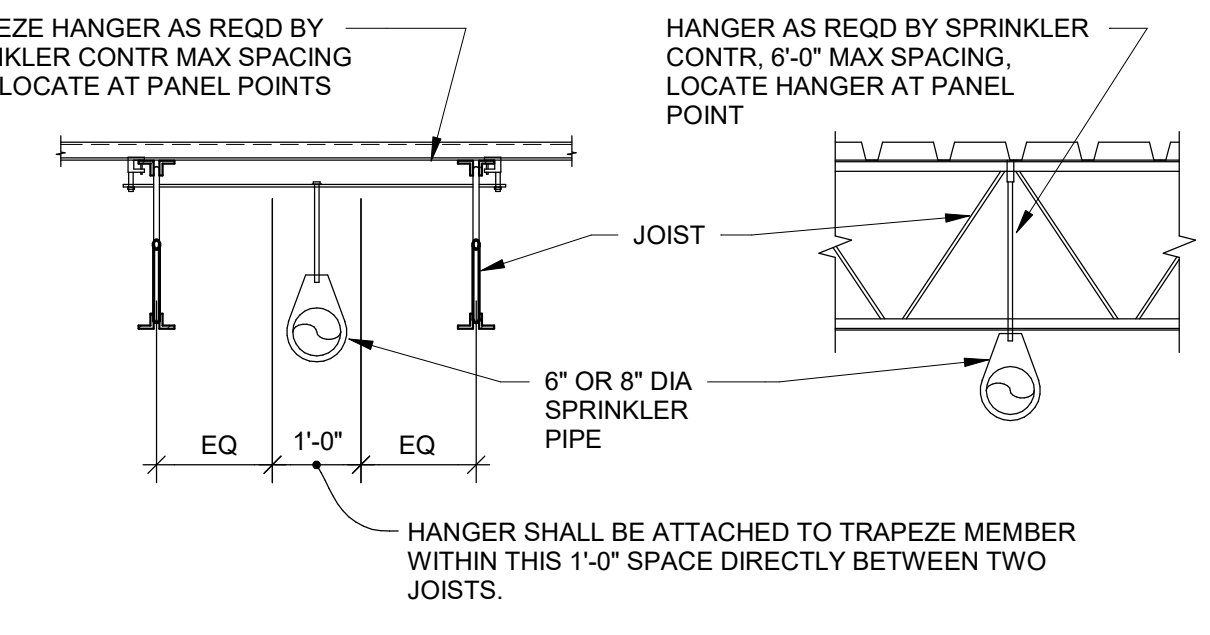
7 TYPICAL BEAM BOTTOM FLANGE BRACE ANGLE DETAIL
S106 NTS



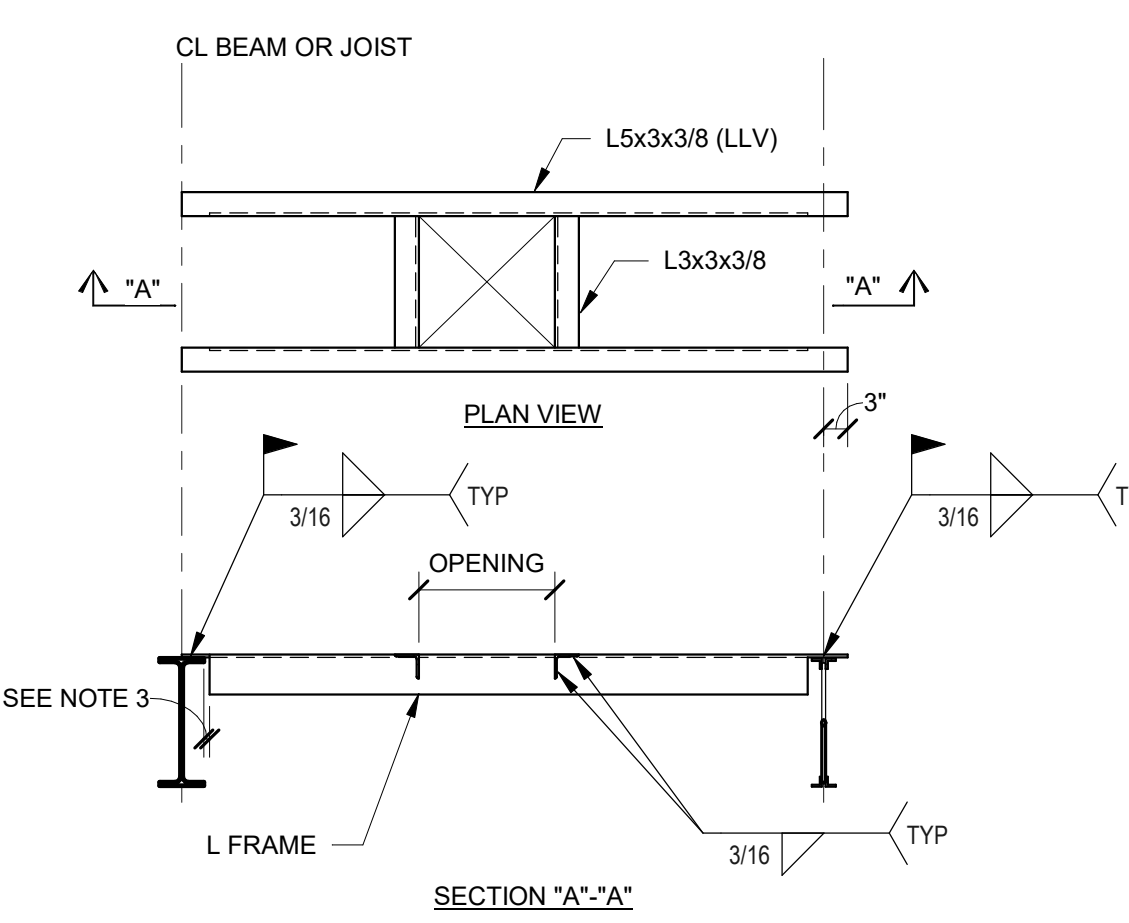
12 TYPICAL ROOF TOP UNIT CURB SUPPORT DETAIL
S106 NTS



1 TYPICAL COMPOSITE BEAM HEADED STUD DETAILS
S106 NTS



6 TYPICAL HANGER DETAIL FOR 6\"/>



11 TYPICAL ROOF OPENING DETAIL
S106 NTS

- COORDINATE SIZE & LOCATION OF OPENINGS w/ ARCHITECTURAL & MECHANICAL DRAWINGS
- PROVIDE FRAME FOR ALL OPENINGS OVER 12"
- PROVIDE BLOCKING BETWEEN DECK RIBS
- LOCATE CURB OVER VERTICAL LEG OF L6x6

- COORDINATE SIZE & LOCATION OF OPENINGS WITH ALL OTHER DISCIPLINES AND DRAWINGS
- PROVIDE L FRAME FOR ALL OPENINGS OVER 12"
- MAXIMUM DISTANCE BETWEEN EDGE OF SUPPORT AND CORDED ANGLE LEG SHALL BE 36"

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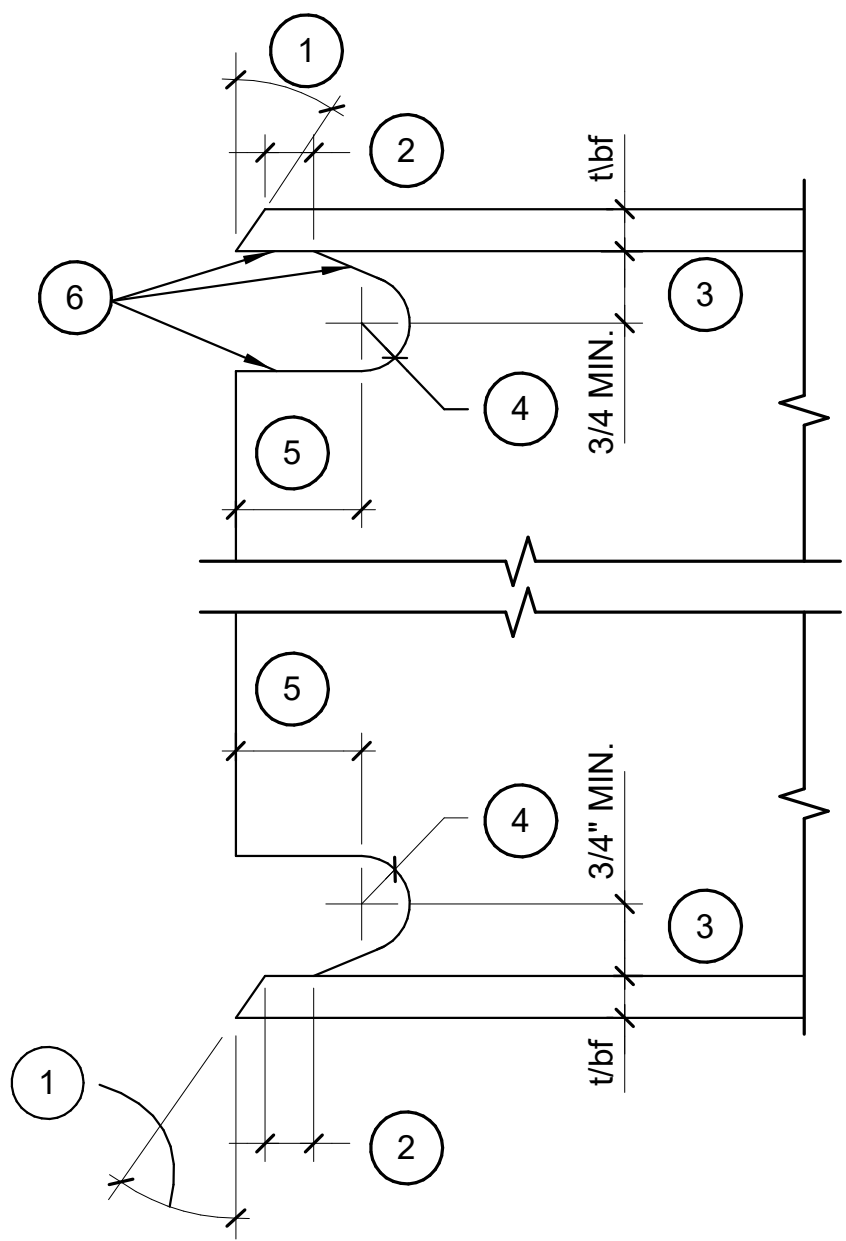
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Proposed: RENOVATION & ADDITION
ELLISVILLE CITY HALL &
POLICE STATION
1 WEBAVE
ELLISVILLE, MO 63011

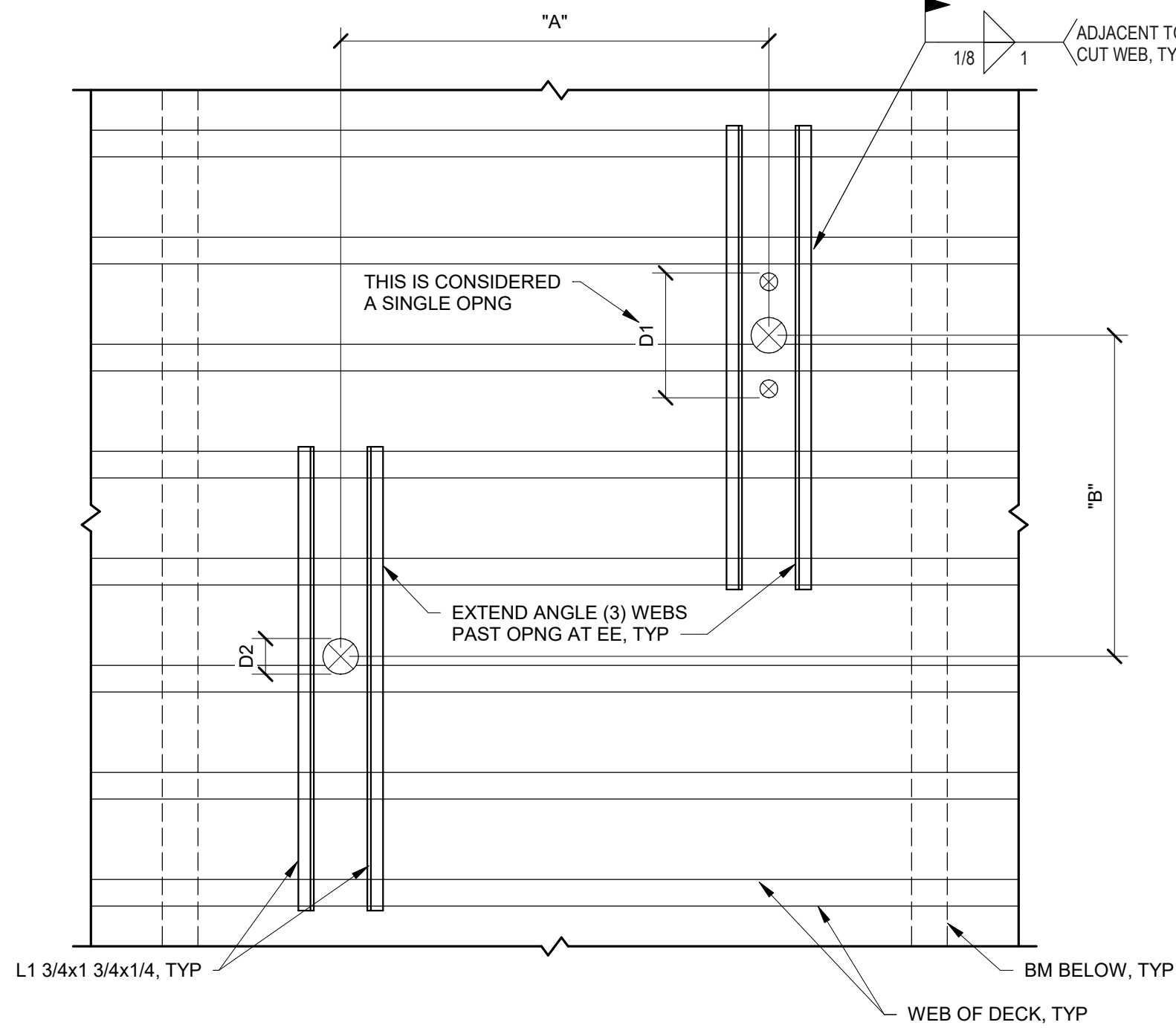
No.	Date	Revision
1	03/17/23	ADDENDUM #1

Project No.
2100212
Sheet No.
S106
Date
2/23/2023



- NOTES**
- 1 BEVEL AS REQUIRED BY AWS D1.1 FOR SELECTED GROOVE WELD PROCEDURE.
 - 2 LARGER OF $\frac{1}{8}$ bf OR $\frac{1}{2}$ ". (PLUS $\frac{1}{2}$ $\frac{1}{8}$ bf, OR MINUS $\frac{1}{4}$ $\frac{1}{8}$ bf.)
 - 3 $\frac{3}{4}$ " $\frac{1}{8}$ bf TO $\frac{1}{4}$ bf, $\frac{3}{4}$ " MINIMUM (+/- $\frac{1}{4}$ ").
 - 4 $\frac{3}{8}$ " MINIMUM RADIUS (PLUS NOT LIMITED, OR MINUS 0).
 - 5 3 $\frac{1}{8}$ bf. (+/- $\frac{1}{2}$ ").
 - 6 SEE AISC 341-10, RECOMMENDED SPECIFICATIONS AND QUALITY ASSURANCE GUIDELINES FOR STEEL MOMENT-FRAME CONSTRUCTION FOR SEISMIC APPLICATIONS FOR FABRICATION DETAILS INCLUDING CUTTING METHODS AND SMOOTHNESS REQUIREMENTS.
- NOTE:**
TOLERANCES SHALL NOT ACCUMULATE TO THE EXTENT THAT THE ANGLE OF THE ACCESS HOLE CUT TO THE FLANGE SURFACE EXCEEDS 25 DEG.

5 SMF CONNECTION WELD ACCESS HOLES DETAIL
S107 N.T.S.



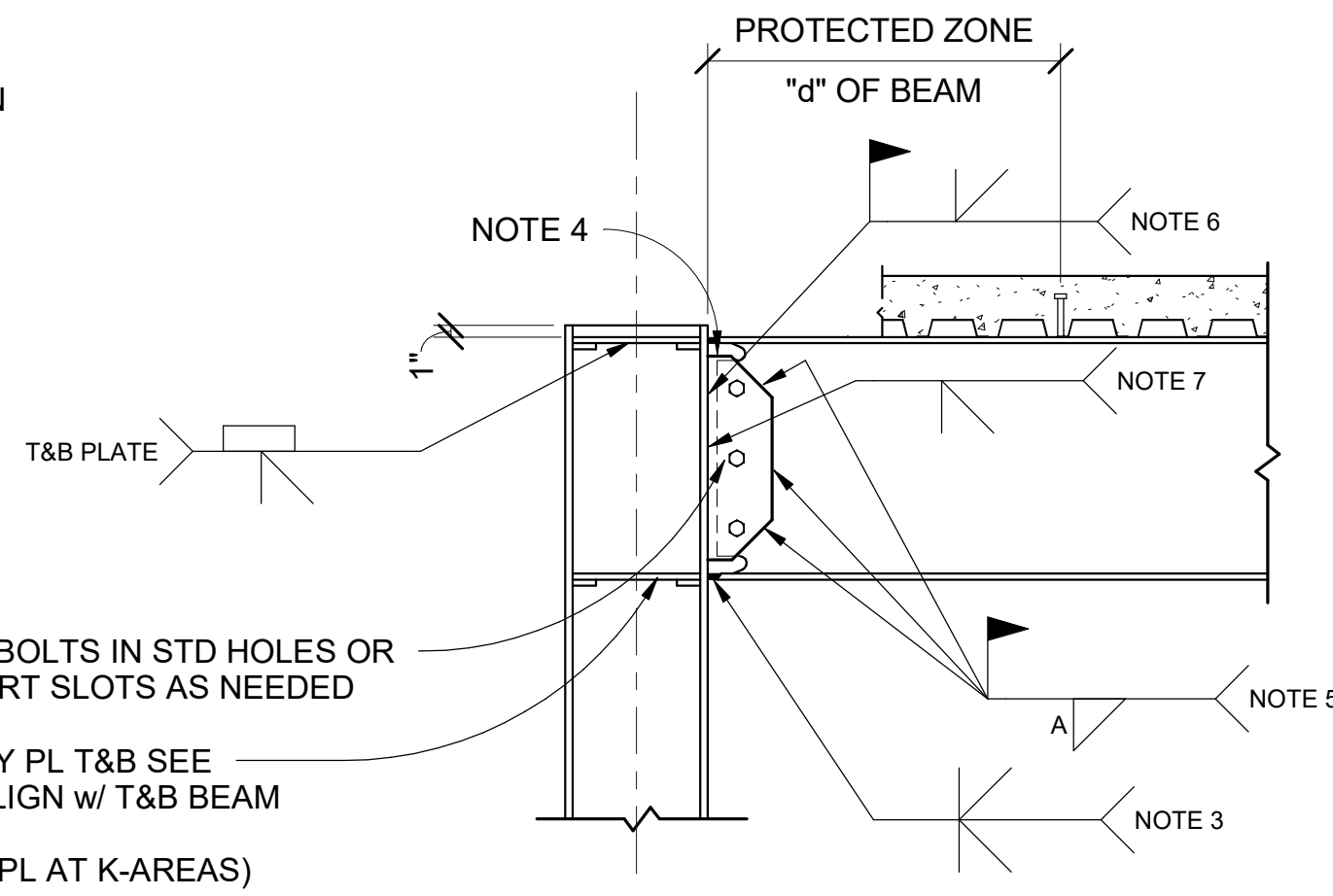
- NOTES:**
- 1 DO NOT CUT MORE THAN (2) ADJACENT WEBS.
 - 2 HOLES LESS THAN 6" IN DIAMETER AND CUTTING NO MORE THAN (1) WEB NEED TO REINFORCING.
 - 3 ANGLES SHALL BE PLACED ON TOP OF DECK.
 - 4 IF DIMENSION "A" IS GREATER THAN 4D1, 4D2 OR 32", WHICH EVER IS LARGER THEN THERE IS NO RESTRICTION ON DIMENSION "B".
 - 5 IF DIMENSION "B" IS GREATER THAN 4D1, 4D2 OR 32", WHICH EVER IS LARGER, THEN THERE IS NO RESTRICTION ON DIMENSION "A".
 - 6 DIMENSIONS "A" AND "B" ARE LESS THAN 4D1, 4D2 OR 32", WHICH EVER IS LARGER THE OPENING GROUP WILL BE CONSIDERED AS A SINGLE HOLE AND MUST BE REINFORCED AS REQUIRED FOR THE LARGER OPENING.

4 TYPICAL DECK SLEEVE DETAIL AT COMPOSITE SLAB
S107 $\frac{3}{4}$ " = 1'-0"

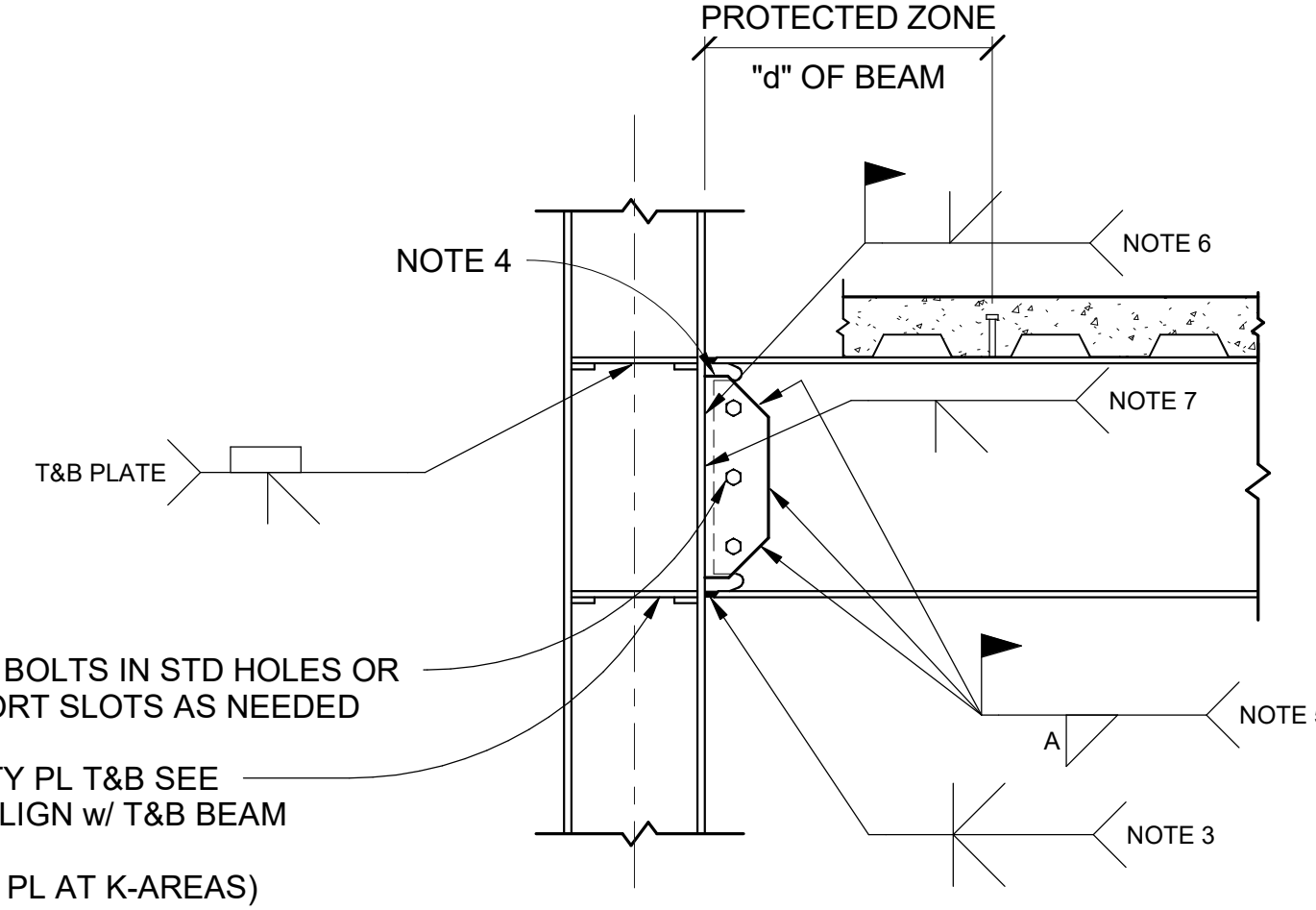
GENERAL NOTES FOR SEISMIC FORCE RESISTING SYSTEM SMF:

- 1 CONNECTION DETAIL IS FOR A PREQUALIFIED WELDED UNREINFORCED FLANGE-WELDED WEB (WUF-W) MOMENT CONNECTION PER ANSI/AISC 358-10 AND SHALL CONFORM TO THE REQUIREMENTS OF THAT STANDARD AS WELL AS ANSI/AISC 341-10 AS APPLICABLE. THE PROTECTED ZONE SHALL CONFORM TO ALL OF THE REQUIREMENTS OF SECTION D1.3 OF ANSI/AISC 341-10. SPECIFICALLY NO SHEAR STUDS SHALL BE WELDED TO THE TOP OF THE FLANGE WITHIN THE PROTECTED ZONE.
- 2 BEAM FLANGES SHALL BE CONNECTED TO COLUMN FLANGES USING COMPLETE-JOINT-PENETRATION GROOVE WELDS CONFORMING TO THE REQUIREMENTS FOR DEMAND CRITICAL WELDS IN SECTIONS D&I OF AISC 341-10.
- 3 WELD ACCESS HOLE GEOMETRY SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.8 SECTION 6.9.1.2. WELD ACCESS HOLE REQUIREMENTS SHALL CONFORM OF THE REQUIREMENTS OF AWS D1.8 SECTION 6.9.2. SEE SMRF MOMENT CONNECTION WELD ACCESS HOLE DETAIL.
- 4 WELD OF THE SINGLE PLATE TO THE BEAM WEB SHALL EXTEND ALONG THE SLOPED TOP AND BOTTOM PORTIONS AS WELL AS THE FULL SINGLE PLATE HEIGHT. THE WELDS ON THE SLOPED TOP AND BOTTOM PORTIONS OF THE SINGLE PLATE SHALL BE TERMINATED AT LEAST $\frac{1}{2}$ ", BUT NO MORE THAN 1" FROM THE EDGE OF THE WELD ACCESS HOLE.
- 5 CJP WELD OF THE BEAM WEB TO COLUMN FLANGE SHALL BE PROVIDED OVER THE FULL LENGTH OF THE WEB BETWEEN WELD ACCESS HOLES. THE WELD SHALL CONFORM TO THE REQUIREMENTS FOR DEMAND CRITICAL WELDS IN SECTIONS D&I OF AISC 341-10. WELD TABS ARE NOT REQUIRED. IF WELD TABS ARE USED, THEY MUST BE REMOVED AFTER WELDING IN ACCORDANCE WITH SECTION 3.4 OF ANSI/AISC 358-10.
- 6 CJP WELD OF SINGLE PLATE TO COLUMN FLANGE. TERMINATE WELD AT LEAST $\frac{1}{2}$ " BUT NOT MORE THAN 1" FROM EDGE OF WELD ACCESS HOLE.

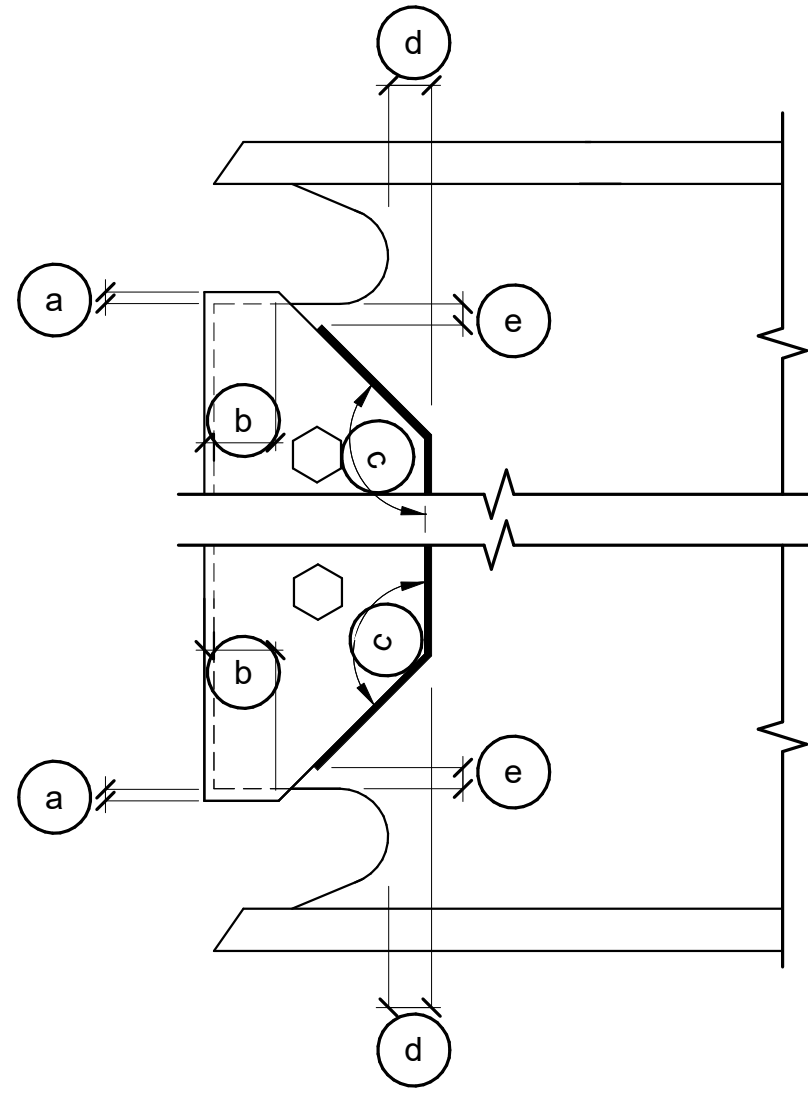
SMF CONNECTOR SCHEDULE				
BEAM SIZE	SINGLE PLATE THICKNESS	WELD SIZE "A"	CONTINUITY PLATE THICKNESS	BOTTOM FLANGE BRACE SPACING
W 24x55	1/2"	7/16"	5/8"	5'-6" o.c.
W 21x50	1/2"	7/16"	5/8"	5'-4" o.c.
W 18x40	1/2"	7/16"	5/8"	5'-3" o.c.
W 18x35	7/16"	9/16"	1/2"	5'-0" o.c.
W 16x40	1/2"	9/16"	5/8"	6'-6" o.c.
W 16x31	7/16"	9/16"	1/2"	4'-10" o.c.



8 SMF CONNECTION AT ROOF LEVEL
S107 N.T.S.

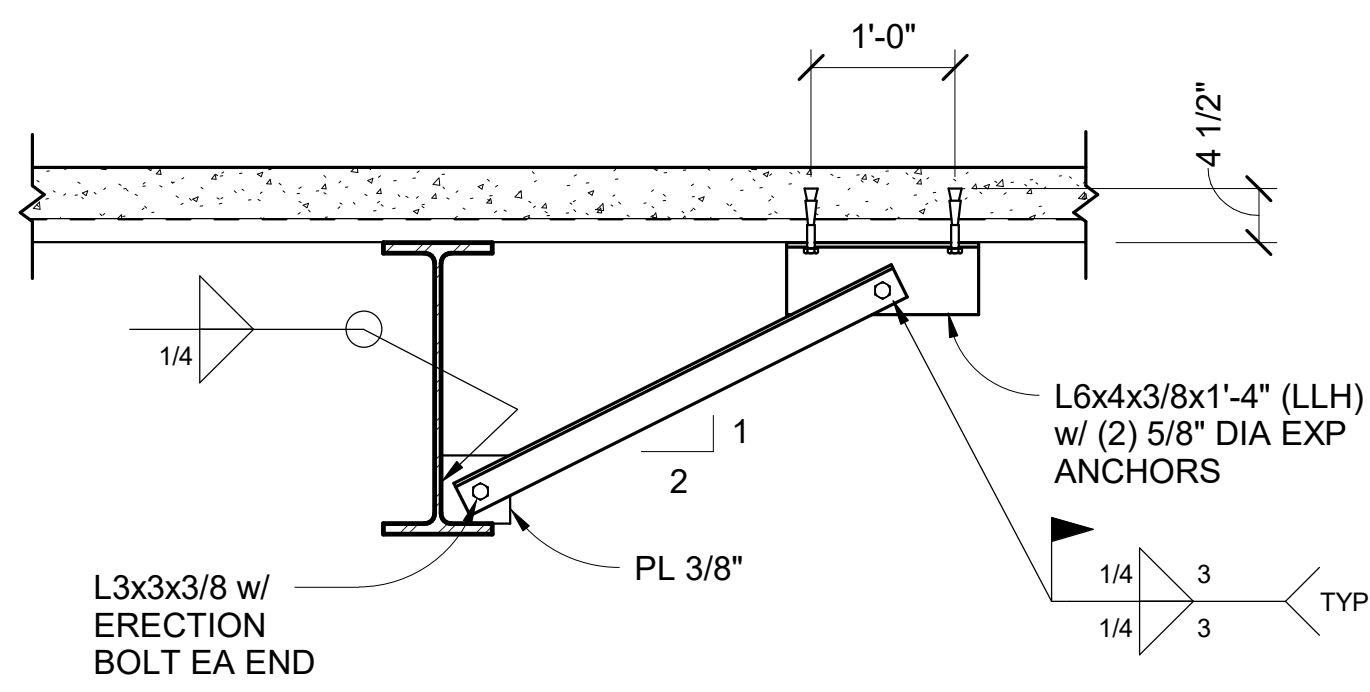


7 SMF CONNECTION AT FLOOR LEVEL
S107 N.T.S.

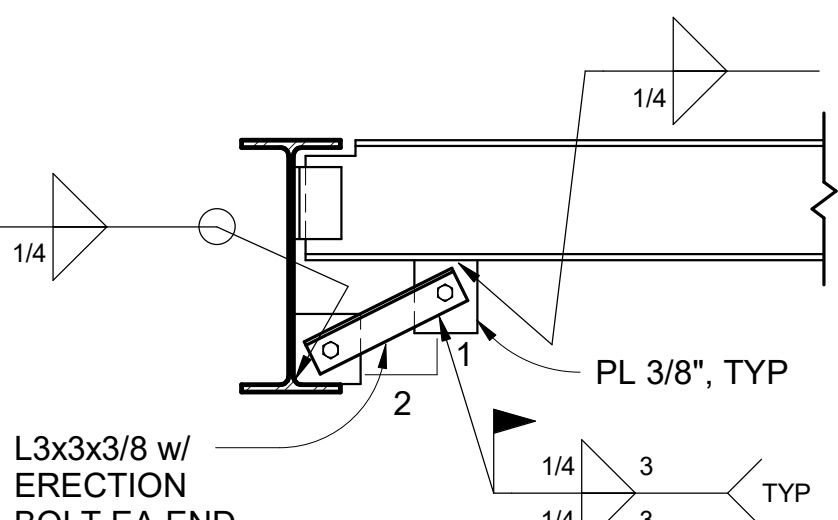


- NOTES**
- a $\frac{1}{4}$ " MINIMUM, $\frac{1}{2}$ " MAXIMUM.
 - b 1" MINIMUM
 - c 30 DEGREES (+/- 10 DEGREES)
 - d 2" MINIMUM
 - e $\frac{1}{2}$ " MINIMUM DISTANCE, 1" MAXIMUM DISTANCE, FROM END OF FILLET WELD TO EDGE OF WELD ACCESS HOLE
- NOTE:**
TOLERANCES SHALL NOT ACCUMULATE TO THE EXTENT THAT THE ANGLE OF THE ACCESS HOLE CUT TO THE FLANGE SURFACE EXCEEDS 25 DEG.

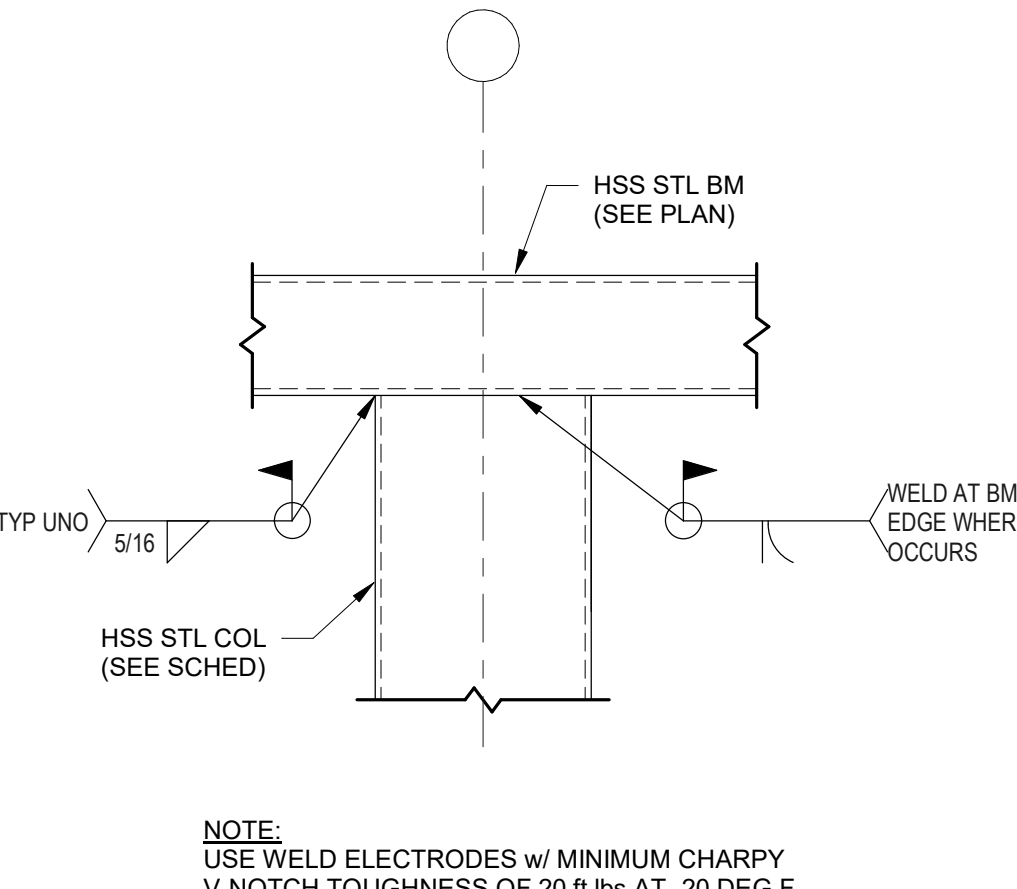
6 SMF CONNECTION SHEAR PLATE DETAIL
S107 N.T.S.



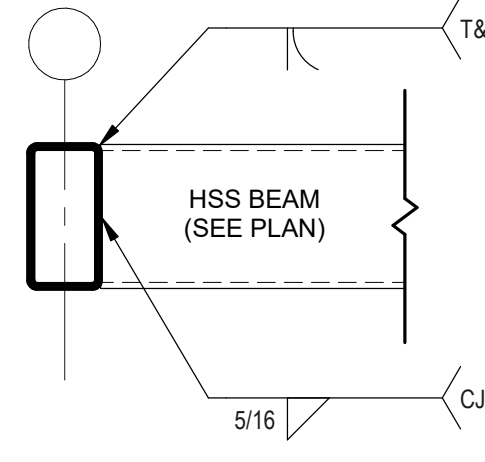
9 TYPICAL MOMENT FRAME BOTTOM FLANGE BRACING AT SLAB
S107 N.T.S.



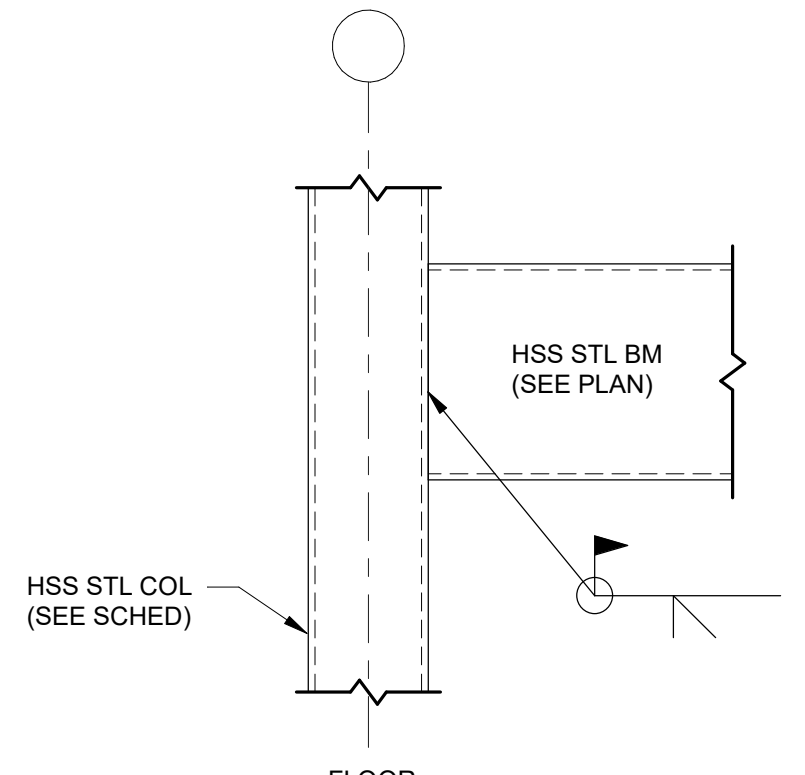
10 TYPICAL MOMENT FRAME BOTTOM FLANGE BRACING
S107 N.T.S.



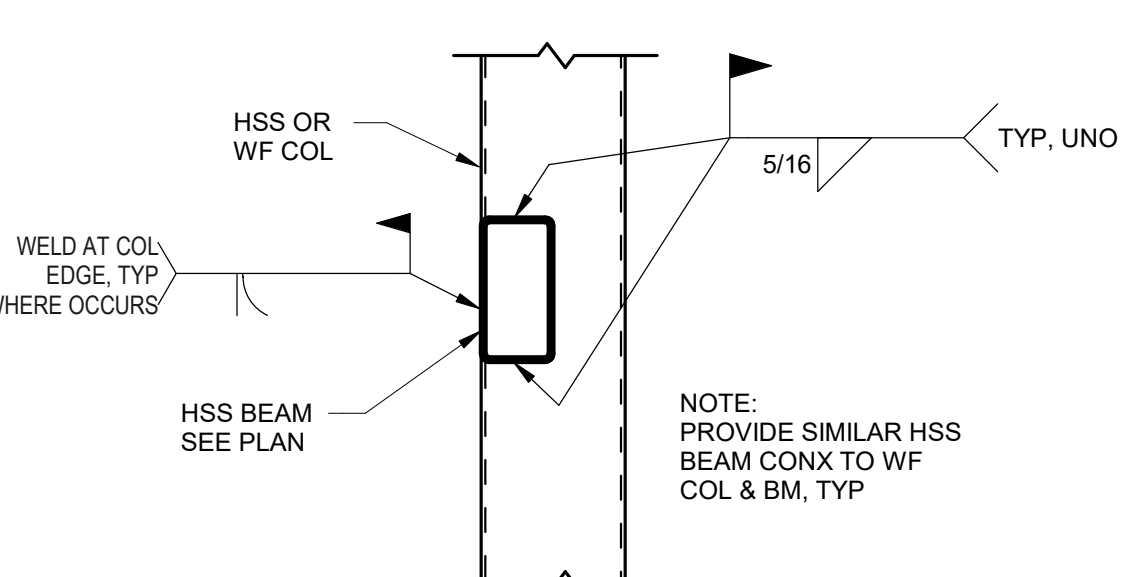
14 TYPICAL CONTINUOUS HSS BEAM CONNECTION AT HSS COLUMN DETAIL
S107 N.T.S.



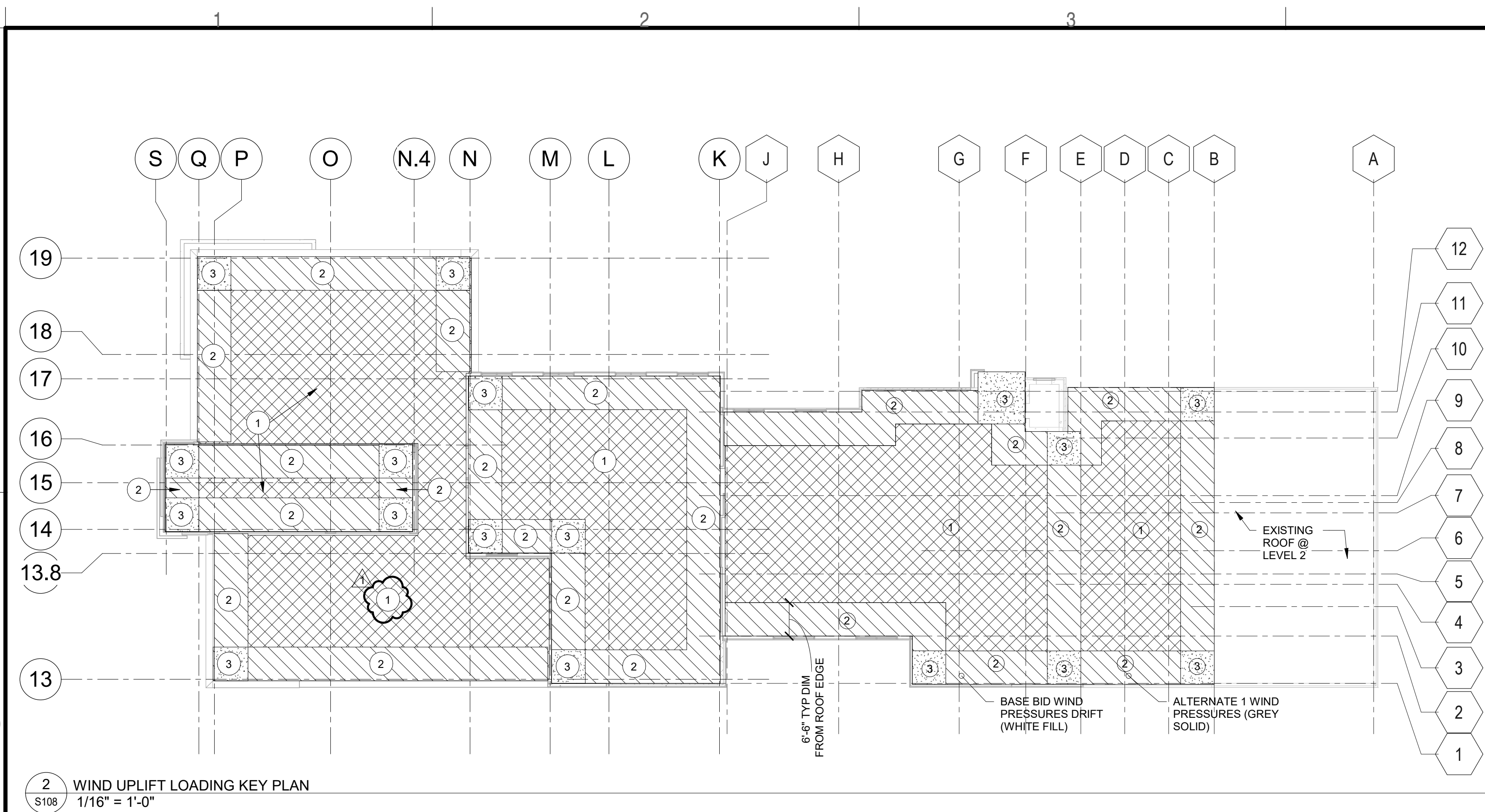
13 TYPICAL HSS BEAM CONNECTION AT HSS BEAM/COLUMN DETAIL
S107 N.T.S.



12 TYPICAL MOMENT CONNECTION AT HSS COLUMN DETAIL
S107 N.T.S.

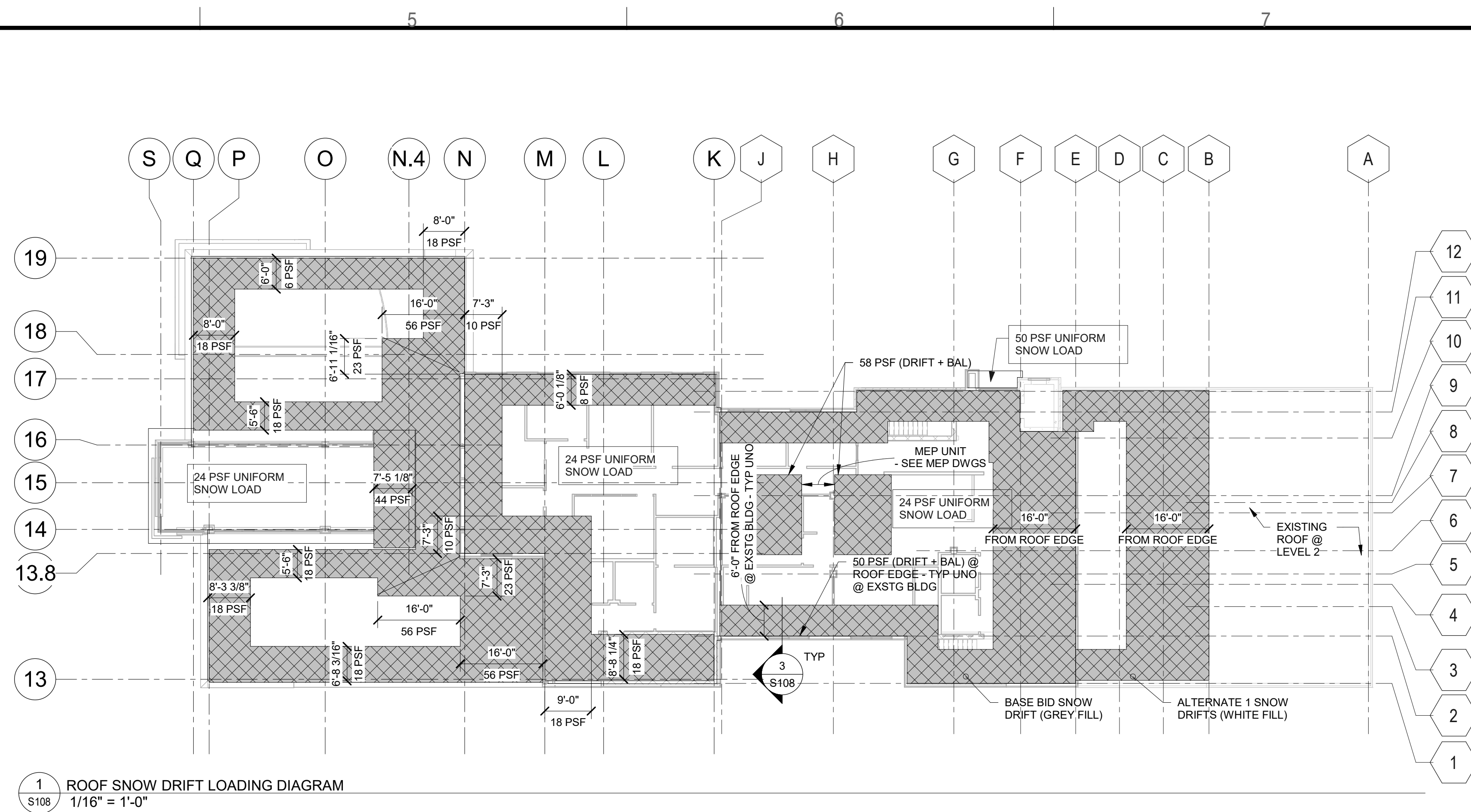


11 TYPICAL HSS BEAM CONNECTION TO COLUMN DETAIL
S107 N.T.S.

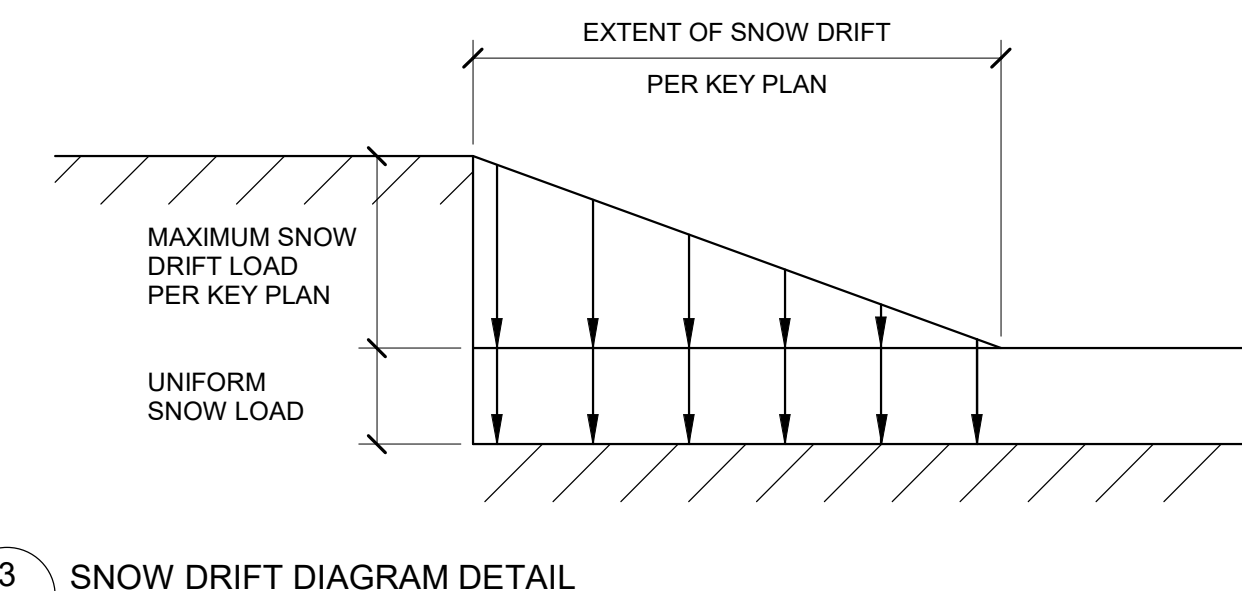


2 WIND UPLIFT LOADING KEY PLAN
S108 1/16" = 1'-0"

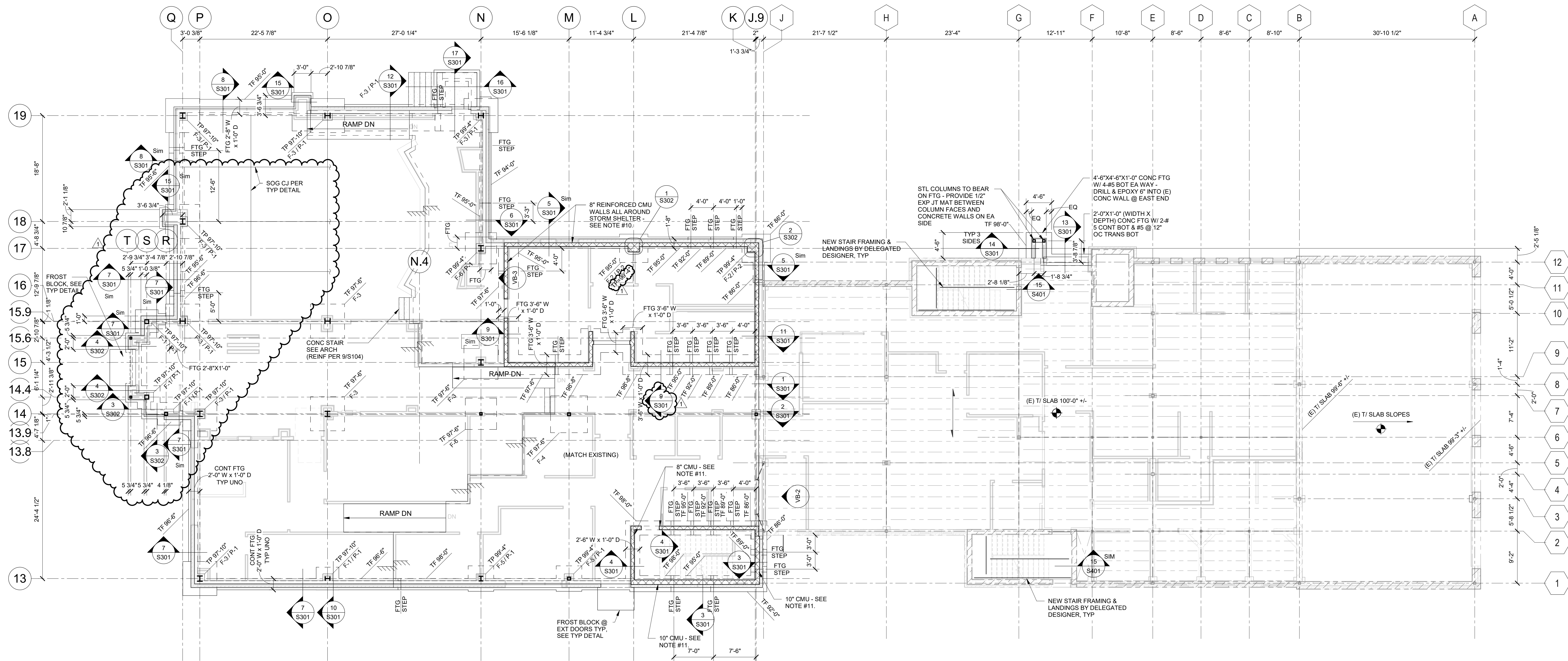
LOCATION	NET UPLIFT PRESSURE (PSF)			REMARKS
	1	2	3	
AREA < 10 SF	10	21	34	
AREA = 25 SF	9	17	25	
AREA = 50 SF	9	14	18	
AREA > 100 SF	9	11	11	
* JOIST NET UPLIFT PRESSURE SHOWN USES THE COMBINATION 0.6D+0.6W. NOTE THAT 10 PSF DEAD LOAD (UNFACTORED) WAS USED FOR THIS LOAD COMBINATION				



1 ROOF SNOW DRIFT LOADING DIAGRAM
S108 1/16" = 1'-0"



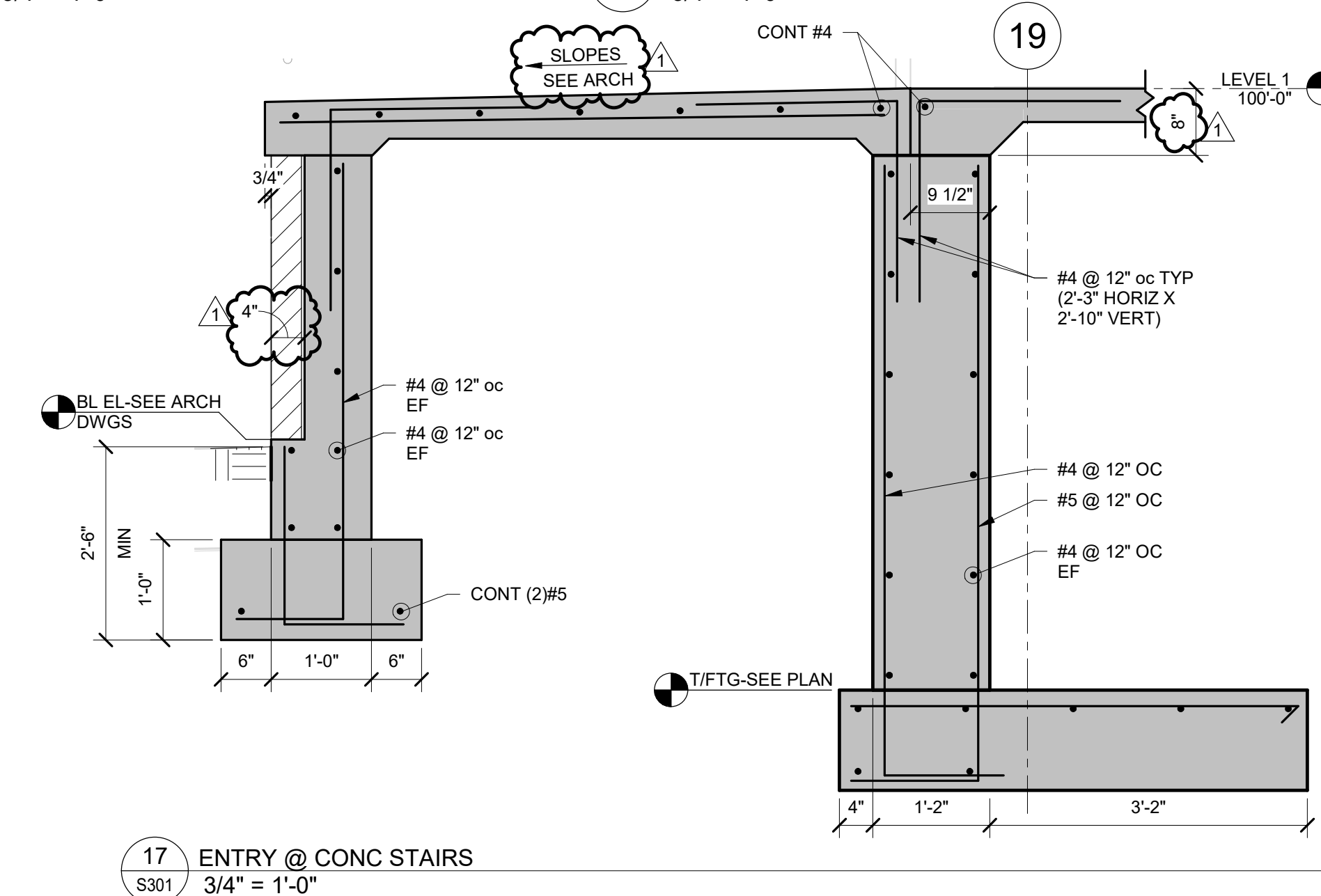
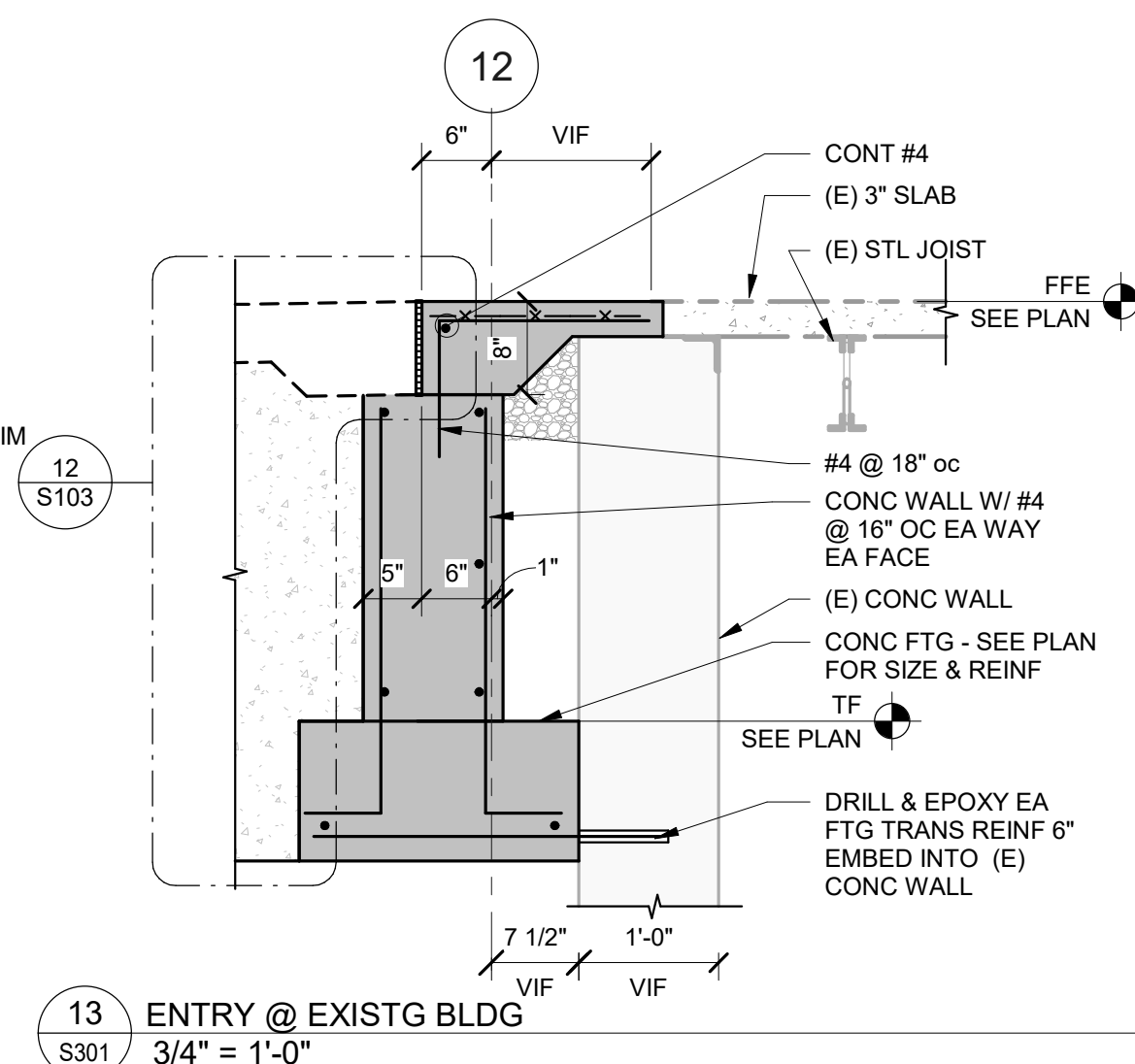
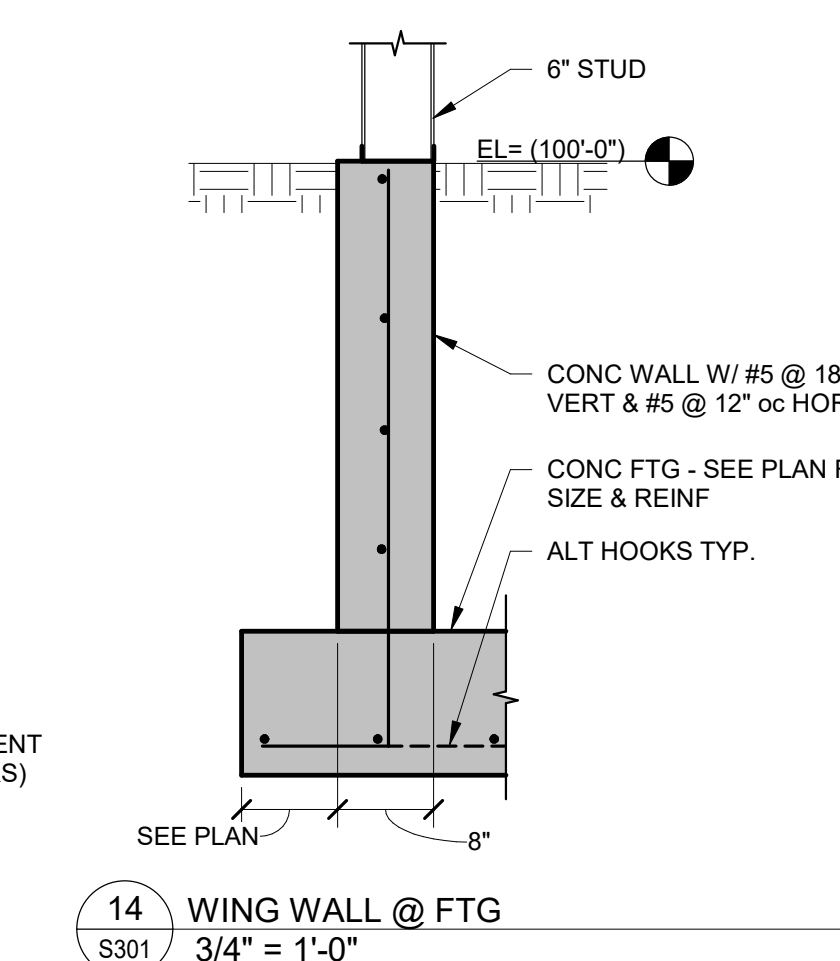
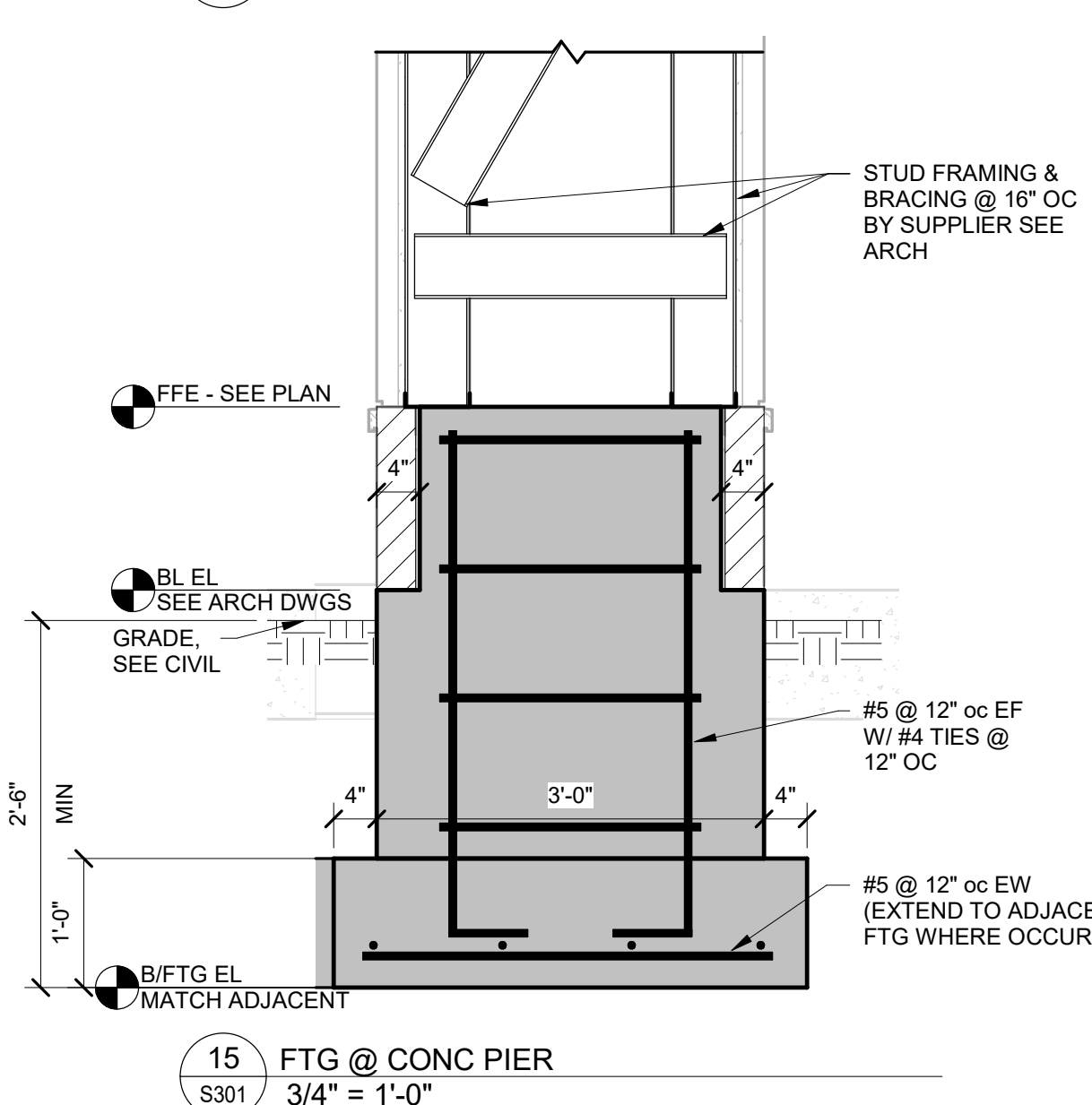
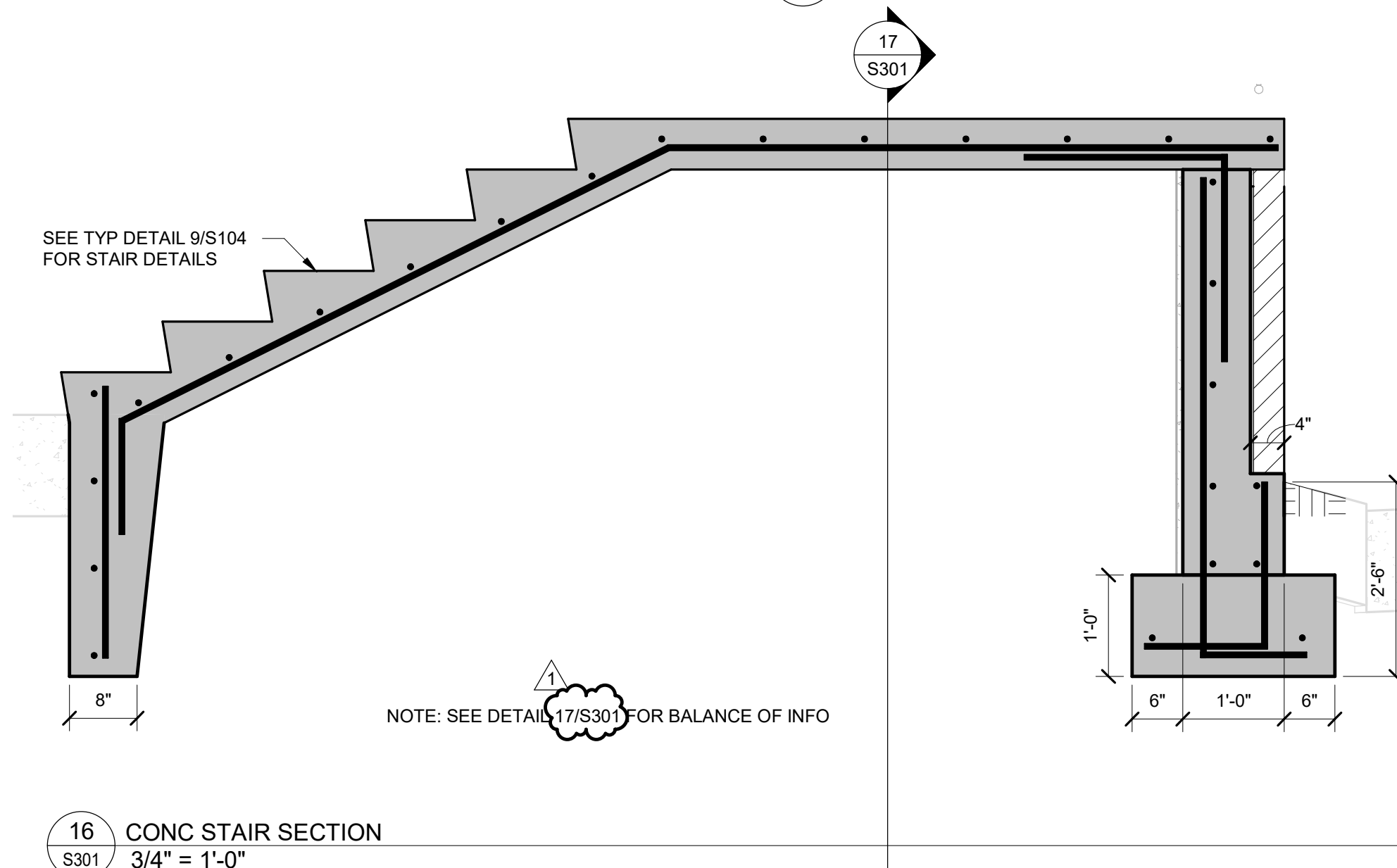
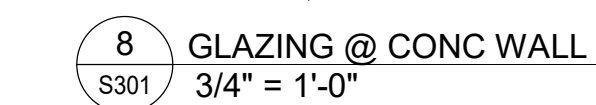
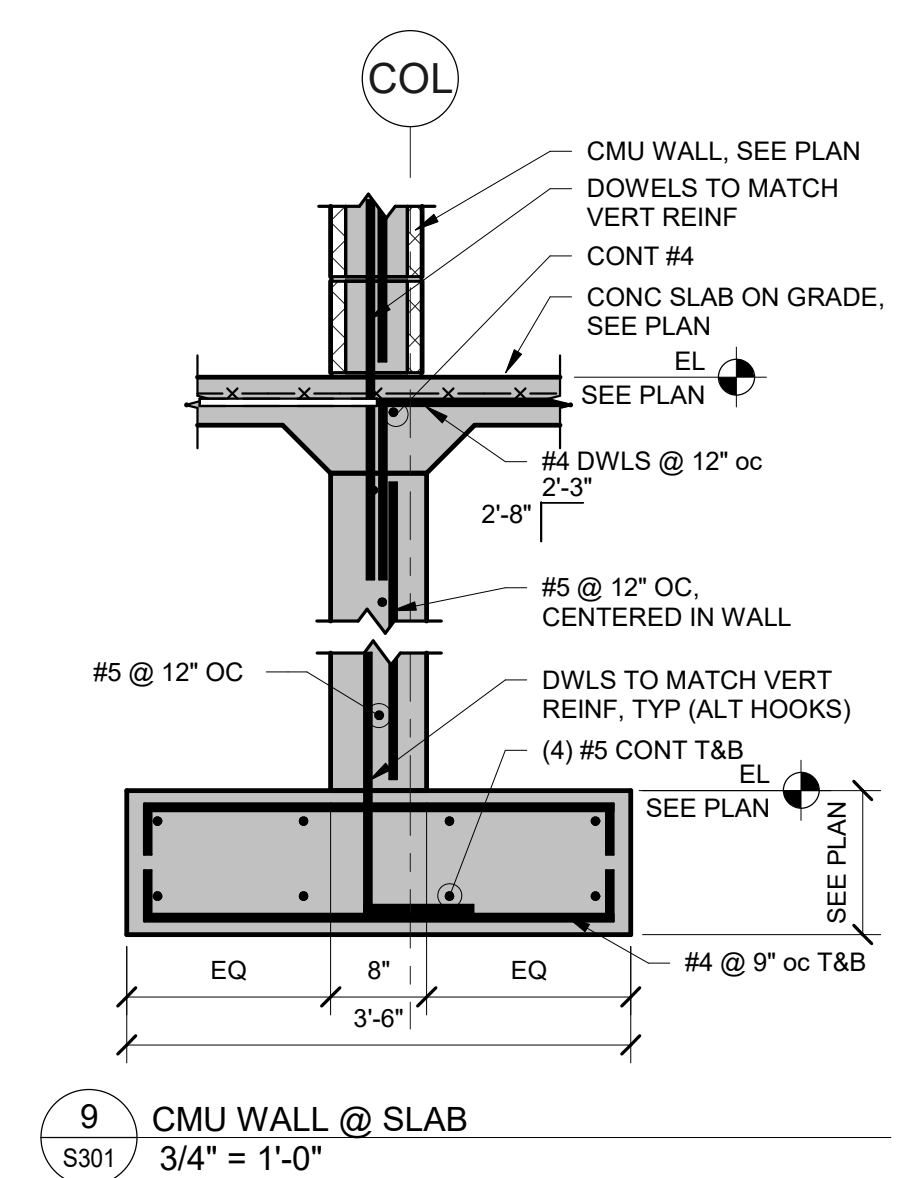
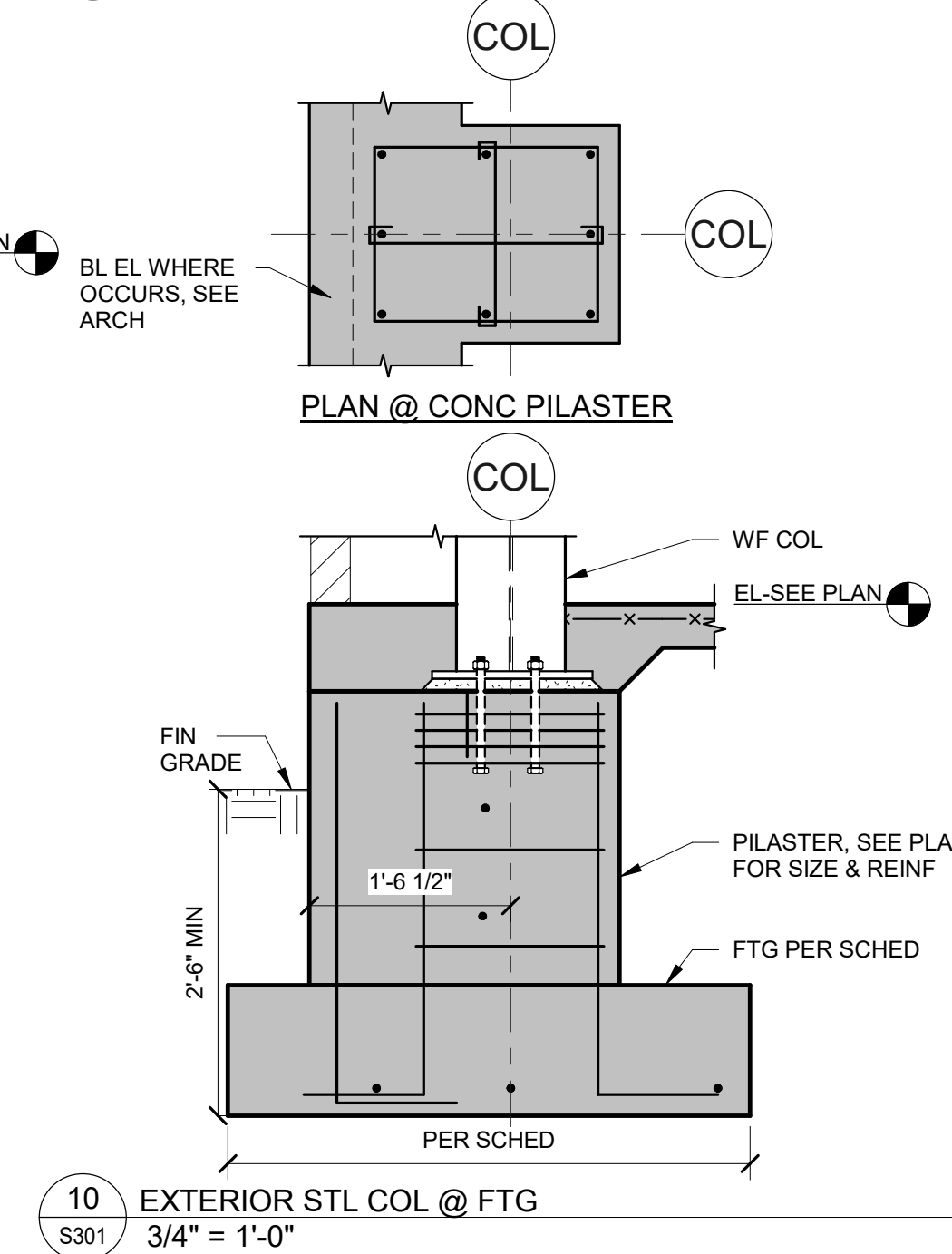
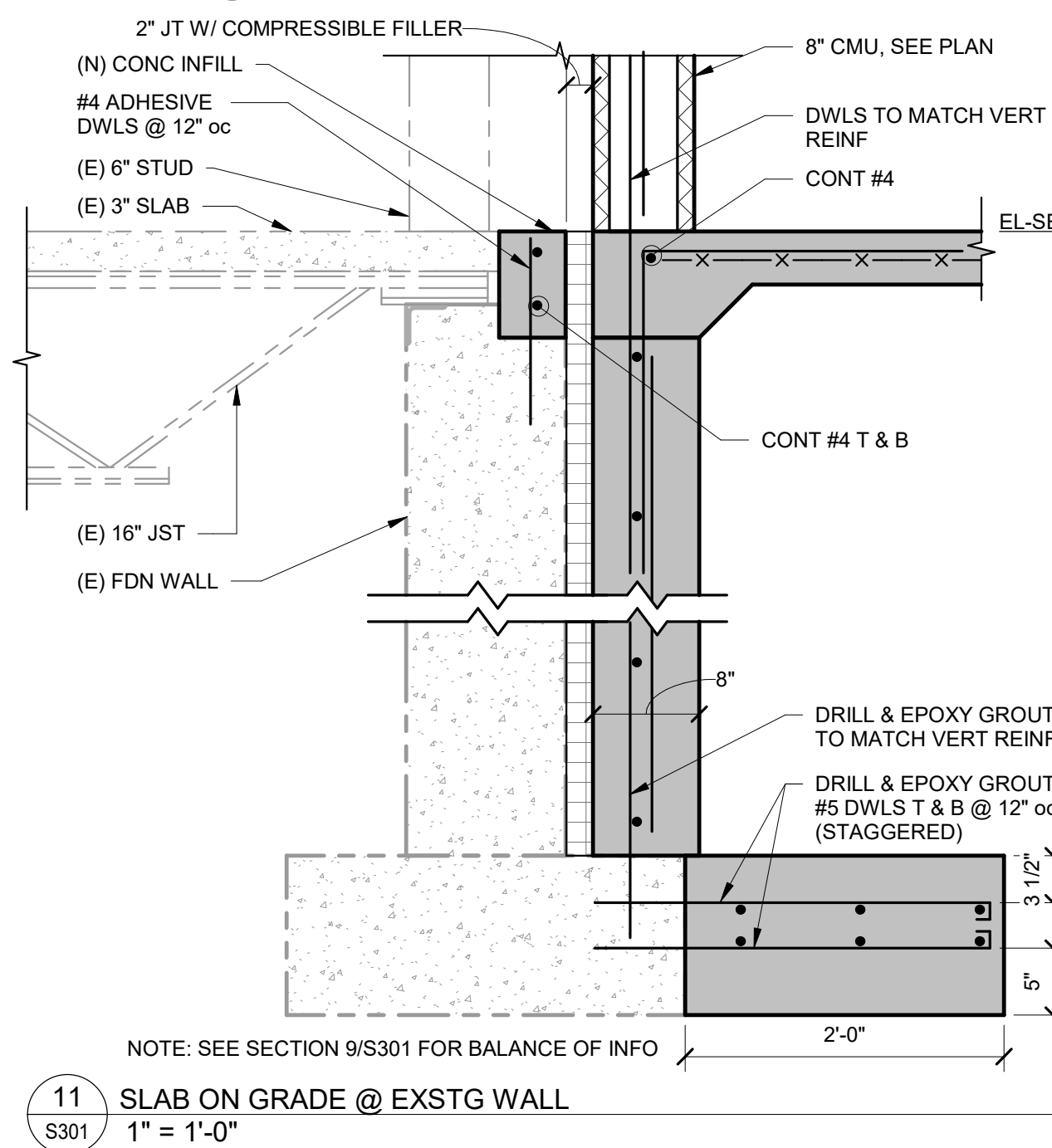
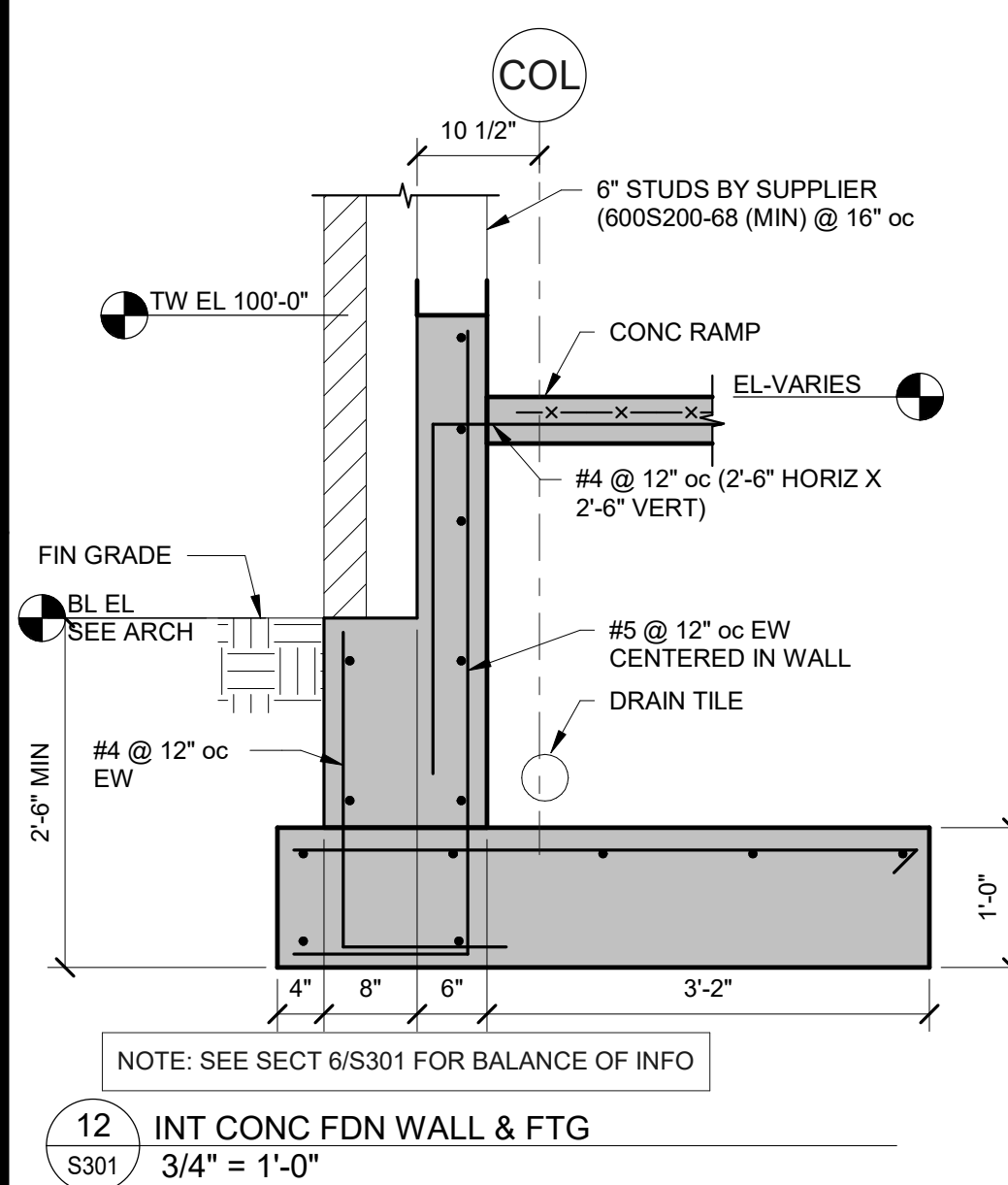
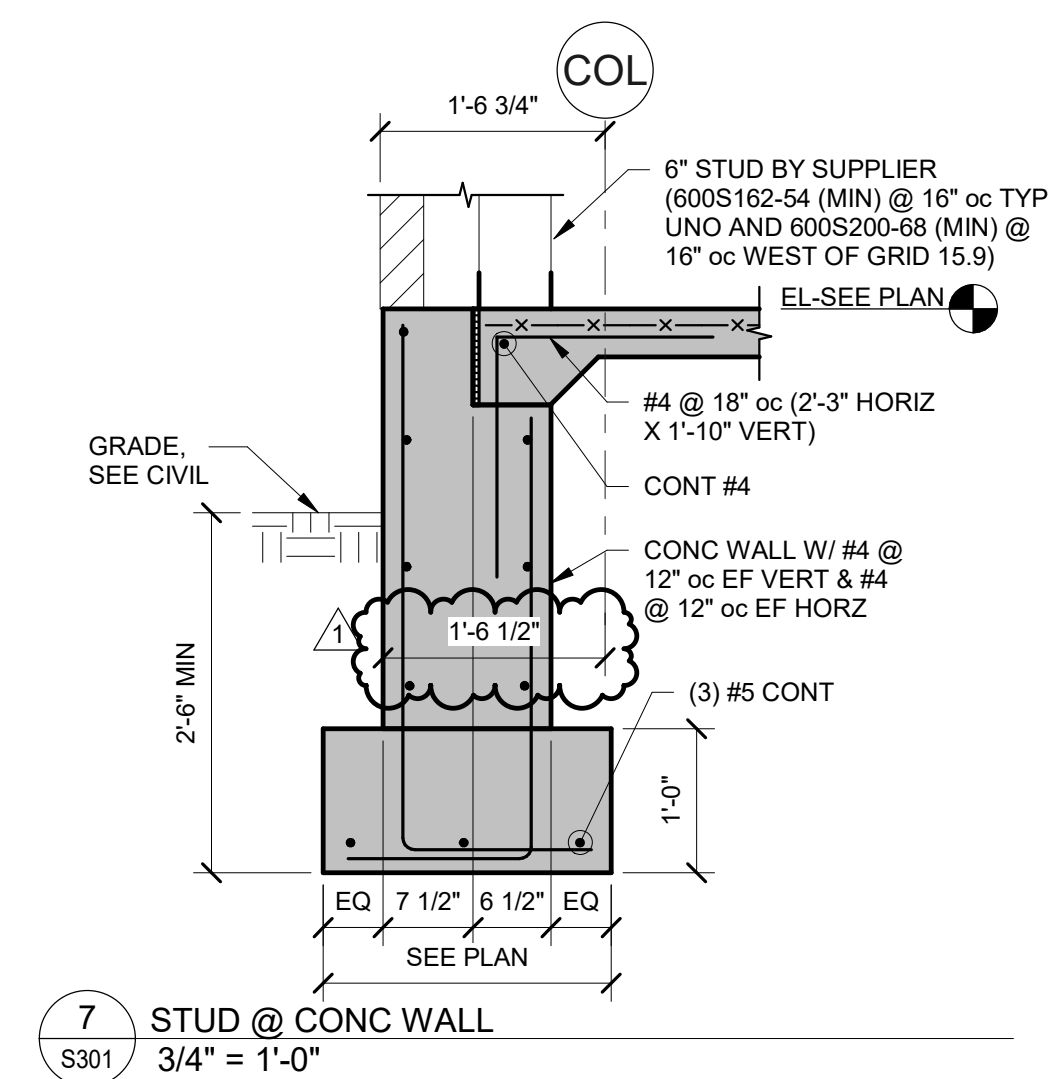
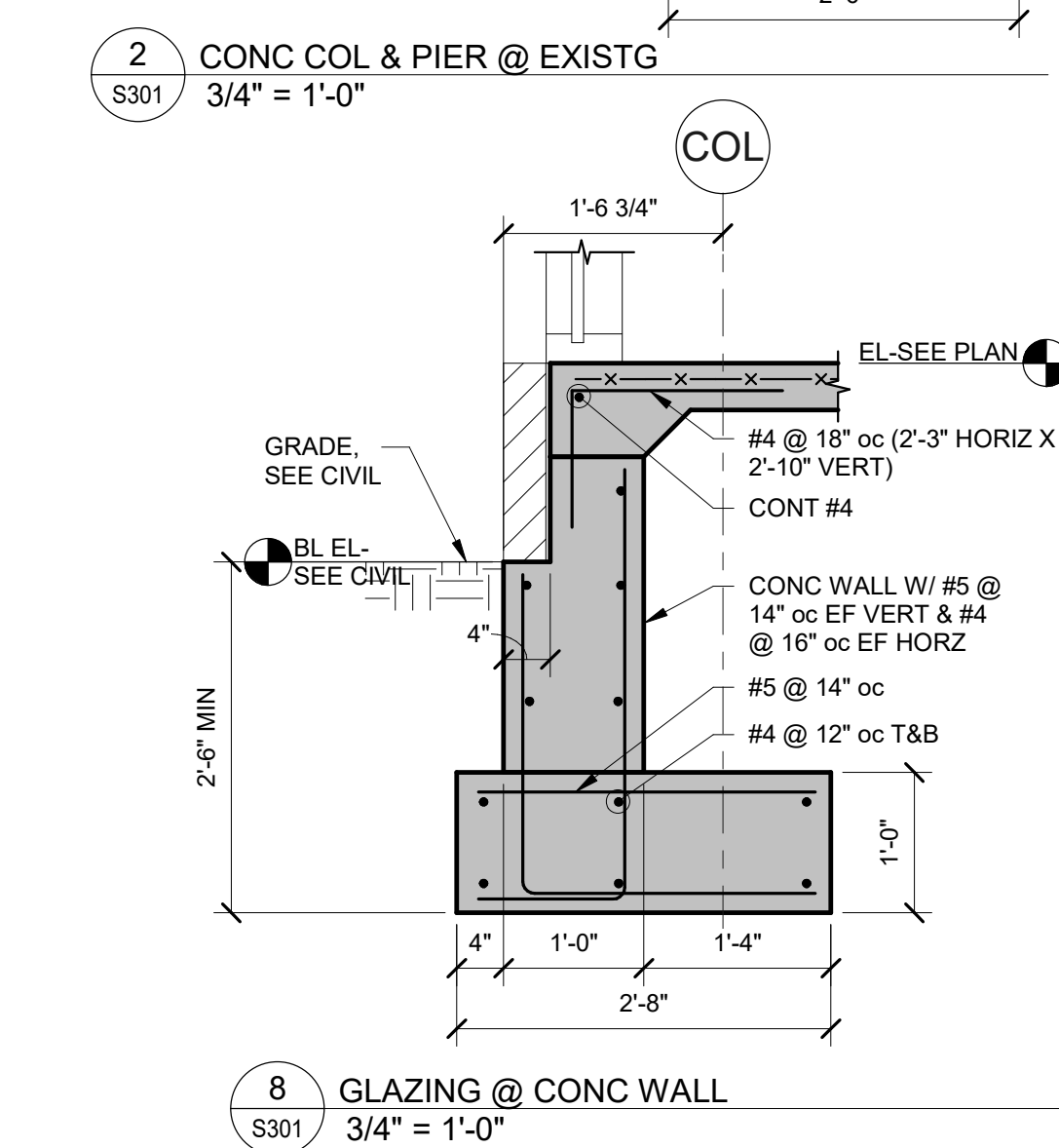
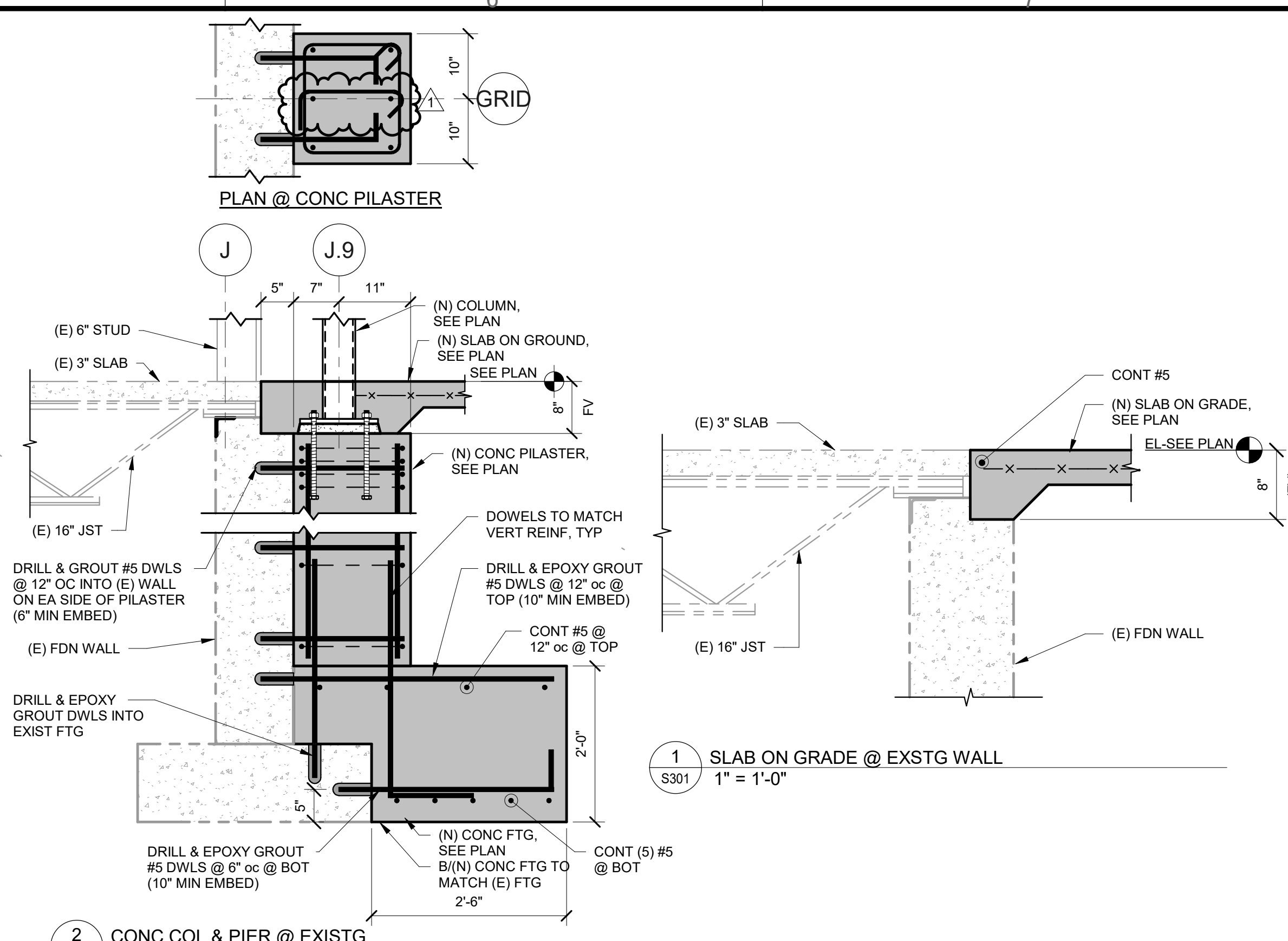
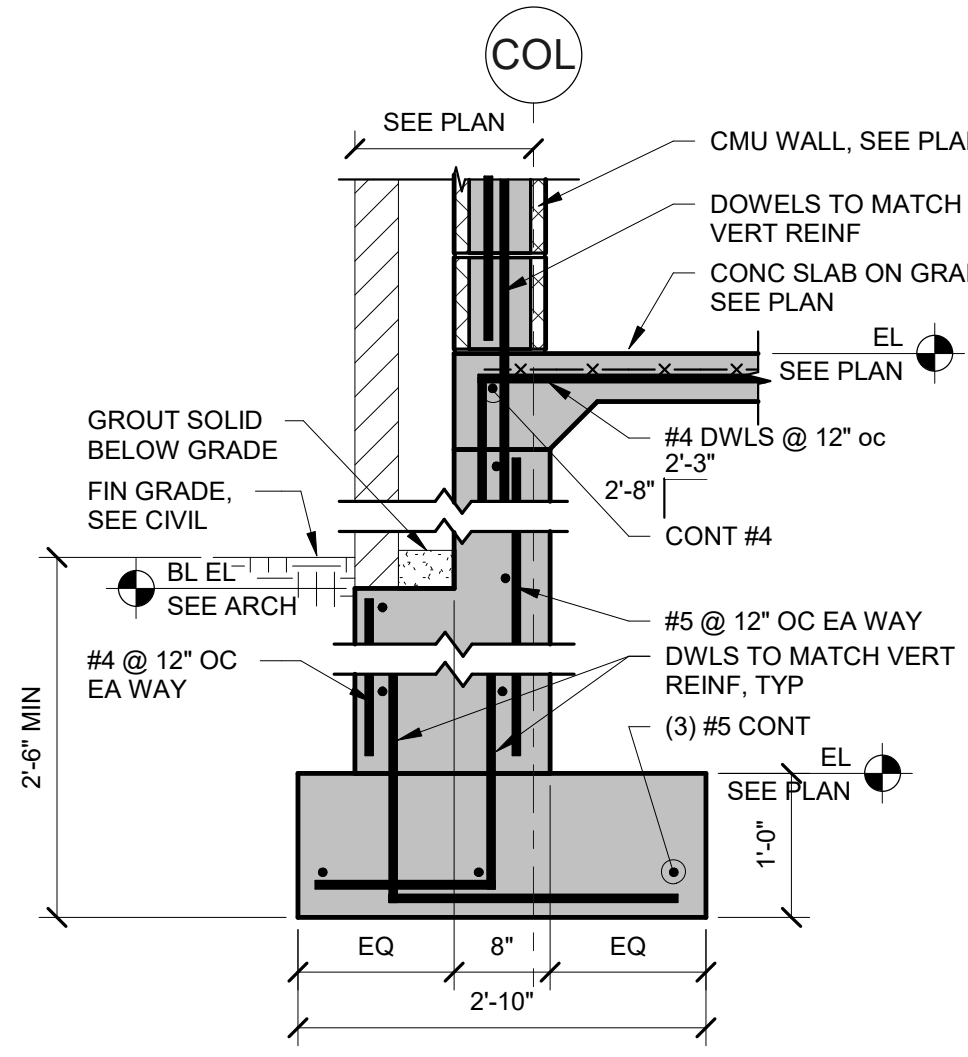
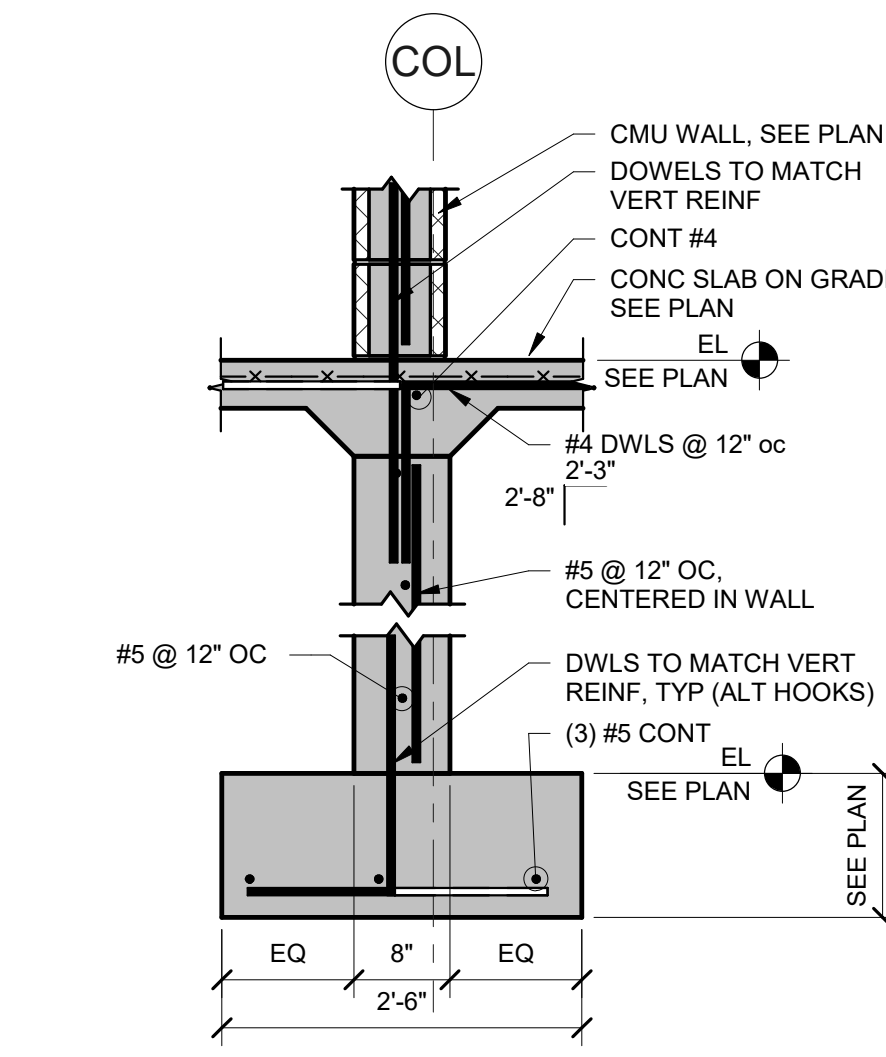
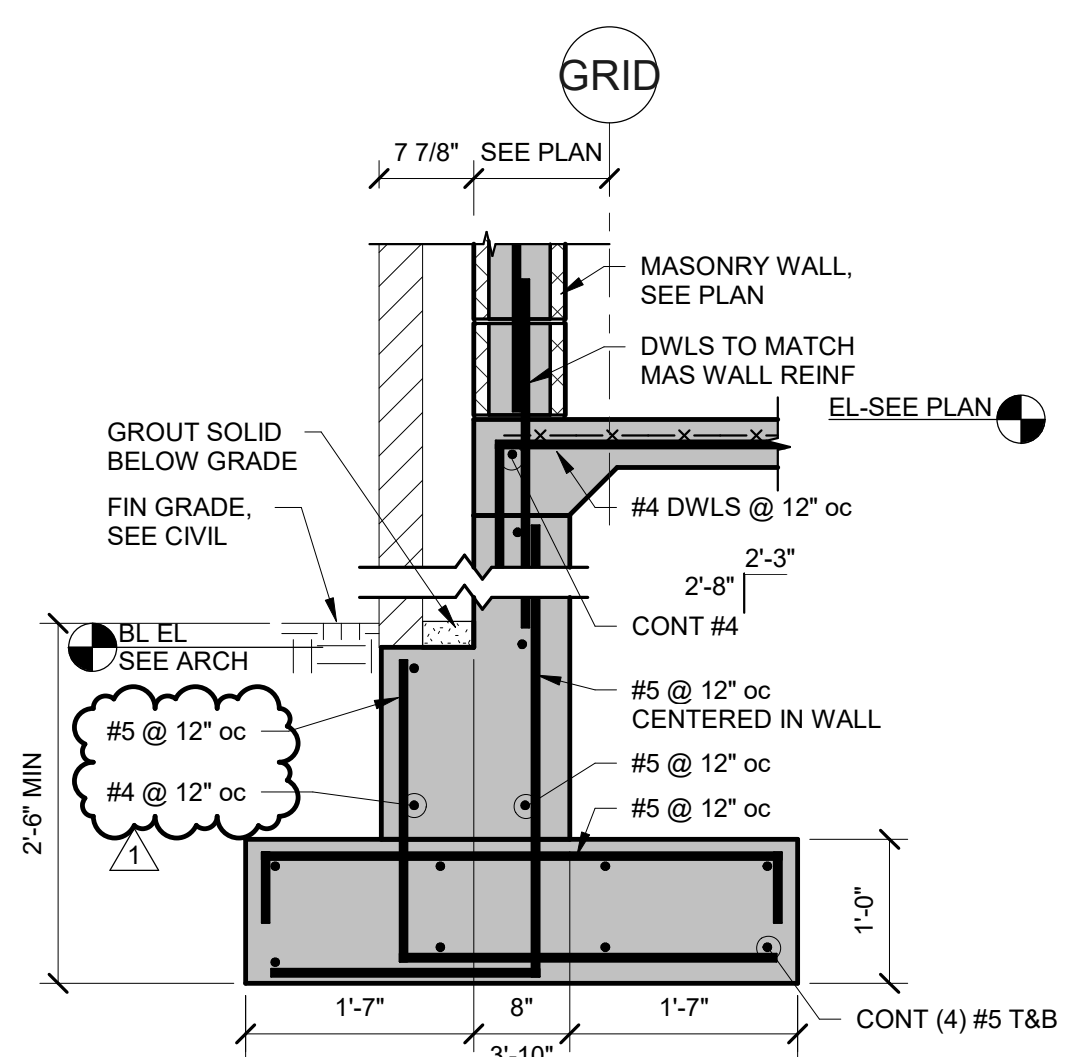
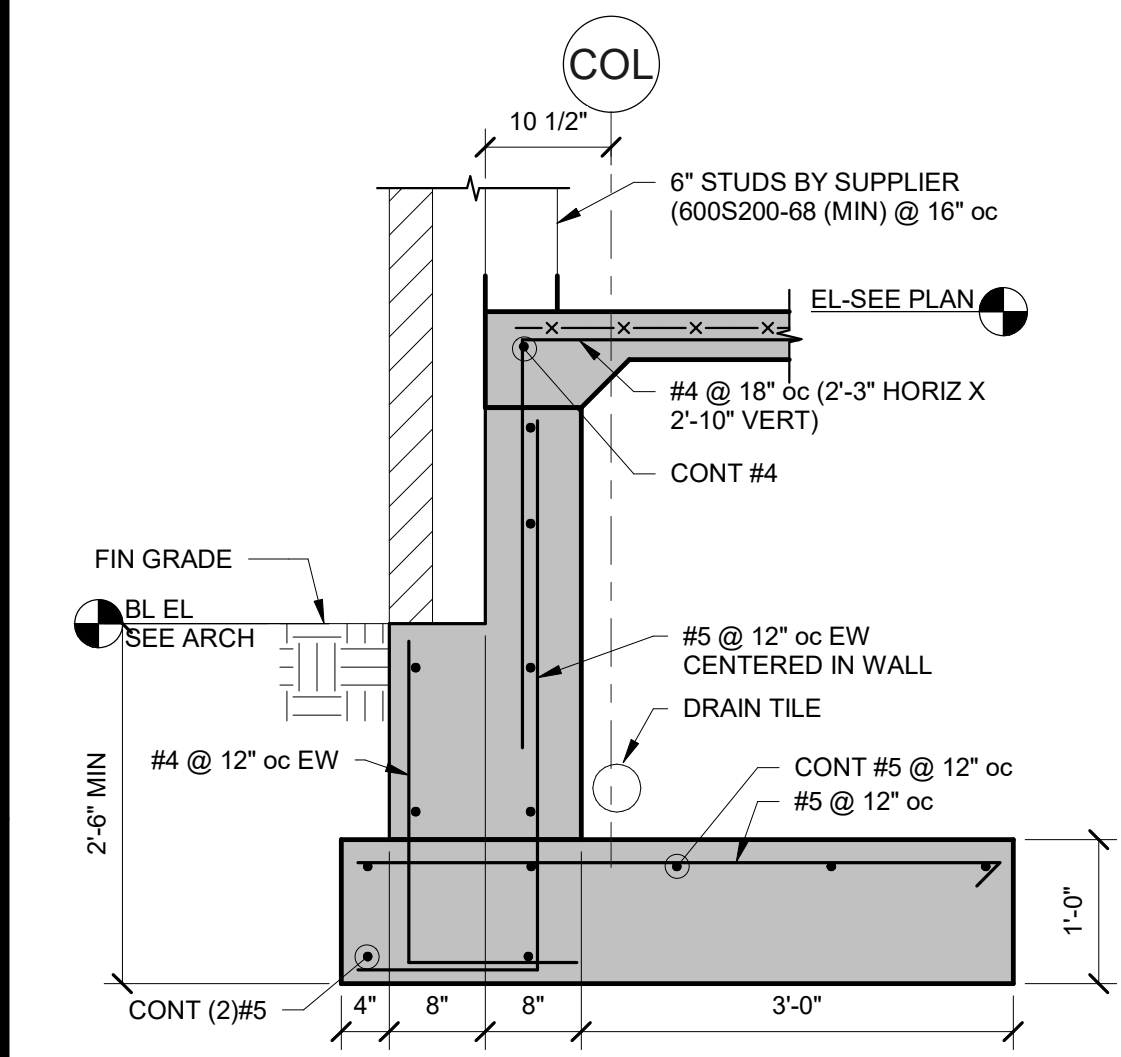
3 SNOW DRIFT DIAGRAM DETAIL
S108 NTS



COLUMN FOOTING SCHEDULE		
MARK	FOOTING SIZE	REINFORCING
F-1	4'-0"x4'-0"x1'-0"	(6) #4 EW B
F-2	5'-0"x5'-0"x1'-0"	(7) #4 EW B
F-3	6'-0"x6'-0"x1'-2"	(7) #5 EW T & B
F-4	6'-6"x6'-6"x1'-4"	(6) #6 EW B
F-5	4'-6"x4'-6"x1'-0"	(6) #4 EW B
F-6	5'-6"x5'-6"x1'-2"	(6) #5 EW T & B
Note:	B-BOTTOM T-TOP	LW-LONG WAY SW-SHORT WAY EW-EACH WAY

- 1 FOUNDATION PLAN AT LEVEL 1
1/8" = 1'-0"
1. FINISHED FLOOR ELEV = 100'-0" (USGS 764.92) MATCH EXISTING.
 2. SLAB ON GROUND SHALL BE 4" NORMAL WEIGHT CONCRETE OVER 10 MIL VAPOR RETARDER ON 8" COMPACTED GRANULAR FILL. REINFORCE SLAB WITH 6x6-W2.1W2.1 WWR.
 3. SEE PLAN FOR RECESSED SLAB ELEVATIONS. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND DIMENSIONS.
 4. TOP OF FOOTING ELEVATIONS ARE AS SHOWN ON PLAN.
 5. TOP OF EXTERIOR FOOTINGS = -2'-0" FROM FINISHED FLOOR ELEVATION, U.N.O.
 6. TOP OF INTERIOR FOOTINGS = -1'-0" FROM FINISHED FLOOR ELEVATION, U.N.O.
 7. TOP OF PILASTER ELEVATIONS ARE AS SHOWN ON PLAN.
 8. SEE SHEET S502 FOR STEEL COLUMN SCHEDULE.
 9. FOR GENERAL NOTES AND TYPICAL DETAILS SEE SHEETS S100 THRU S108.
 10. STORM SHELTER WALLS (SOUTH OF GRID LINE J & WEST OF GRID LINE 14) SHALL BE 8" CMU WALLS REINFORCED W/ #6 VERT @ 16" oc & (2) #5 HORIZ @ 48" oc. ALL CELLS SHALL BE GROUTED SOLID.
 11. STAIR WALLS (SOUTH OF GRID LINE J) SHALL BE 8" OR 10" CMU WALLS REINFORCED W/ (2) #5 VERT @ 16" oc & (2) #5 HORIZ @ 48" oc. ALL CELLS SHALL BE GROUTED SOLID. SEE PLAN FOR WALL THICKNESS.
 12. COLUMN FOOTINGS ARE CENTERED EACH WAY ON COLUMN CENTERLINE UNO.
 13. P-1 INDICATES 24"x24" CONC PILASTER REINFORCED W/ (8) #6 VERT AND (4) #4 TIES @ 3' oc AT TOP & BALANCE TIES @ 12" oc. SEE 10/301 FOR DETAILS. PILASTERS ARE CENTERED EACH WAY ON COLUMN CENTERLINES UNO.
 14. P-2 INDICATES 24"x20" CONC PILASTER REINFORCED W/ (8) #6 VERT AND (4) #4 TIES @ 3' oc AT TOP & BALANCE TIES @ 12" oc.
 15. SEE ARCH DRAWINGS FOR SLAB RECESSES, STEPS, RAMPS AND SLOPES. SEE SHEET S109 FOR STORM SHELTER INFORMATION.

THE DIMENSIONS AND ELEVATIONS SHOWN FOR THE EXISTING CONSTRUCTION ARE NOT AS-BUILT DIMENSIONS BUT WERE OBTAINED FROM FIELD MEASUREMENTS, OTHER DRAWINGS, AND DOCUMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS, ELEVATIONS AND MEMBER SIZES AS REQUIRED PRIOR TO BEGINNING CONSTRUCTION, FABRICATION, ETC.





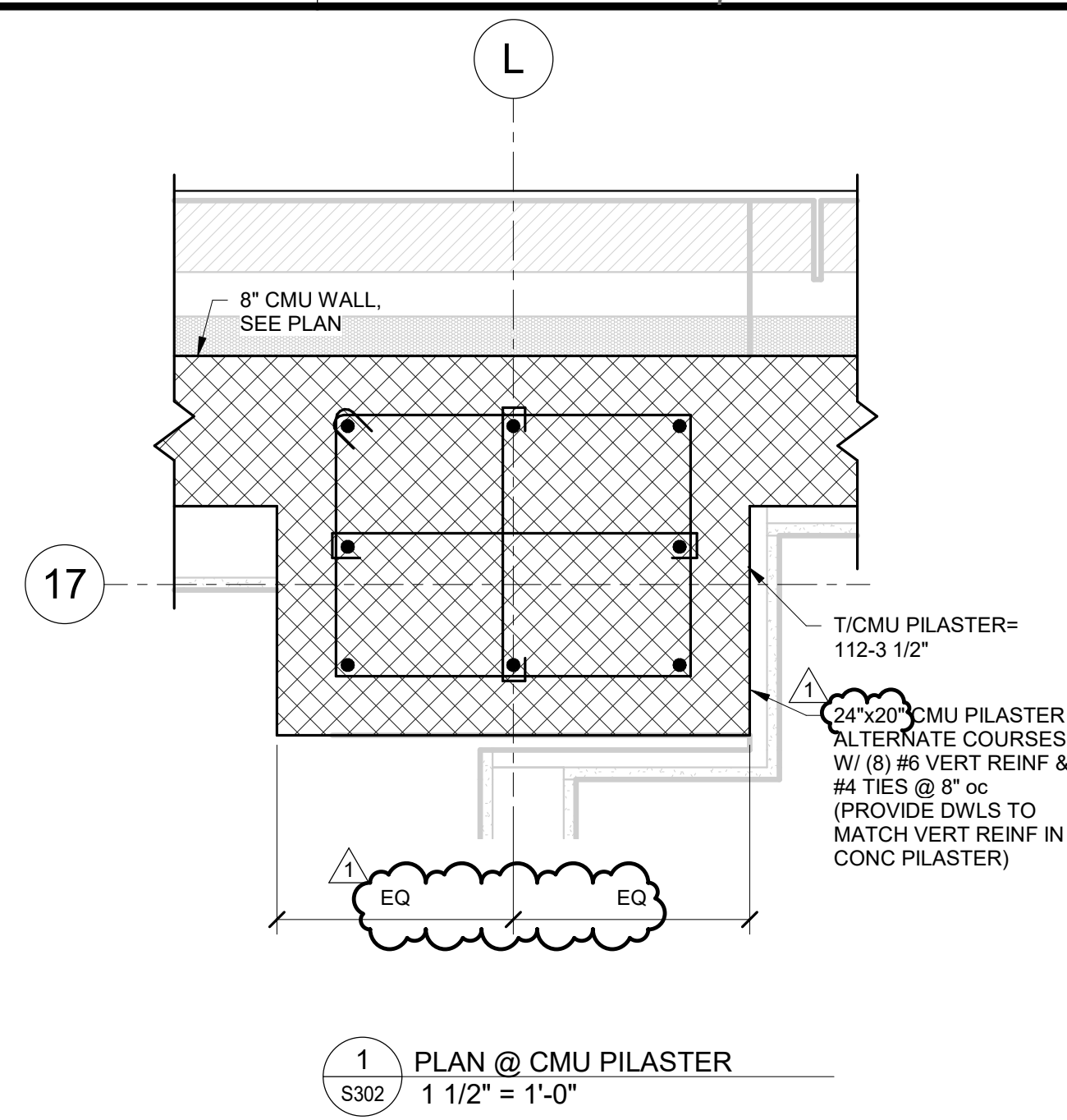
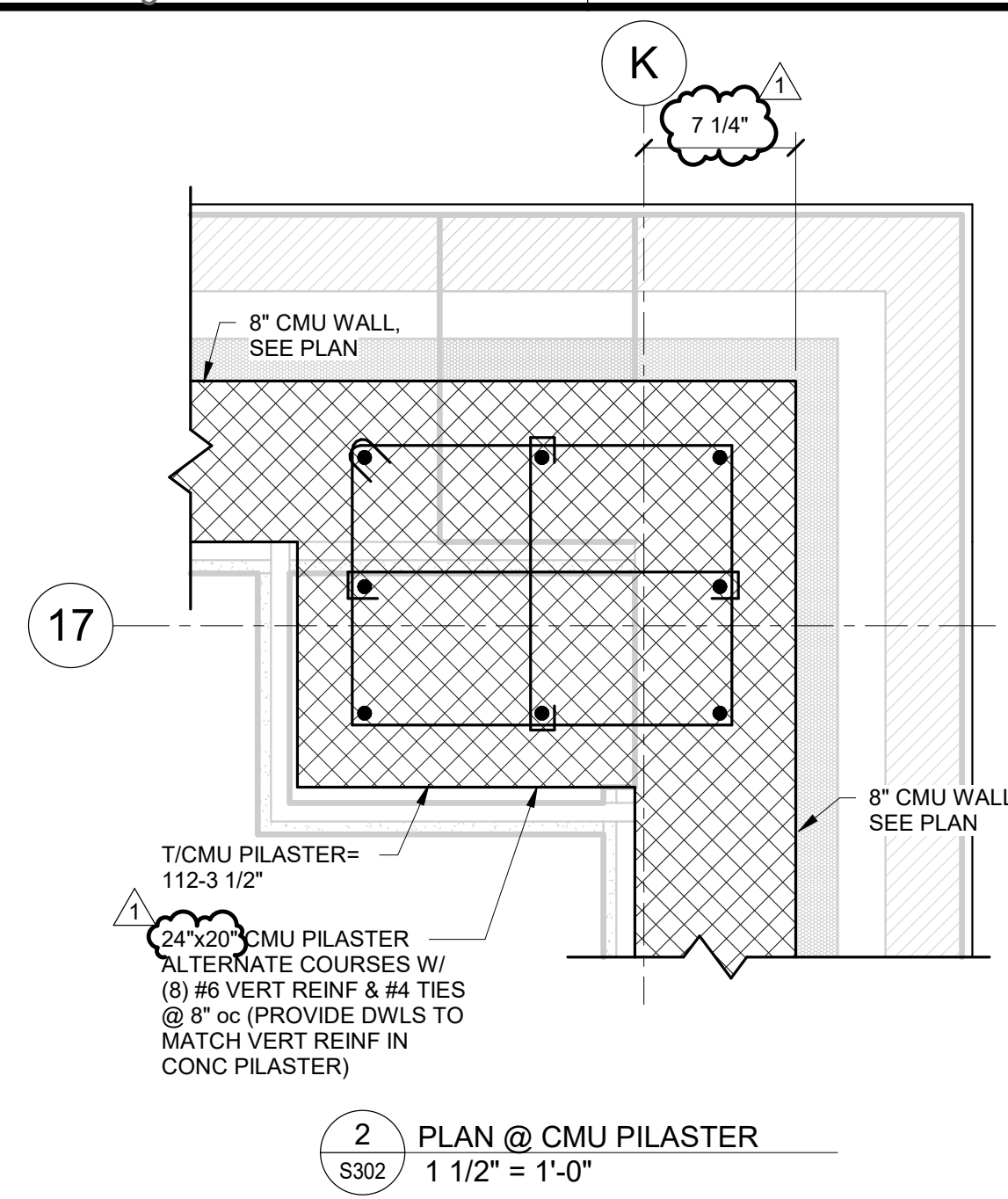
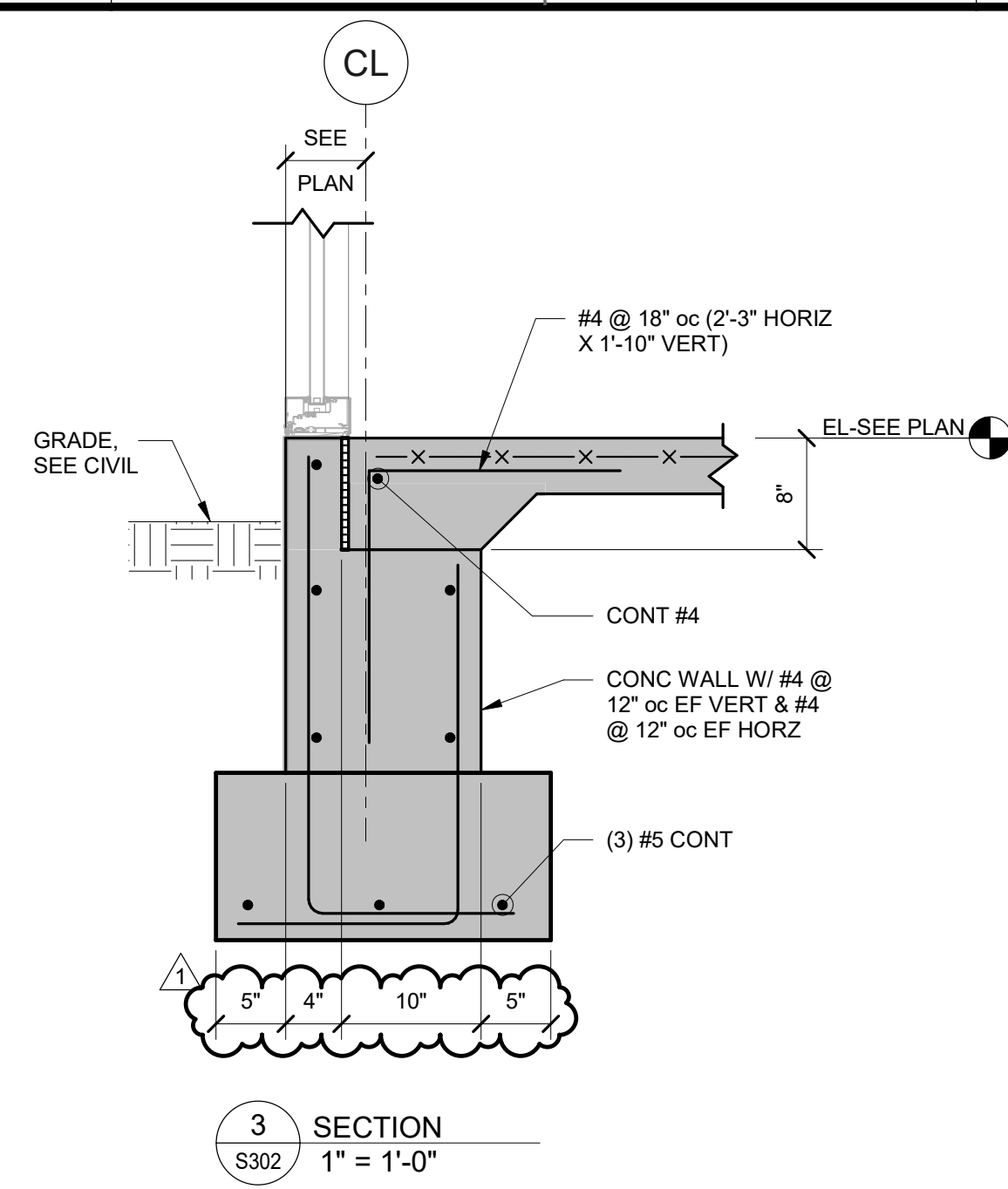
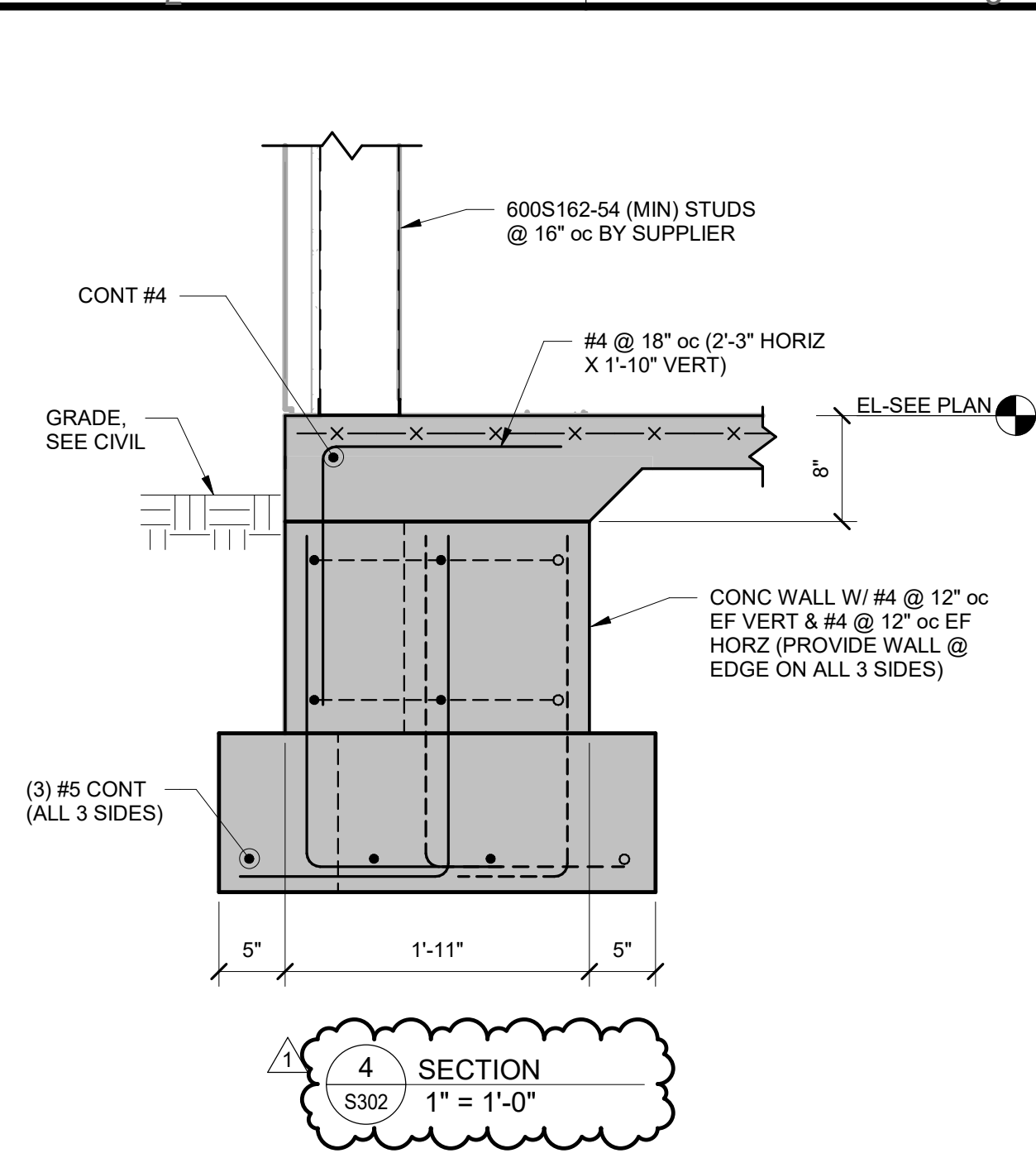
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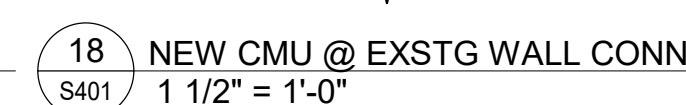
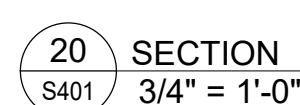
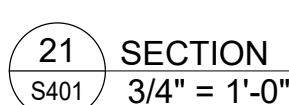
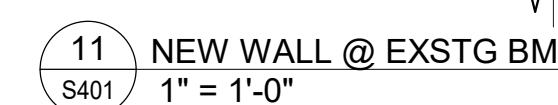
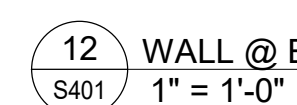
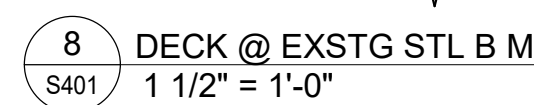
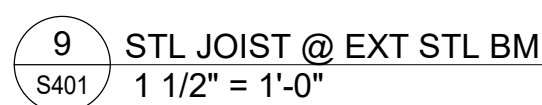
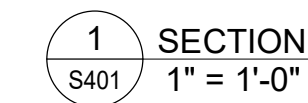
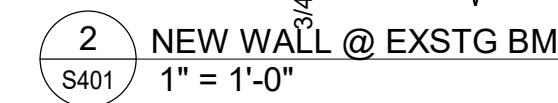
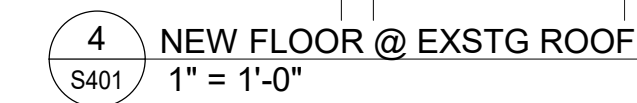
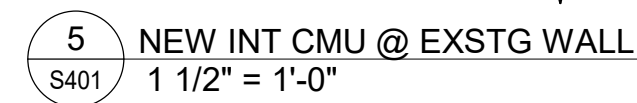
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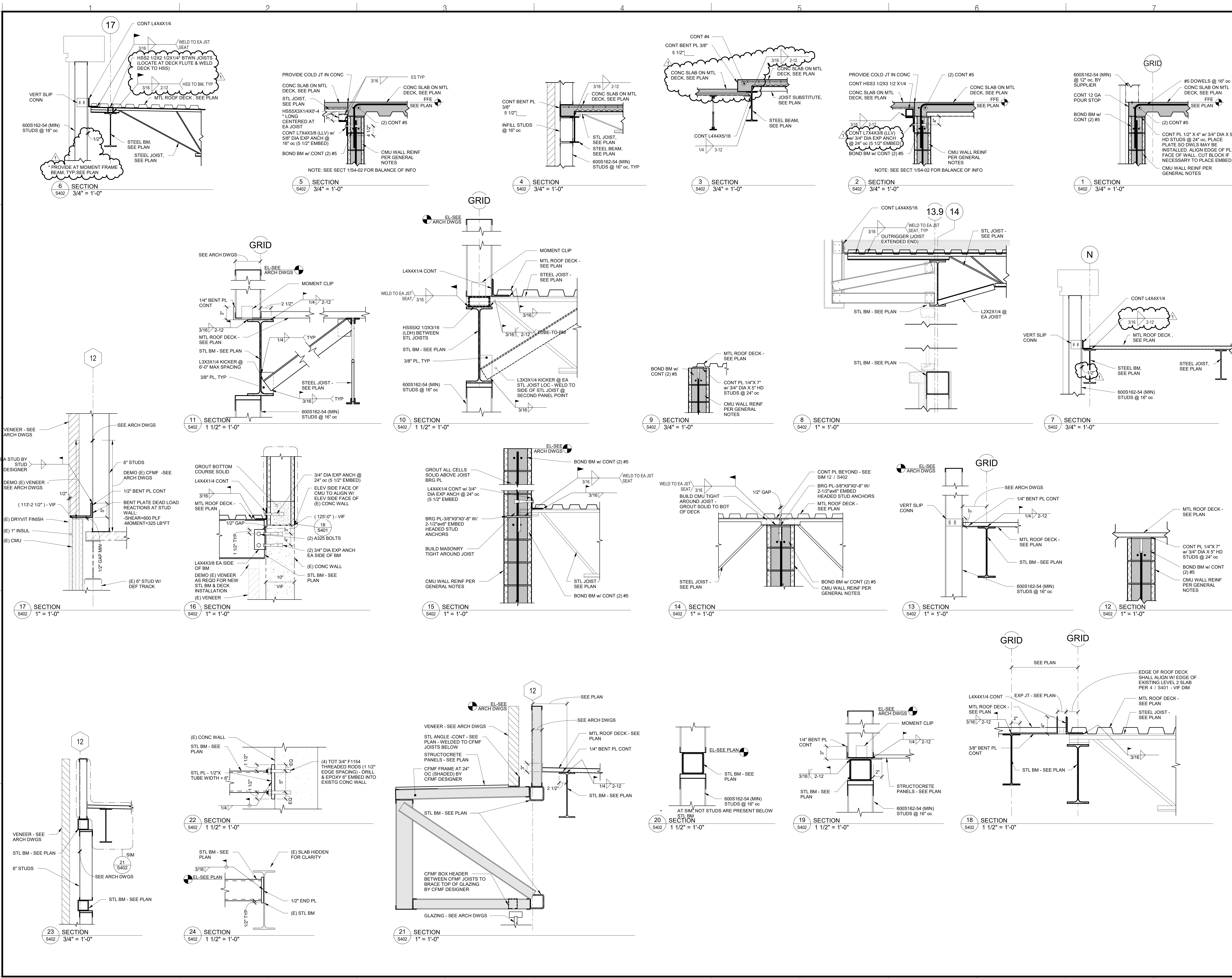
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B

A







No.	Date	Revision
1	03/17/23	ADDENDUM #1

Project No.
2100212

Sheet No.
S402

Date
2/23/2023

1 WEBAE

Proposed: RENOVATION & ADDITION

ELLISVILLE CITY HALL &
POLICE STATION

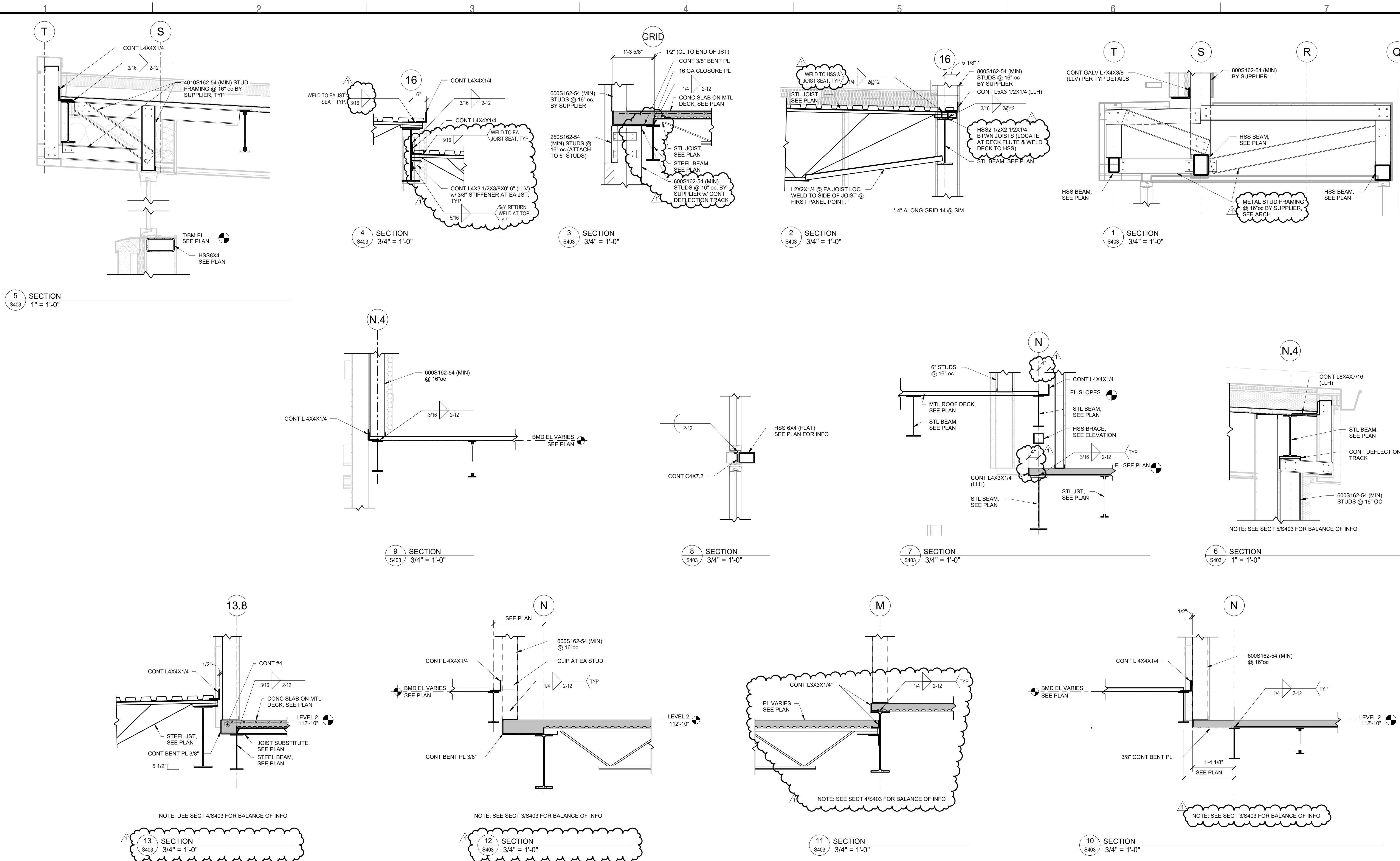
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COLUMN SCHEDULE

1/8" = 1'-0"

Column Locations	Q-18	Q-19	R-14	S-14.4, S-15.9	T-14.4, T-15.6	Column Locations
BASEMENT						BASEMENT
LEVEL 1						LEVEL 1
LEVEL 2						LEVEL 2
ROOF						ROOF

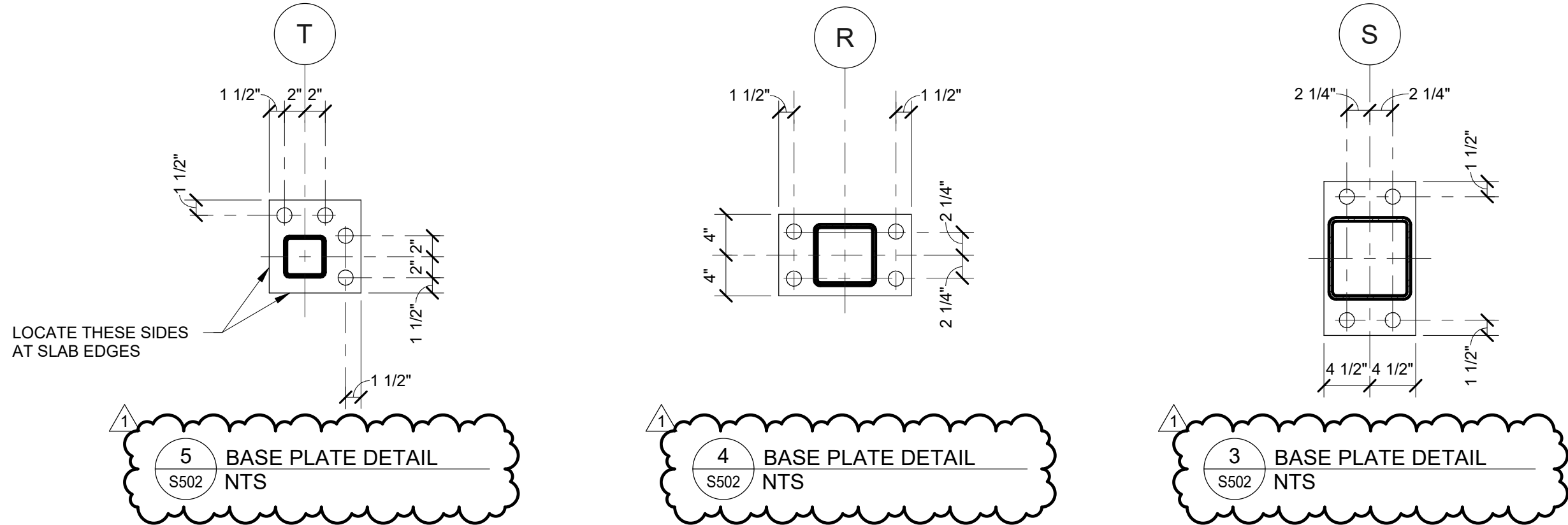
ROOF																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</
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COLUMN SCHEDULE - ALTERNATE 1

1/8" = 1'-0"

Column Locations	B-1	B-3	B-8	B-12	E-12	Column Locations
BASEMENT						BASEMENT
LEVEL 1						LEVEL 1
LEVEL 2						LEVEL 2
ROOF						ROOF

BASE PLATE SCHEDULE			
COLUMN SIZE	BASE PLATE (t x B x N)	ANCHOR RODS	COMMENTS
HSS 5x5x3/8	3/4 x 11 x 11	(4) 3/4" DIA	
HSS 6x6x3/8	3/4 x 12 x 12	(4) 3/4" DIA	
HSS 6x6x1/2	3/4 x 12 x 12	(4) 3/4" DIA	
W10x33	3/4 x 16 x 14	(4) 3/4" DIA	
W10x88	1 x 16 x 16	(6) 1" DIA	SEE DETAIL 1/S502
W10x100	1 x 16 x 16	(6) 1" DIA	
W14x82	3/4 x 15 x 15	(4) 3/4" DIA	SEE DETAIL 2/S502
HSS8x8x3/8 (@ COL S-14.4)	3/4 x 14 x 14	(4) 3/4" DIA	SEE DETAIL 3/S502
HSS6x6x1/2 (@ COL R-14)	3/4 x 8 x 13	(4) 3/4" DIA	SEE DETAIL 4/S502
HSS4x4x5/16	3/4 x 9 x 9	(4) 3/4" DIA	SEE DETAIL 5/S502



2 COLUMN BASE PLATE
S502 NTS

1 TYPICAL MOMENT FRAME COL BASE PL
S502 NTS

No. 1 Date: 03/17/23 ADDENDUM #1 Revision

Project No.
2100212

Sheet No.
S502

Date
2/23/2023

Proposed: RENOVATION & ADDITION
**ELLISVILLE CITY HALL &
POLICE STATION**

COLUMN SCHEDULE

1 WEBAVE

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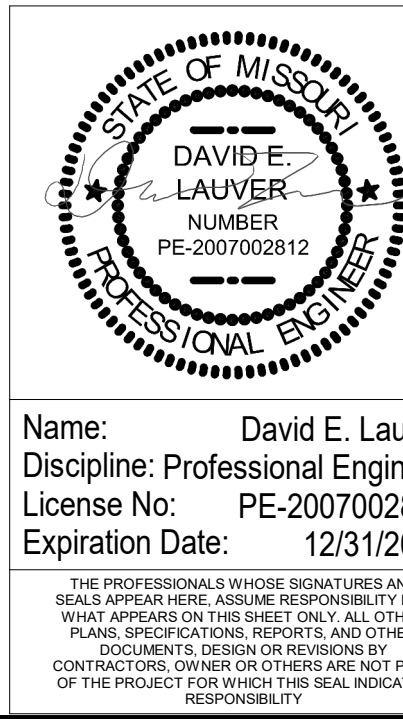


DOMESTIC WATER HEATER SCHEDULE											
MARK	MANUFACTURER	MODEL NO	RECOVERY	DELTA	FUEL	INPUT (Kw)	VOLTAGE	PHASE	STORAGE	STORAGE TEMP	REMARKS
DWH-01	EXISTING TO REMAIN										
DWH-02	AO SMITH	DEL-15		100 F.	ELECTRIC	2.5	208	1	15 GAL.	120F	1, 2

NOTES:

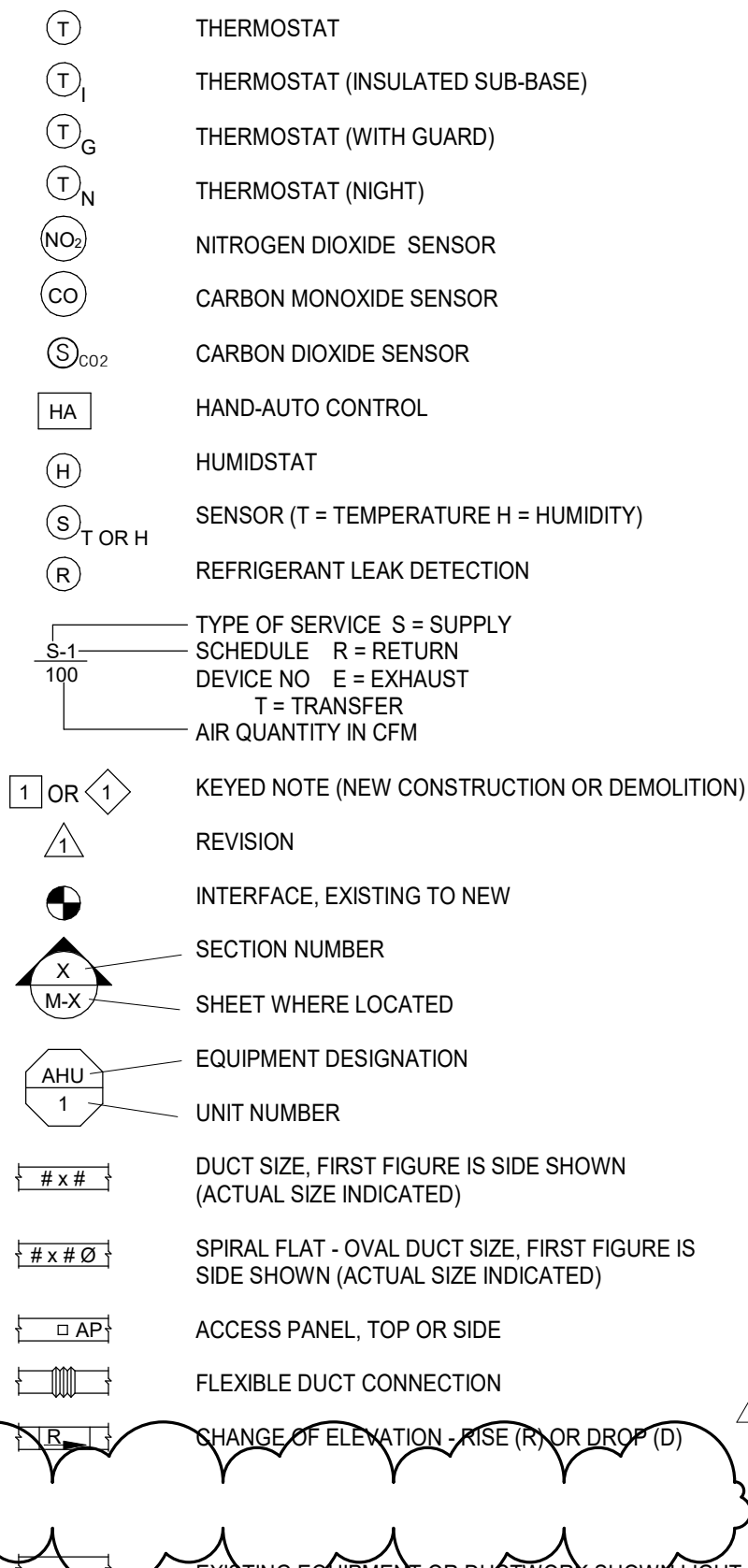
1. REFER TO ELECTRICAL EQUIPMENT DATA SCHEDULE FOR ADDITIONAL POWER CHARACTERISTICS.
2. ET-1 = AMTROL EX-15.

1	RH-1	SPECURE: WOODFORD #SRHMS		-	3/4"	-	FREEZEPROOF, EXTERIOR USE, ROOF MOUNTED	
NOTES								

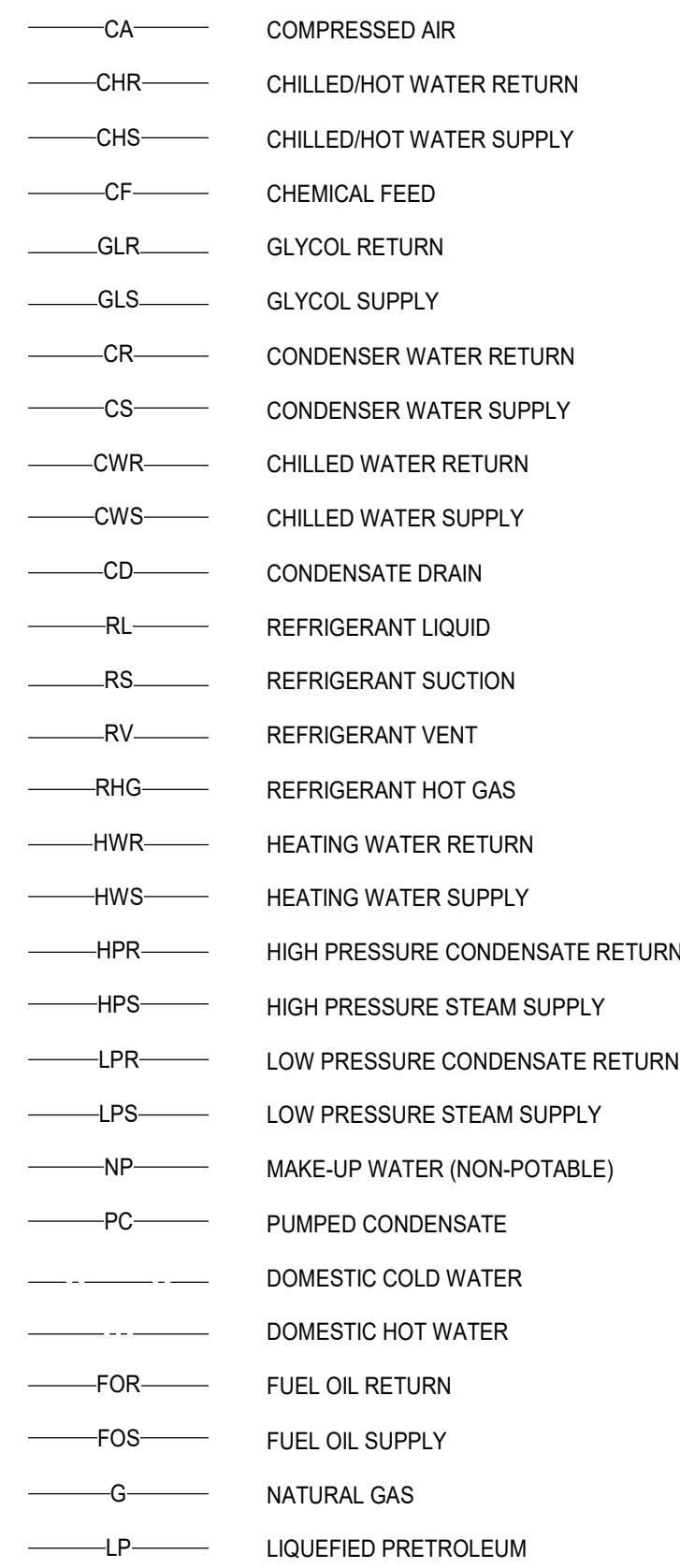


PLUMBING SCHEDULES

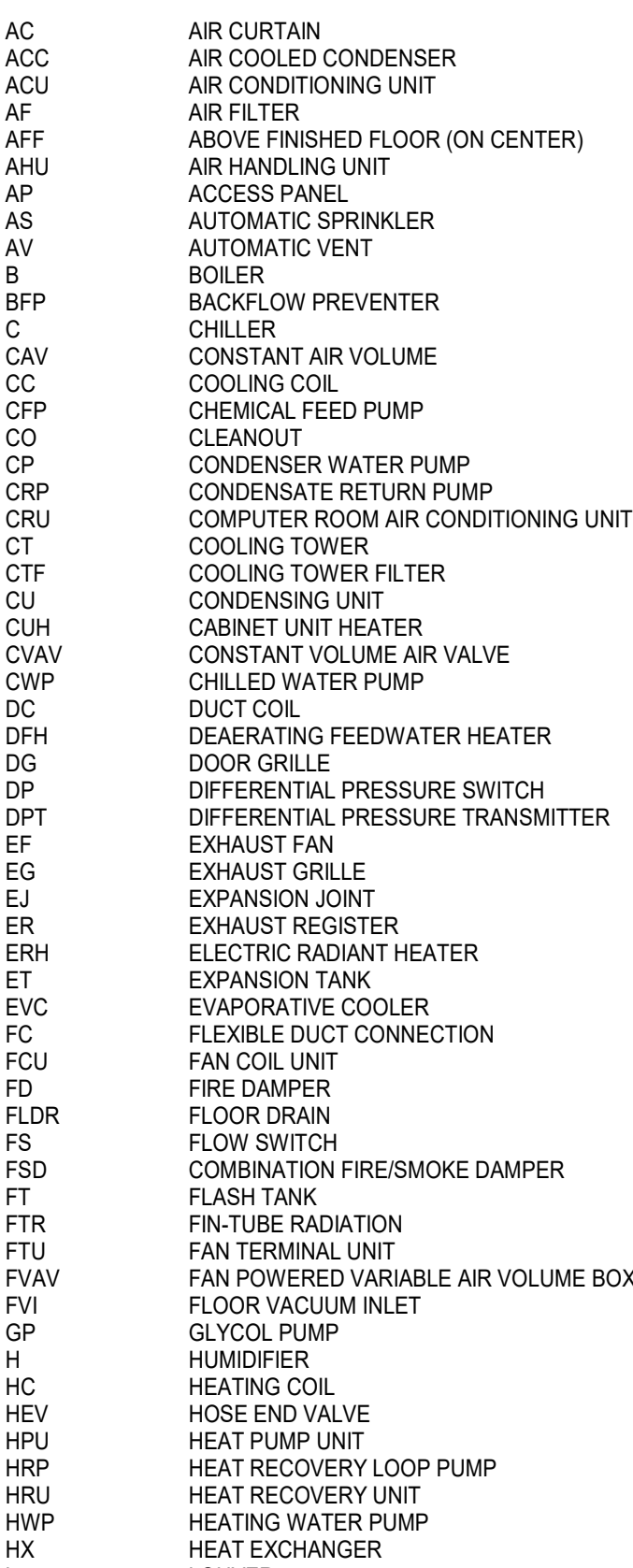
GENERAL SYMBOLS



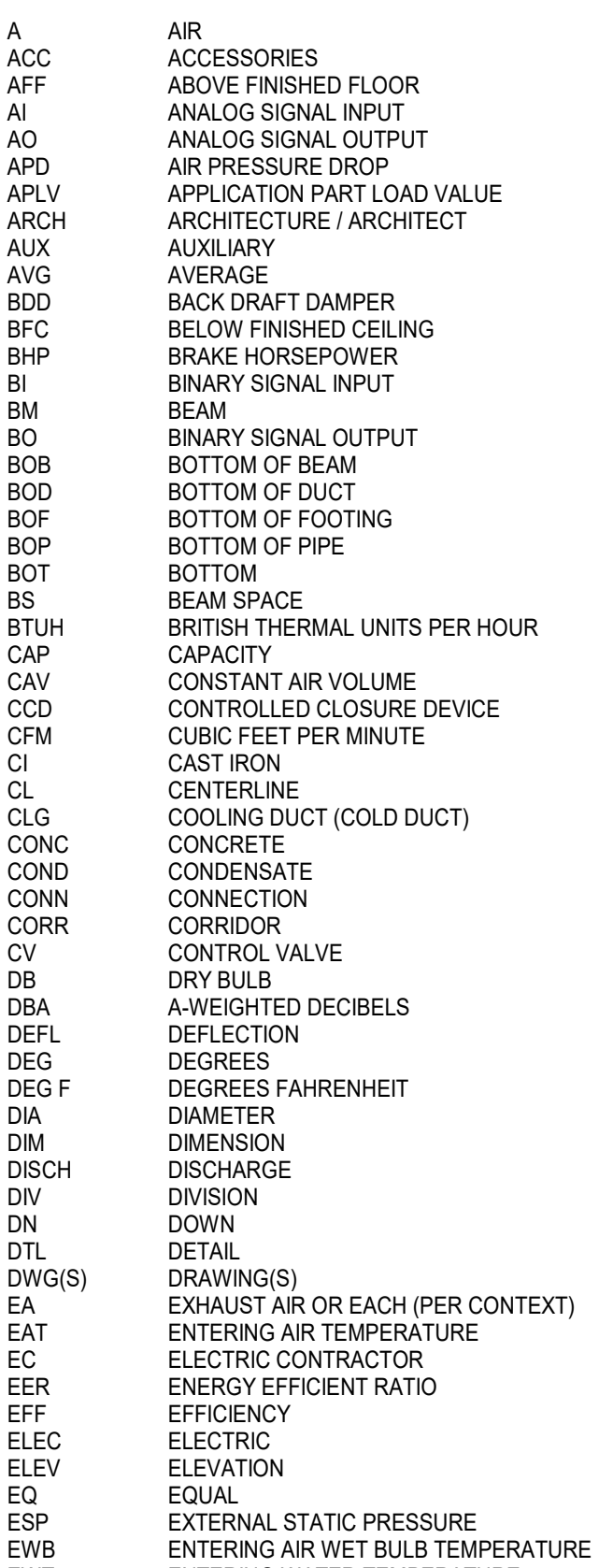
PIPING SYMBOLS



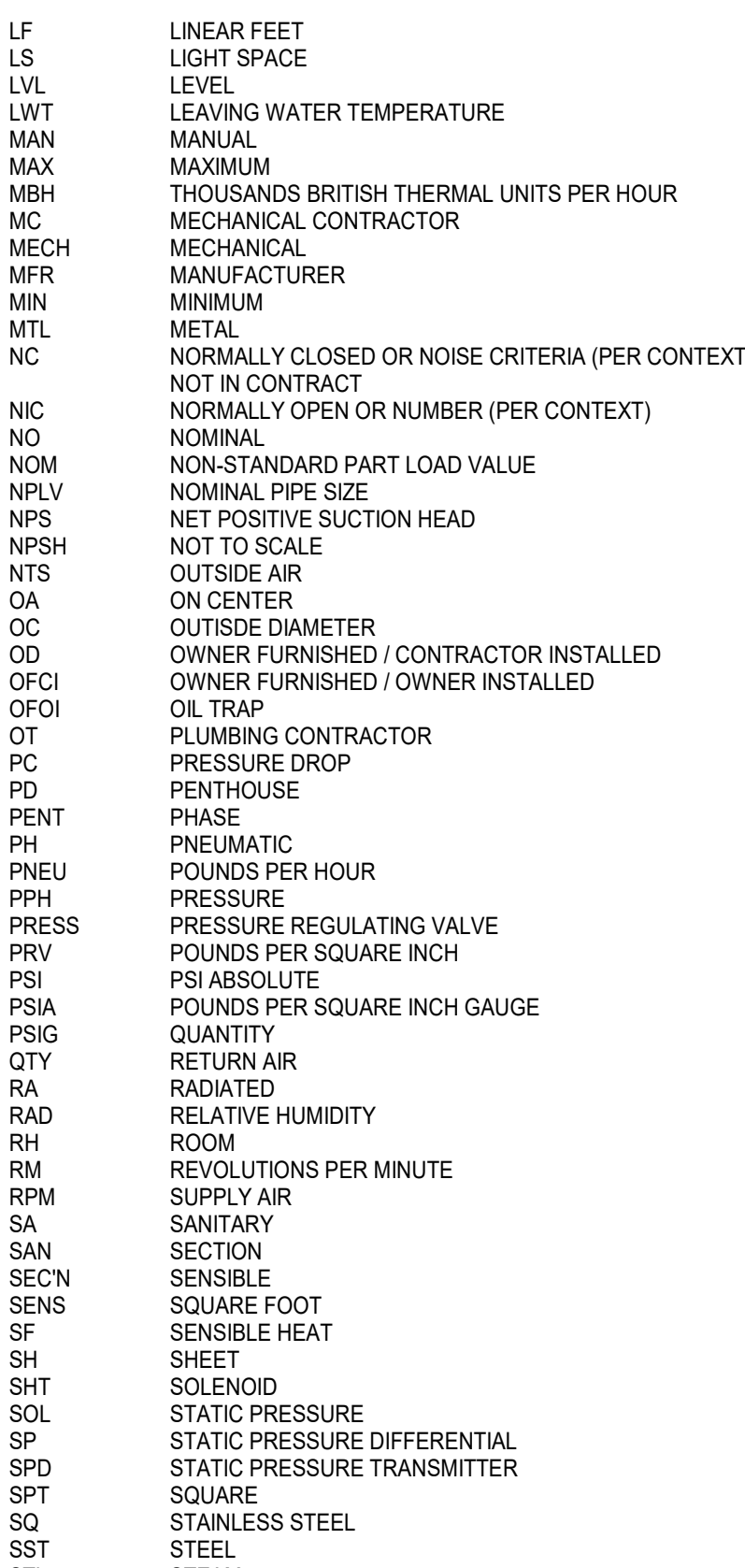
EQUIPMENT ABBREVIATIONS



GENERAL ABBREVIATIONS



GENERAL ABBREVIATIONS



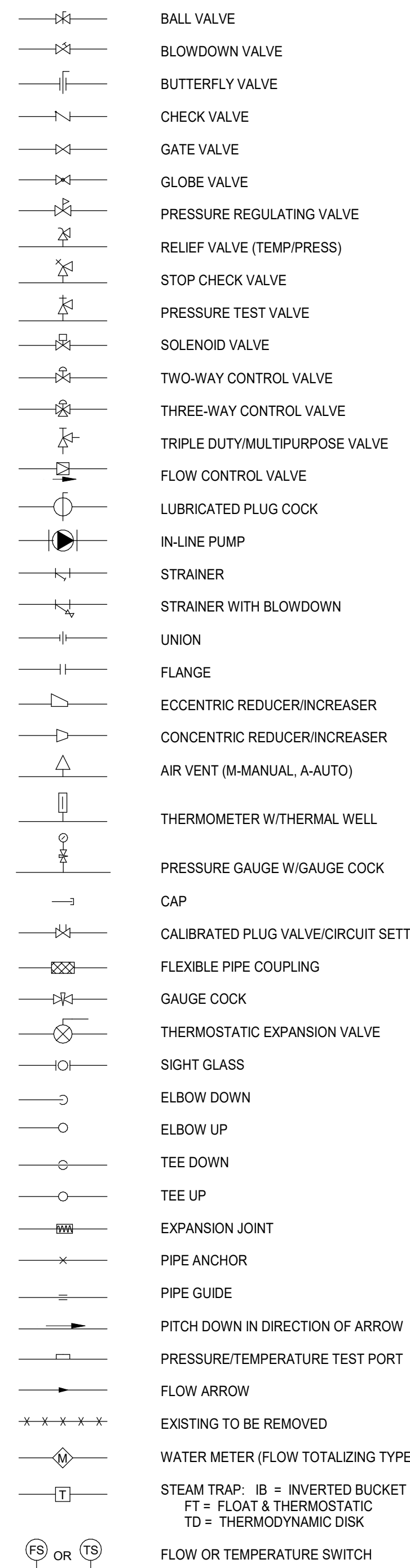
GENERAL NOTES

1. THESE PLANS ARE DIAGRAMMATIC IN NATURE SINCE THEY REFLECT ONLY THE AVAILABLE INFORMATION OBTAINED FROM EXISTING PLANS, SPECIFICATIONS AND FIELD SURVEYS. THE EXACT LOCATION OF EXISTING DUCTWORK, PIPING AND EQUIPMENT MAY DEVIATE FROM THE LOCATION INDICATED ON THESE DRAWINGS. THE CONTRACTOR SHALL BE PREPARED TO MAKE ALTERATIONS TO NEW AND/OR EXISTING SERVICES TO FIT ACTUAL JOB CONDITIONS.
2. ALL ELBOWS, FITTINGS, ETC. IN PIPING AND DUCTWORK ARE NOT NECESSARILY INDICATED TO CLEAR ALL EXISTING AND NEW JOB OBSTRUCTIONS.
3. BECAUSE OF THE LIMITED SPACE AVAILABLE TO INSTALL ALL OF THE MECHANICAL WORK, COORDINATION BETWEEN THE VARIOUS TRADES IS OF THE UTMOST IMPORTANCE.
4. IF THE CONTRACTOR DOES NOT CLEARLY UNDERSTAND THESE PLANS, OR IS NOT SURE OF THEIR MEANING, HE/SHE SHOULD OBTAIN THE ENGINEER'S WRITTEN EXPLANATION AND INTERPRETATION, PRIOR TO SUBMITTING HIS BID. SINCE THE CONTRACTOR SHALL BE HELD RIGIDLY TO THE INTERPRETATION OF THE ENGINEER.
5. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR ALL CEILING AIR DEVICE LOCATIONS.
6. REFER TO ARCHITECTURAL ELEVATION DRAWINGS FOR LOCATION OF WALL MOUNTED MECHANICAL ITEMS.
7. ROUND AND/OR RECTANGULAR DUCT RUN-OUTS TO AIR DEVICES, SHALL BE SIZED PER THE AIR DEVICE SCHEDULE.
8. DUCT SIZES SHOWN ARE FREE AREA. IF DUCT LINER IS USED, INCREASE THE SHEETMETAL SIZE TO MAINTAIN THE SAME FREE AREA SHOWN ON THE PLANS.
9. LOCATE ALL DUCT BALANCING DAMPERS ABOVE ACCESSIBLE CEILINGS OR PROVIDE ACCESS DOORS. MINIMUM ACCESS DOOR SIZE SHALL BE 18x18 UNLESS OTHERWISE APPROVED BY ENGINEER.
10. PROVIDE VOLUME DAMPERS AT ALL SUPPLY, RETURN AND EXHAUST DUCT BRANCH TAKE-OFFS WHERE INDICATED. REFER TO THE AIR DEVICE SCHEDULE.
11. BLANK-OFF AREAS OF LOUVERS NOT USED WITH 20 GAGE SHEET METAL DOUBLE WALL. BLANK-OFF PANEL INSULATED WITH 2" RIGID FIBERBOARD, SEAL AIR TIGHT.
12. COORDINATE SCHEDULE FOR HOOKUPS TO EXISTING SYSTEM AND REMOVAL OR RELOCATION OF EQUIPMENT WITH THE OWNER. PERFORM THIS WORK AT SUCH TIMES TO ENSURE THAT PERIODS OF SHUTDOWN WILL BE ACCEPTABLE TO THE OWNER.
13. VERIFY EXACT LOCATION OF CONNECTION POINTS (NEW TO EXISTING) IN FIELD PRIOR TO CONSTRUCTION.
14. COORDINATE INSTALLATION OF NEW DUCTWORK AND PIPING WITH EXISTING BUILDING STRUCTURE, DUCTWORK, PIPING, ELECTRICAL CONDUIT, LIGHTING, ETC.
15. TAKE DOWN AND REINSTALL EXISTING CEILINGS IN ALL AREAS WHERE MECHANICAL WORK IS INDICATED AND EXISTING CEILINGS REMAIN. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN DRAWINGS FOR LOCATIONS WHERE EXISTING CEILINGS REMAIN. REPLACE CEILING TILES DAMAGED DURING WORK. ALL WORK ABOVE EXISTING TO REMAIN HARD CEILING SHALL BE DONE THROUGH EXISTING ACCESS PANELS.
16. PATCH ALL WALLS, FLOORS, CEILINGS AND ROOFS TO MATCH EXISTING IN ALL CASES WHERE EXISTING WALLS, FLOORS, CEILINGS AND ROOFS REMAIN AND HVAC DEMOLITION IS INDICATED.
17. PROVIDE POSITIVE DRAINAGE OF ALL PLENUMS CONNECTED TO OUTSIDE LOUVERS. WATERPROOF BOTTOM OF PLENUMS. SLOPE PLENUM BOTTOM TO LOUVER OR PROVIDE DRAIN POINTS WITH DISCHARGE TO DRAIN.
18. REFRIGERANT PIPING TO BE SIZED BY MANUFACTURER.
19. ROUTE CONDENSATE PIPING FROM ALL EQUIPMENT TO NEAREST FLOOR DRAIN UNLESS NOTED OTHERWISE ON THE FLOOR PLANS. DRAINS SHALL BE DWV COPPER R/W RETURN AIR PLENUMS AND WHERE HIDDEN IN INACCESSIBLE WALLS, FLOORS, CEILINGS, ETC. UNLESS SPECIFICALLY NOTED OTHERWISE.

DEMOLITION NOTES

1. THESE PLANS ARE DIAGRAMMATIC IN NATURE SINCE THEY REFLECT ONLY THE AVAILABLE INFORMATION OBTAINED FROM EXISTING PLANS, SPECIFICATIONS AND FIELD SURVEYS. THE EXACT LOCATION OF EXISTING DUCTWORK, PIPING AND EQUIPMENT MAY DEVIATE FROM THE LOCATION INDICATED ON THESE DRAWINGS.
2. ALL ELBOWS, FITTINGS, ETC. IN PIPING AND DUCTWORK ARE NOT NECESSARILY INDICATED.
3. IF THE CONTRACTOR DOES NOT CLEARLY UNDERSTAND THESE PLANS, OR IS NOT SURE OF THEIR MEANING, HE/SHE SHOULD OBTAIN THE ENGINEER'S WRITTEN EXPLANATION AND INTERPRETATION, PRIOR TO SUBMITTING HIS BID. SINCE THE CONTRACTOR SHALL BE HELD RIGIDLY TO THE INTERPRETATION OF THE ENGINEER.
4. DASHED LINETYPE INDICATES ITEMS TO BE DEMOLISHED.
5. THE OWNER SHALL MAINTAIN ALL SALVAGE RIGHTS OF EQUIPMENT AND MATERIALS REMOVED. ALL EQUIPMENT AND MATERIALS NOT CLAIMED BY THE OWNER SHALL BE REMOVED FROM THE PREMISES BY THE CONTRACTOR.
6. THE CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING AND PATCHING OF FLOOR(S), WALL(S), ROOF AND/OR CEILING REMOVAL AND REPLACEMENT IN AREAS WHERE THE ONLY WORK IS MECHANICAL.
7. CONTRACTOR SHALL USE CAUTION WHEN REMOVING DUCTS, PIPING, EQUIPMENT, ETC. TO AVOID DAMAGE TO ELECTRICAL, WIRING, CONTROL WIRING, PIPING, ETC. THAT IS TO REMAIN. NOTIFY GC AND E.C. IF WIRING IS FOUND ATTACHED TO DUCTWORK.
8. WHEREVER EXISTING EQUIPMENT, PIPING, DUCTS, ETC. ARE TO BE REMOVED, SUCH REMOVAL SHALL INCLUDE ALL ANCHORS, HANGERS, FOUNDATIONS, ETC. UNLESS NOTED OTHERWISE AFTER REMOVAL. FLOORS, WALLS AND CEILINGS SHALL BE PATCHED AND FINISHED TO MATCH ADJOINING AREAS.
9. WHERE ITEMS ARE REMOVED, UTILITIES AND THE AREA FROM WHICH THE ITEMS HAVE BEEN REMOVED SHALL BE LEFT IN SUCH A MANNER THAT IS SAFE FOR BOTH PEOPLE AND PROPERTY ONLY ON A DAILY BASIS.
10. WHERE POWERED AND/OR CONTROLLED EQUIPMENT OR ACCESSORIES ARE REMOVED AND WIRING IS NOT TO BE REUSED, REMOVE ALL WIRING BACK TO PANEL UNLESS NOTED OTHERWISE. MODIFY CONTROLS SYSTEM WHERE APPLICABLE TO REMOVE DEMOLISHED ITEM.

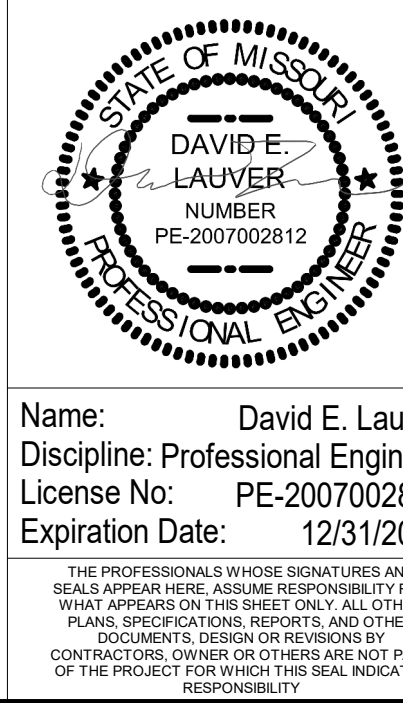
PIPELINE EQUIPMENT



ANCHORAGE AND SWAY BRACING FOR MECHANICAL SYSTEM COMPONENTS RELATED TO SEISMIC LOAD RESISTANCE

OCCUPANCY CATEGORY (IV)	RELATED TO SEISMIC LOAD RESISTANCE								SEISMIC DESIGN CATEGORY (D)			
LISTING OF EQUIPMENT & SYSTEM COMPONENTS	ANCHORAGE TO FLOORS, ROOF, ETC.		SWAY BRACING		LOCATION OF PROFESSIONALLY-SEALED ANCHORAGE AND SWAY BRACING DETAILS				COMMENTS			
	NOT PROVIDED	PROVIDED	NOT PROVIDED	PROVIDED	ON CONSTRUCTION DOCUMENTS		SUBSEQUENT SUBMITTAL SEPARATE PERMIT AND PLANS					
					DRAWING NO. OR SPEC. SECTION	SHOP DRAWINGS	SEPARATE PERMIT & PLANS					
FIRE PROTECTION, DETECTION & ALARM EQUIPMENT AND SYSTEM IP=1.5												
FIRE DAMPERS		X	X				X		NOTE 2			
HAZARDOUS EQUIPMENT AND SYSTEM COMPONENTS IP=1.5												
NATURAL GAS PIPING (EXTERIOR)	X		X						NOTE 3			
NATURAL GAS PIPING (INTERIOR)		X		X			X					
OTHER EQUIPMENT & SYSTEM COMPONENTS NEEDED FOR CONTINUED OPERATION OF OCCUPANCY CATEGORY IV FACILITIES OR WHOSE FAILURE COULD IMPAIR THEIR CONTINUED OPERATION												
DUCTWORK < 6FT ² FROM RTU-03&03A, EF-03	X		X						NOTE 1			
DUCTWORK > 6FT ² FROM RTU-03&03A, EF-03		X	X				X					
EXHAUST & SUPPLY FANS FROM EF-03 & RTU-03		X	X				X					
DIFFUSER, REGISTERS, GRILLS AND LOUVERS	X		X						NOTE 2			
VAV BOXES ASSOCIATED WITH RTU-03&03A		X		X			X					
ROOFTOP UNITS 03&03A		X		X			X					
OTHER GENERAL EQUIPMENT & SYSTEM COMPONENTS IP=1.0												
CONDENSATE DRAIN PIPING		X	X				X					
UNIT HEATERS		X	X				X					
CONDENSING UNITS		X	X				X					
ROOFTOP UNITS 01&02		X	X				X					
VAV BOXES ASSOCIATED WITH RTU-01&02		X	X				X					
EXHAUST FAN 02		X	X				X					
DUCTWORK < 6 FT ² FROM RTU-01&02, EF-02	X		X						NOTE 1			
DUCTWORK > 6 FT ² FROM RTU-01&02, EF-02		X	X				X					
NOTES:												
1. EXEMPT: TABLE 600, EXCEPTION FOR DUCTWORK "D": DUCTWORK HAS A CROSS-SECTION AREA OF LESS THAN 6 FT. SQ.												
2. COMPONENT SHALL BE POSITIVELY ATTACHED WITH MECHANICAL FASTENERS.												
3. PROVIDE A SEISMIC SHUT-OFF VALVE WITHIN 5 FEET OF THE BEGINNING OF THE RUN OF GAS PIPING ON THE ROOF OR OTHER APPROVED LOCATION.												
EXPLANATORY NOTES:												
1. PLANS SIGNED AND SEALED BY A MISSOURI PROFESSIONAL ENGINEER ALONG WITH A SEPARATE PERMIT APPLICATION NEED TO BE SUBMITTED TO THE COUNTY A MINIMUM OF TWO WEEKS PRIOR TO THE INSTALLATION TO ALLOW FOR PLAN REVIEW AND DISTRIBUTION TO THE INSPECTOR. ADDITIONAL TIME MAY BE NEEDED IF SUCH SUBMISSIONS ARE DEFICIENT.												
2. SWAY BRACING REQUIRED FOR ITEMS SUSPENDED FROM STRUCTURE, UNLESS EXEMT.												
3. ANCHORAGE & BRACING CONTRACTOR SHALL REFER TO SPECIFICATIONS AS WELL AS TO ST. LOUIS COUNTY RULES & REGULATIONS ON SEISMIC ANCHORAGE & SWAY BRACING (DATED 11/30/06).												
4. ALL SEISMIC SHOP DRAWINGS SHALL BE REVIEWED BY THE ENGINEER OF RECORD PRIOR TO SUBMITTAL TO THE COUNTY REVIEWER.												

NOTES:
1. EXEMPT, TABLE 600, EXCEPTION FOR DUCTWORK "b" - DUCTWORK HAS A CROSS-SECTION AREA OF LESS THAN 6 FT. SQ.
2. COMPONENT SHALL BE POSITIVELY ATTACHED WITH MECHANICAL FASTENERS.
3. PROVIDE A SEISMIC SHUT-OFF VALVE WITHIN 5 FEET OF THE BEGINNING OF THE RUN OF GAS PIPING ON THE ROOF OR OTHER APPROVED LOCATION.
EXPLANATORY NOTES:
1. PLANS SIGNED AND SEALED BY A MISSOURI PROFESSIONAL ENGINEER ALONG WITH A SEPARATE PERMIT APPLICATION NEED TO BE SUBMITTED TO THE COUNTY A MINIMUM OF TWO WEEKS PRIOR TO THE PLANNED INSTALLATION TO ALLOW FOR PLAN REVIEW AND DISTRIBUTION TO THE INSPECTOR. ADDITIONAL TIME MAY BE NEEDED IF SUCH SUBMISSIONS ARE DEFICIENT.
2. SWAY BRACING REQUIRED FOR ITEMS SUSPENDED FROM STRUCTURE, UNLESS EXEMPT.
3. ANCHORAGE & BRACING CONTRACTOR SHALL REFER TO SPECIFICATIONS AS WELL AS TO ST. LOUIS COUNTY RULES & REGULATIONS ON SEISMIC ANCHORAGE & SWAY BRACING (DATED 11/30/06).
4. ALL SEISMIC SHOP DRAWINGS SHALL BE REVIEWED BY THE ENGINEER OF RECORD PRIOR TO SUBMITTAL TO THE CODE REVIEWER.



Revision
No. 1
Date 03/17/23
ADDENDUM #1
Project No. 20016
Sheet No. M001
Date 02/23/23
Name: David E. Lauver
Discipline: Professional Engineer
License No: PE-2007002812
Expiration Date: 12/31/2023

Proposed: RENOVATION & ADDITION
ELLISVILLE CITY HALL &
POLICE STATION
MECHANICAL SYMBOLS & ABBREV.

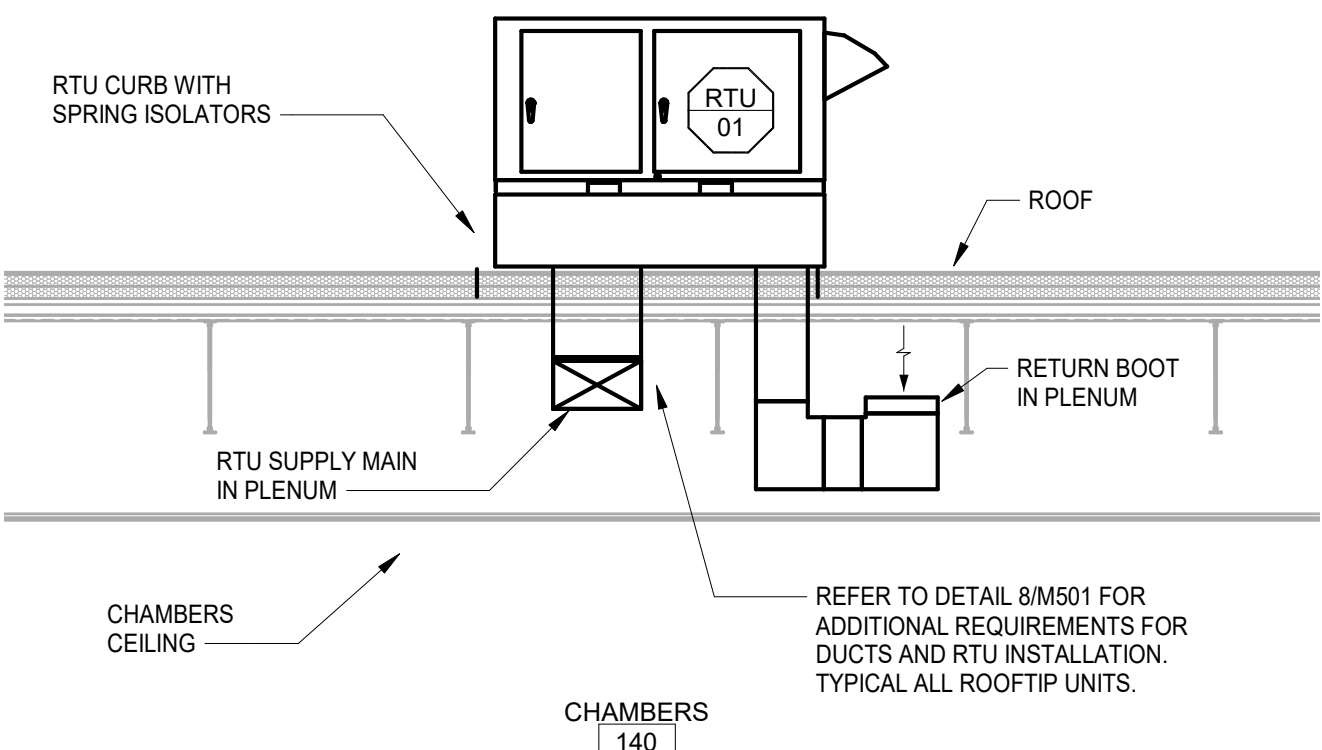
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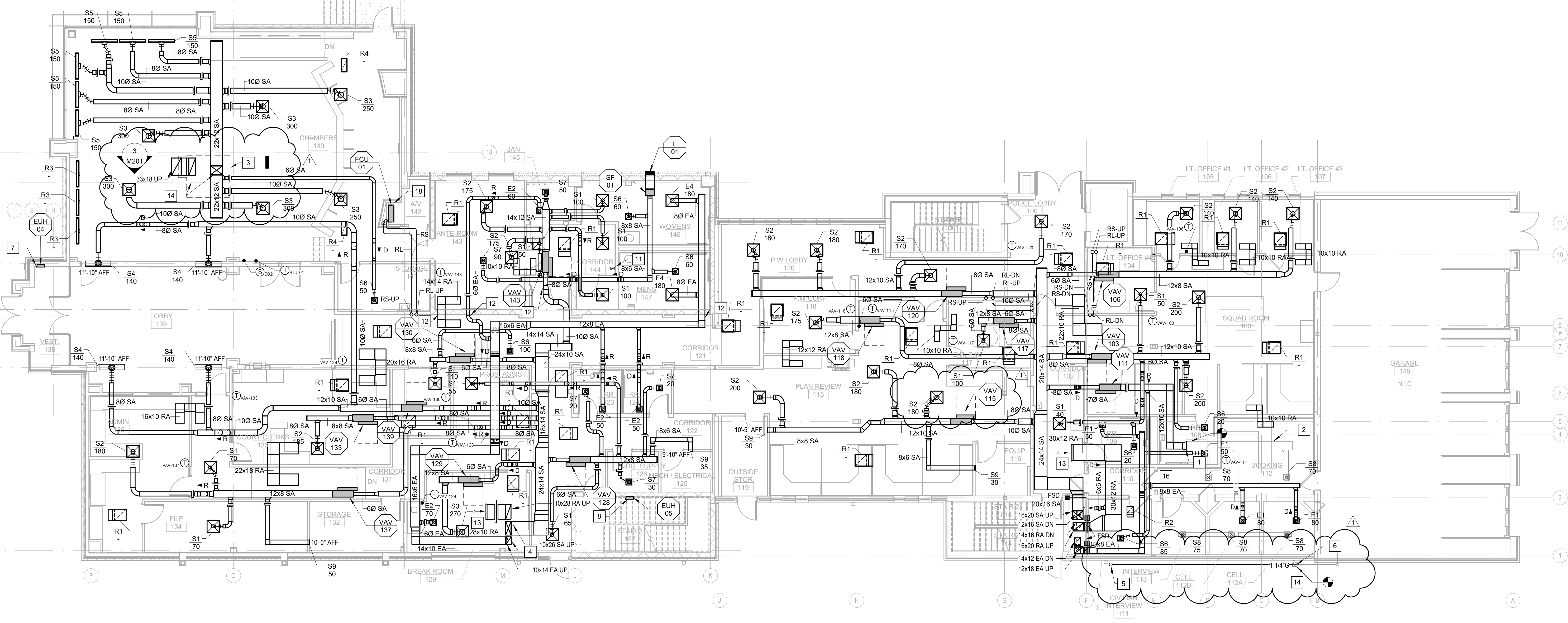
M201 KEYED NOTES

- FIELD VERIFY ELEVATION OF EXISTING DUCTWORK. ROUTE NEW DUCTWORK AT THIS LOCATION TO ELEVATION OF EXISTING DUCTWORK FOR CONNECTION.
- IF EXISTING DUCTWORK DOES NOT HAVE LINER INSULATION, ADD WRAP INSULATION. SIZE PER SPECIFICATIONS.
- HIDDEN LINES DENOTE RTU 01 ON ROOF. PROVIDE SOUND CONTROL PER DETAIL.
- ROUTE EXHAUST RISER OVER TO AVOID INTERFERENCE WITH DRYWALL SHAFT.
- ROUTE NEW GAS LINE ALONG WALL TO ROOF. DO NOT ROUTE OVER WINDOW. USE PIPE SUPPORT AND SPACING PER SPECIFICATIONS. SEE SECOND AND ROOF LEVEL PLANS FOR CONTINUED PIPE ROUTING.
- EXISTING GAS METER TO REMAIN.
- ORIENT RECESSED ELECTRIC CONVECTION HEATER TOWARDS ENTRANCE DOORS. MOUNT AT 18" AFF. SURFACE MOUNT AT 6" AFF.
- ORIENT ELECTRIC HEATER TOWARDS CENTER OF ROOM. MOUNT AT 6" AFF.
- ROUTE CONDENSATE PIPING ABOVE DROP CEILING WITH INLINE CONDENSATE PUMP. CONNECT TO SINK TAILPIECE IN BREAK ROOM 008. PITCH OF RUN SHALL BE 1/8" DROP PER FOOT. MOUNT BOTTOM OF INDOOR UNIT 6'-4" AFF.
- PROVIDE SWITCH LABELED "EMERGENCY VENTILATION FAN" TO CONTROL SF-01.
- PROVIDE A MODEL CW50 WALL SHROUD BY ROOF PENETRATION HOUSINGS (RPH) OR APPROVED EQUAL. HOUSING SHOULD BE RATED TO MEET THE REQUIREMENTS OF ICC-500 2014/FEMA P-381 MISSILE IMPACT RATING TO 250 MPH. ADJUST DUCT ROUTING AS REQUIRED BASED ON SHROUD DIMENSIONS.
- TERMINATE DUCT IN PLENUM WITH A BELLMOUTH FITTING.
- TRANSITION AS NEEDED TO CONNECT TO UNIT.
- NOT USED.
- PROVIDE VOLUME DAMPER IN EXHAUST DUCT ABOVE LAY-IN CEILING.
- ROUTE CONDENSATE PIPING ABOVE DROP CEILING WITH INLINE CONDENSATE PUMP. CONNECT TO SINK TAILPIECE IN BREAK ROOM 008. PITCH OF RUN SHALL BE 1/8" DROP PER FOOT. MOUNT BOTTOM OF INDOOR UNIT 7'-5" AFF.
- ROUTE CONDENSATE PIPING ABOVE DROP CEILING WITH INLINE CONDENSATE PUMP. TERMINATE ABOVE MOP SINK IN JANITOR 145. PITCH OF RUN SHALL BE 1/8" DROP PER FOOT. MOUNT BOTTOM OF INDOOR UNIT 6'-4" AFF.



3 RTU 01 SECTION VIEW

1 BASEMENT LEVEL - MECHANICAL



2 FIRST LEVEL - MECHANICAL

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EXPIRATION DATE: DECEMBER 31, 2022

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Proposed: RENOVATION & ADDITION

ELLISVILLE CITY HALL & POLICE STATION

ELLISVILLE, MO 63011

1 WEBAE

BSMT & 1ST FLOOR PLAN - MECHANICAL

Project No. 20016

Sheet No. M201

Date 02/23/23

STATE OF MISSOURI

DAVID E. LAUVER

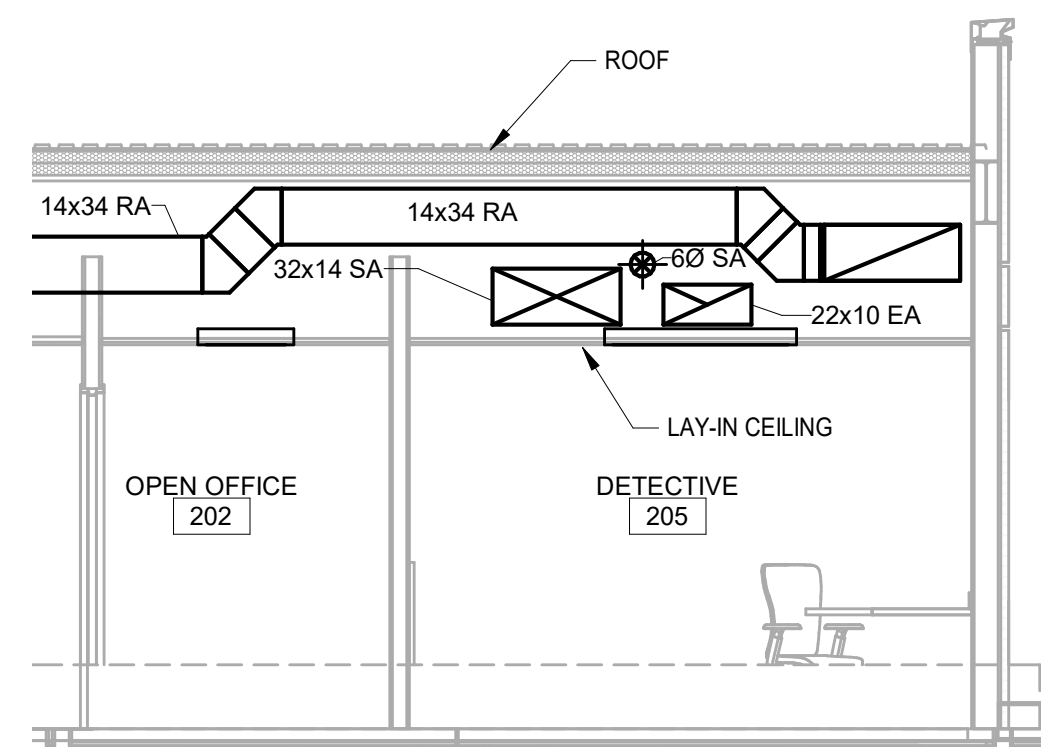
PROFESSIONAL ENGINEER

Name: David E. Lauver

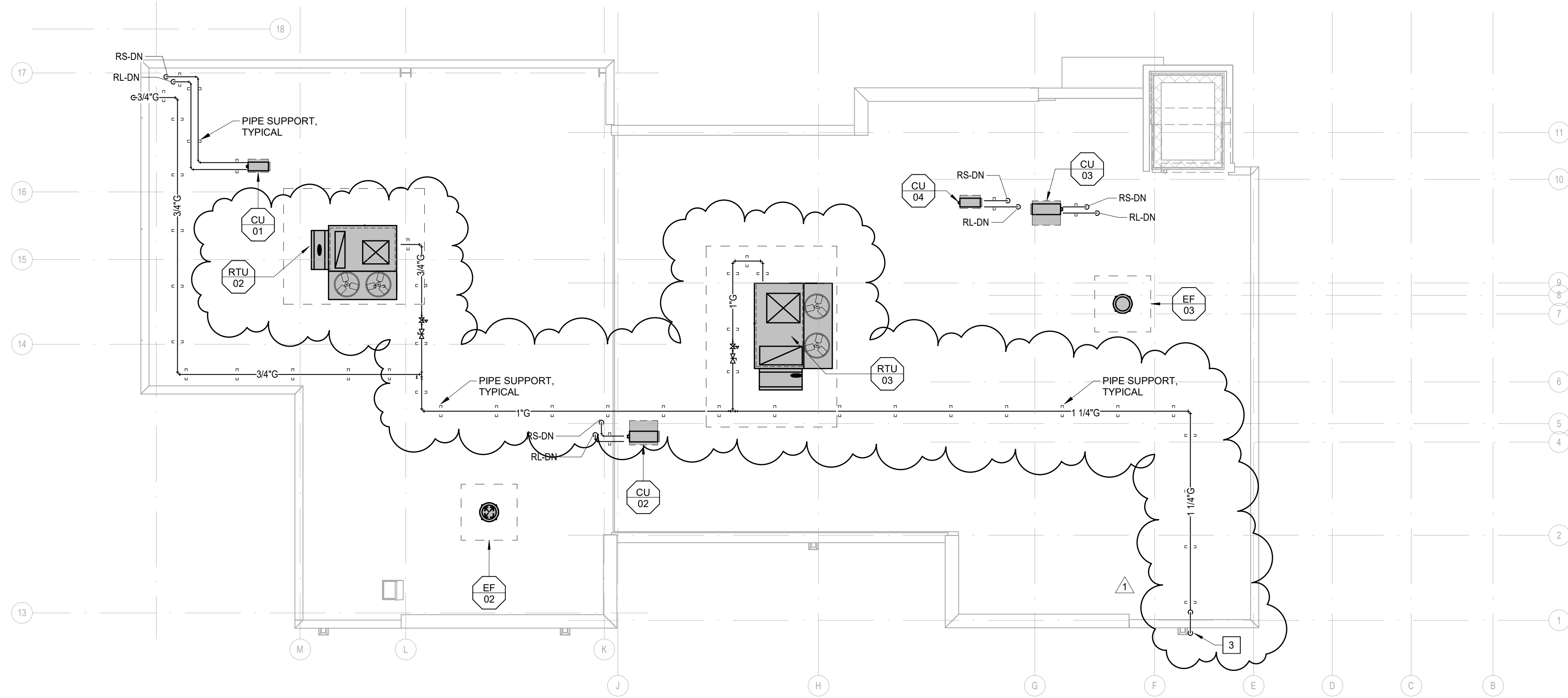
Discipline: Professional Engineer

License No: PE-2007002812

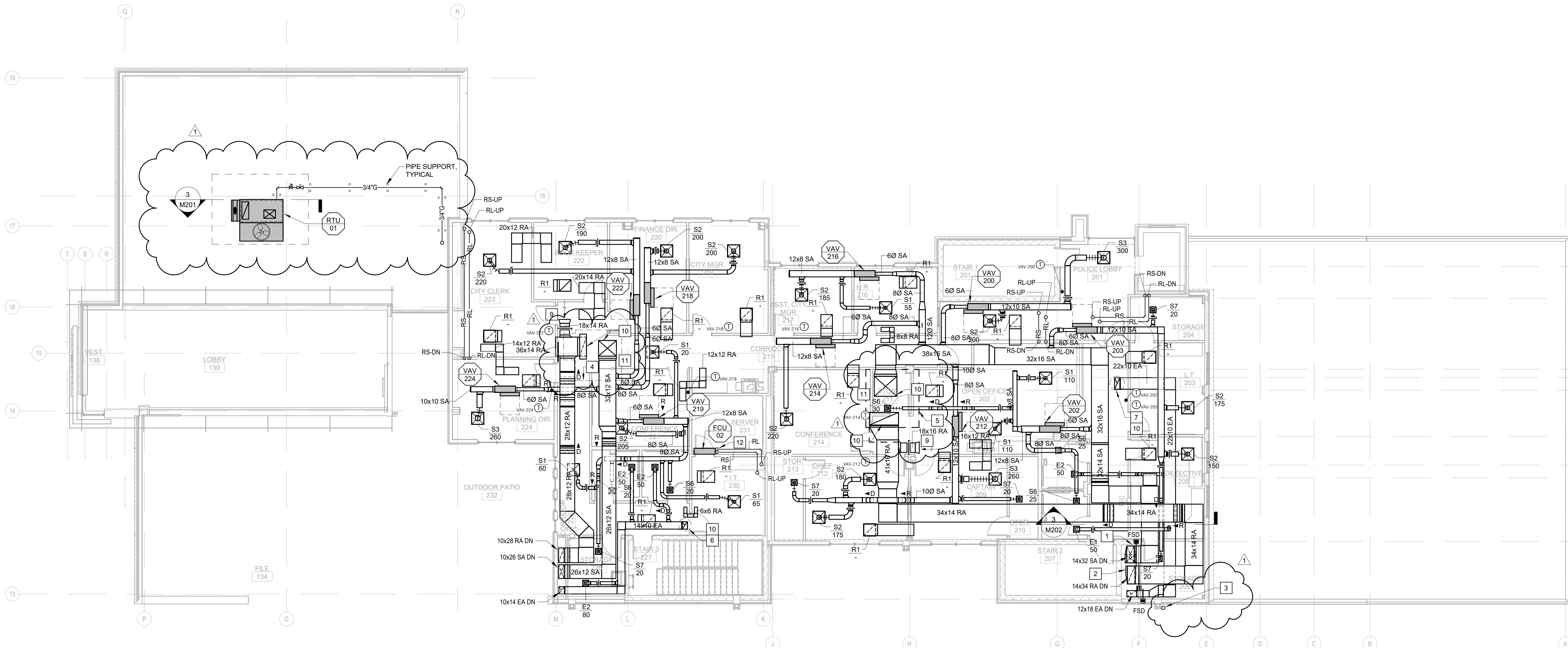
Expiration Date: 12/31/2023



3 SECOND LEVEL SECTION VIEW
1/4" = 1'-0"

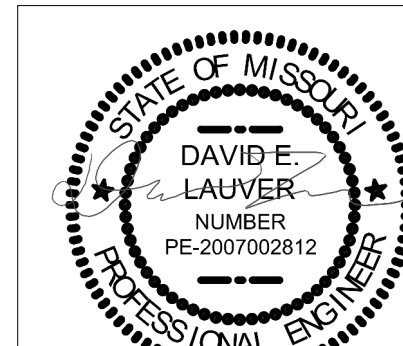


1 ROOF LEVEL - MECHANICAL
1/8" = 1'-0"



2 SECOND LEVEL - MECHANICAL
1/8" = 1'-0"

- M202 KEYED NOTES**
- TRANSITION FROM 14x32 TO 16x20 IN ORDER TO AVOID EXISTING JOISTS.
 - TRANSITION FROM 14x34 TO 36x20 IN ORDER TO AVOID EXISTING JOISTS.
 - ROUTE NEW 1-1/4" GAS LINE ALONG FIRST AND SECOND FLOOR WALL TO ROOF. DO NOT ROUTE OVER WINDOW. USE PIPE SUPPORT AND SPACING PER SPECIFICATIONS.
 - DASHED LINES DENOTE RTU 02 ON ROOF.
 - DASHED LINES DENOTE RTU 03 ON ROOF.
 - DASHED LINES DENOTE EF 03 ON ROOF.
 - DASHED LINES DENOTE EF 03 ON ROOF.
 - ROUTE CONDENSATE PIPING ABOVE DROP CEILING WITH INLINE CONDENSATE PUMP. CONNECT TO LAVATORY TAILPIECE IN RESTROOM 229. PITCH OF RUN SHALL BE 1/8" DROP PER FOOT. MOUNT INDOOR UNIT 6'-0" AFF.
 - TERMINATE DUCT IN PLENUM WITH A BELLMOUTH FITTING.
 - TRANSITION AS NEEDED TO CONNECT TO UNIT.
 - REFER TO DETAIL 6M501 FOR ADDITIONAL INSTALLATION REQUIREMENTS.
 - ROUTE CONDENSATE PIPING ABOVE DROP CEILING WITH INLINE CONDENSATE PUMP. CONNECT TO LAVATORY TAILPIECE IN RESTROOM 229. PITCH OF RUN SHALL BE 1/8" DROP PER FOOT. MOUNT BOTTOM OF INDOOR UNIT 7'-6" AFF.



Name: David E. Lauer
Discipline: Professional Engineer
License No: PE-2007002812
Expiration Date: 12/31/2023

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Revision
No. 1
Date 02/23/23
ADDENDUM #1

Project No. 20016

Sheet No. M202

Date 02/23/23

Proposed: RENOVATION & ADDITION

ELLISVILLE CITY HALL &

POLICE STATION

ROOF & 2ND FLR PLN - MECH BASE BID

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Expires: 12/31/22

AIR DEVICE SCHEDULE																
MARK	MANUFACTURER	MODEL	DESCRIPTION	MAX FLOW CFM	CONNECTION SIZE			LINER SLOTS			MATERIAL	BORDER TYPE	MAX PRESSURE DROP IN WG	ACCESSORIES	FINISH	NOTES
					WIDTH OR DIAMETER	LENGTH	MODULE SIZE	NUMBER	WIDTH	MAX NC						
S1	TITUS	OMNI	SQUARE PLAQUE	120	8"		24X24			25	STEEL	LAY-IN	0.10		BWE	
S2	TITUS	OMNI	SQUARE PLAQUE	240	8"		24X24			25	STEEL	LAY-IN	0.10		BWE	1
S3	TITUS	OMNI	SQUARE PLAQUE	380	10"		24x24			25	STEEL	LAY-IN	0.10		BWE	
S4	TITUS	TBDI - 30	Plenum Slot Diffuser	150	10"		48X2	1	1"	30	ALUMINUM	SURFACE	0.15		STD	
S5	TITUS	TBDI - 30	Plenum Slot Diffuser	215	8"		48X4	2	1"	30	ALUMINUM	SURFACE	0.15		STD	
S6	TITUS	OMNI	SQUARE PLAQUE	110	6"		12X12			25	STEEL	LAY-IN	0.10		BWE	1
S7	TITUS	OMNI	SQUARE PLAQUE	110	6"		12X12			25	STEEL	LAY-IN	0.10		BWE	1
S8	TITUS	OMNI	SQUARE PLAQUE	110	6"		12X12			25	STEEL	LAY-IN	0.10		BWE	7
S9	TITUS	301RL	SINGLE DEFLECTION	180	8"	6"	10X8			25	STEEL	SURFACE	0.10	0 DEFLECTION	BWE	
R1	TITUS	PAR-AA	Perforated Ceiling Diffusers	520	22"	10"	24X24			25	STEEL	LAY-IN	0.10		BWE	
R2	TITUS	PAR-AA	Perforated Ceiling Diffusers	260	10"	10"	12X12			25	STEEL	LAY-IN	0.10		BWE	
R3	TITUS	TBR - 30	Plenum Slot Diffuser	460	0"		48X4	2	3/4"	30	ALUMINUM	SURFACE	0.05		STD	5
R4	TITUS	350RS	Louvered Return Grilles	750	24"	10"	26X12			30	STEEL	SURFACE	0.10		BWE	2.6
E1	TITUS	350RS	Louvered Exhaust Grilles	115	6"		12X12			25	STEEL	LAY-IN	0.10	RSD	BWE	
E2	TITUS	350RS	Louvered Exhaust Grilles	115	6"		12X12			25	STEEL	LAY-IN	0.10		BWE	
E3	TITUS	350RS	Louvered Exhaust Grilles	120	6"		24X24			25	STEEL	LAY-IN	0.10		BWE	
E4	TITUS	350RS	Louvered Exhaust Grilles	240	8"		24X24			25	STEEL	LAY-IN	0.10	RSD	BWE	1
E5	TITUS	350RS	Louvered Return Grilles	130	6"	6"	8X8			20	STEEL	SURFACE	0.10	0 DEFLECTION	BWE	2.6

NOTES:
1. VOLUME CONTROL DAMPER SHALL BE INSTALLED IN BRANCH DUCTWORK UNLESS NOTED OTHERWISE INDICATED ON PLANS. SEE PLANS FOR LOCATION AND ACCESSIBILITY.
2. PROVIDE WITH BALANCING DAMPER ADJUSTABLE FROM FACE OF DIFFUSER.
3. PROVIDE WITH 22"x12" RETURN AIR BOOT.
4. PROVIDE WITH 10"x6" RETURN AIR BOOT.
5. NO PLENUM SECTION.
6. ZERO DEGREE DEFLECTION.
7. EXISTING TO REMAIN DIFFUSERS.

MATERIAL
ST - STEEL
AL - ALUMINUM
SS - STAINLESS STEEL
PL - PLASTIC
SP - SPECIAL (BY NOTE)

ACCESSORIES
VC - VOLUME CONTROL
PC - PATTERN CONTROL
RC - REMOVABLE CORE
BS - BIRDSCREEN
AF - ANGLE FRAME
AS - AIR SCOOP DEVICE
EP - EXTENSION PANEL
BB - BLANK-OFF BATTLE
RSD - RADIAL SLIDING BLADE DAMPER

FINISH
STD - STANDARD
BWE - BAKED WHITE ENAMEL
PC - PRIME COAT MATCH WALL COLOR
BLK - POWDER COAT BLACK
ENL - BAKED ENAMEL COLOR BY ARCHITECT
SP - SPECIAL (BY NOTE)

ROOFTOP UNIT SCHEDULE (GAS HEATING)																																							
UNIT NO.	NOMINAL TONS	OA CFM	SUPPLY FAN				POWER EXHAUST FAN				COOLING SECTION				CONDENSING SECTION				FANS				GAS HEATING				FILTERS				ELECTRICAL				BASIS OF DESIGN				
			TOTAL CFM	MINIMUM CFM	TOTAL SP (IN. WC)	EXT. S.P. (IN. WC)	BHP	HP	BHP	HP	TOTAL COOLING (MBH)	SENSIBLE CAPACITY (MBH)	EAT DBSWB (°F)	LAT DBSWB (°F)	TYPE	NO. CIRCUITS	NO. OF COMPRESSORS	OA TEMP (DB - °F)	QTY	HP EA	MBH INPUT	MBH OUTPUT	TURN/O WN	EAT (DB - °F)	LAT (DB - °F)	QUANTI TY	THICK (IN)	MAX FACE VEL (FPM)	MERV	FLA	MCA	MOCP	V/PH/Hz	EMERGENCY POWER	UNIT DIMENSION (LxWxH) (IN)	UNIT WEIGHT (LBS)	MANUFACTURER	MODEL	NOTES
RTU 01	10	800	2600	875	2.65	1.50	1.72	3.00	2.09	3.00	117.0	80.3	81.5/67.6	52.2/52.1	410A	1	1	96	1	1.0	210	166	11.1	48.5	108.3	4	2	292.5	8	59	66	90	208/3/60	NONE	97.9x79.3x44.0	1494	AAON	RN-010-S-0-KB09-3LB	3.4
RTU 02	13	700	3700	1250	3.22	2.25	2.75	7.50	1.17	3.00	154.5	109.3	82.1/68.1	54.1/53.9	410A	2	2	96	2	1.0	293	234	10.1	36.4	119.6	4	2	266.4	8	90	96	110	208/3/60	NONE	110.6x95.8x50.1	2177	AAON	RN-013-S-0-KB09-3GB	3
RTU 03	16	1600	5700	1850	3.58	2.50	5.83	10.50	2.46	5.00	202.1	153.9	80.9/67.1	55.4/55.1	410A	1	1	96	2	1.0	405	328	13.1	50.4	103.7	6	2	273.6	8	120	134	175	208/3/60	NONE	138.0x100.9x60.0	2854	AAON	RN-016-S-0-KB09-3GB	1.3
RTU 03A	20	1750	6650	2185	3.78	2.50	6.66	15.00	3.56	7.50	229.8	176.6	80.5/66.8	55.4/55.1	410A	2	2	96	2	1.0	405	328	13.1	51.6	97.3	6	2	319.2	8	144	156	200	208/3/60	NONE	138.0x100.9x60.0	3113	AAON	RN-020-S-0-KB09-38B	1.2,3

NOTES:
1. PROVIDE SEISMIC RATING FOR THIS UNIT. UNIT SHALL REMAIN OPERATIONAL AFTER A SEISMIC EVENT. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. ALTERNATE #1.
3. PROVIDE WITH SEISMICALLY RATED VIBRATION ISOLATION CURB.
4. PROVIDE WITH MODULATING HOT GAS REHEAT COIL, DOWNSTREAM OF COOLING COIL.

EXHAUST FAN SCHEDULE																						
UNIT NO.	TYPE	CFM	SP (IN. WC)	WHEEL TYPE	FAN RPM	DRIVE	SOUND DATA								MOTOR				BASIS OF DESIGN			
							SONES	1/63	2/125	3/250	4/500	5/1K	6/2K	7/4K	8/8K	BHP	HP	RPM	V/PH/Hz	WEIGHT	MANUFACTURER	MODEL
EF 02	DOWNBLAST	770	0.82	BACKWARD	1,518	DIRECT	7.4	69	70	71	64	55	53	51	45	0.19	1/4	1,518	208/1/60	38	GREENHECK	G-100-VG
EF 03	DOWNBLAST	1670	1.39	BACKWARD	1,561	DIRECT	14.9	71	75	85	72	70	67	62	53	0.73	1	1,561	208/3/60	69	GREENHECK	G-140-VG

NOTES:
1. PROVIDE WITH BACK DRAFT DAMPERS.
2. PROVIDE WITH FACTORY SUPPLIED DISCONNECT SWITCH.
3. PROVIDE WITH FAN SPEED CONTROLLER.

SUPPLY FAN SCHEDULE																								
UNIT NO.	TYPE	CFM	SP (IN. WC)	WHEEL TYPE	FAN RPM	DRIVE	SOUND DATA								MOTOR				EMERGENCY POWER	WEIGHT	BASIS OF DESIGN		NOTES	
							SOUND POWER AT OCTAVE BAND (Db), RE 10 ⁻¹² W								BHP	HP	RPM	V/PH/Hz			MANUFACTURER	MODEL		
							SONES	1/63	2/125	3/250	4/500	5/1K	6/2K	7/4K										8/8K
SF 01	IN-LINE	260	0.43	FORWARD CURVE	1500	DIRECT	4.0	59	69	68	57	49	44	41	36	0.043	1/16	1500	120/1/60	BACK UP	24	COOK	GN-422	

SPLIT SYSTEM FAN COIL UNIT SCHEDULE (COOLING ONLY)														
UNIT NO.	AREA SERVED	CONFIG.	TOTAL CFM	COOLING CAPACITY				ELECTRICAL DATA				BASIS OF DESIGN		NOTES
				TOTAL COOLING (MBH)	SENSIBLE CAPACITY (MBH)	LAT DB/WB (°F)	MAX RUN/RISE (°F)	MCA	MOCP	V/PH/Hz	MANUFACTURER	MODEL		
FCU 01	142 AV	SINGLE ZONE WALL MOUNT	316	10,900	9,090	80/67	65/49	7.8	20	208/1/60	DAIKIN	FTK12AXVJU	1.5	
FCU 02	231 SERVER	SINGLE ZONE WALL MOUNT	605	21,200	15,670	80/67	98/66	13.4	20	208/1/60	DAIKIN	FTK24AXVJU	2.5	
FCU 03	007 IT	SINGLE ZONE WALL MOUNT	605	21,200	16,670	80/67	98/66	13.4	20	208/1/60	DAIKIN	FTK24AXVJU	3.5	
FCU 04	ELEV. EQUIP. 003	SINGLE ZONE WALL MOUNT	316	10,900	9,090	80/67	65/49	7.8	20	208/1/60	DAIKIN	FTK12AXVJU	4.5	

NOTES:
1. THIS UNIT IS CONNECTED TO CU 01.
2. THIS UNIT IS CONNECTED TO CU 02.
3. THIS UNIT IS CONNECTED TO CU 03.
4. THIS UNIT IS CONNECTED TO CU 04.
5. PROVIDE ALL PIPING, CONTROLS, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. PROVIDE CONDENSATE PUMP WHERE REQUIRED TO ROUTE TO DRAIN.

SPLIT SYSTEM CONDENSER SCHEDULE											
UNIT NO.	AREA SERVED	FAN QUANTITY	GROSS CAPACITY (MBH)	ELECTRICAL DATA				BASIS OF DESIGN			NOTES
				V/PH/Hz	MCA	MOCP	UNIT KW	WEIGHT (LBS)	MANUFACTURER	MODEL	
CU 01	142 AV	1	10,900	208/1/60	7.8	15	0.041	62	DAIKIN	RK12AXVJU	1
CU 02	231 SERVER	1	21,200	208/1/60	13.4	20	0.128	106	DAIKIN	RK24AXVJU	2
CU 03	007 IT	1	21,200	208/1/60	13.4	20	0.128	106	DAIKIN	RK24AXVJU	3
CU 04	ELEV. EQUIP. 003	1	10,900	208/1/60	7.8	15	0.041	62	DAIKIN	RK12AXVJU	4

NOTES:
1. THIS UNIT IS CONNECTED TO FCU 01.
2. THIS UNIT IS CONNECTED TO FCU 02.
3. THIS UNIT IS CONNECTED TO FCU 03.
4. THIS UNIT IS CONNECTED TO FCU 04.

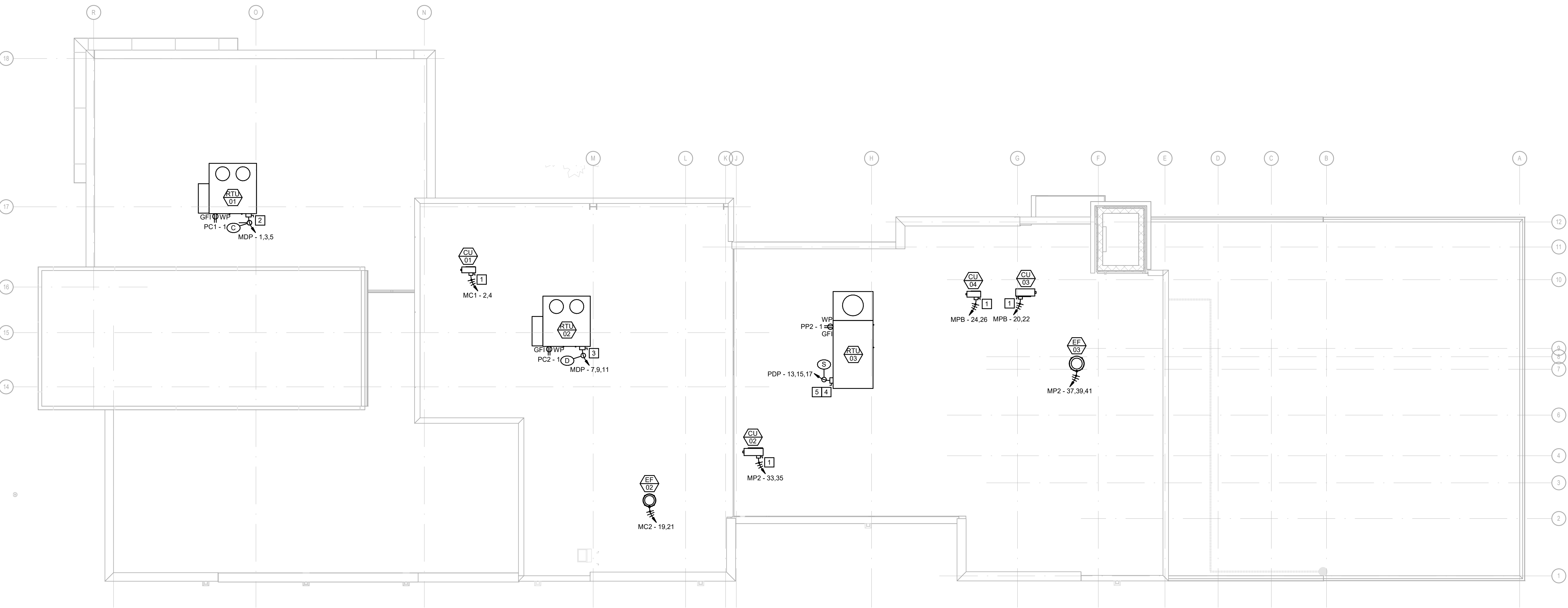
VAV SCHEDULE (ELECTRIC)														
UNIT NO.	MANUFACTURE	MODEL	UNIT SIZE (DIA)	AIRFLOW (CFM)		TOTAL HEAT MBH	ELECTRIC HEATING COIL							NOTES
				MAX	MIN		HEATING CFM	KW	V/PH/Hz	STEPS	EAT (°F)	LAT (°F)		
VAV 002	Titus HVAC	DESV	6"	380	170	9.1	275	3.0	208/1/60	SCR	55	87	1	
VAV 006	Titus HVAC	DESV	8"	610	210	11.2	325	3.5	208/1/60	SCR	55	87	1	
VAV 016	Titus HVAC	DESV	9"	810	540	8.4	350	2.5	208/1/60	SCR	55	87	1	
VAV 103	Titus HVAC	DESV	8"	530	180	19.4	475	6.0	208/3/60	SCR	55	92	1	
VAV 106	Titus HVAC	DESV	6"	420	140	12.1	350	4.0	208/3/60	SCR	55	87	1	
VAV 111	Titus HVAC	DESV	7"	440	150	16.3	400	5.0	208/3/60	SCR	55	92	1	
VAV 115	Titus HVAC	DESV	8"	620	210	25.4	575	7.5	208/3/60	SCR	55	95	1	
VAV 117	Titus HVAC	DESV	6"	100	40	0.9	50	0.5	208/1/60	SCR	55	87	1	
VAV 118	Titus HVAC	DESV	6"	175	60	1.8	75	1.0	208/1/60	SCR	55	87	1	
VAV 120	Titus HVAC	DESV	8"	700	240	21.5	625	8.5	208/3/60	SCR	55	87	1	
VAV 128	Titus HVAC	DESV	6"	225	80	9.5	225	3.0	208/1/60	SCR	55	95	1	
VAV 129	Titus HVAC	DESV	6"	270	90	9.1	250	3.0	208/1/60	SCR	55	87	1	
VAV 130	Titus HVAC	DESV	6"	210	70	2.0	100	1.0	208/1/60	SCR	55	87	1	
VAV 133	Titus HVAC	DESV	6"	195	70	4.3	125	1.5	208/1/60	SCR	55	87	1	
VAV 137	Titus HVAC	DESV	6"	370	130	13.9	325	4.5	208/3/60	SCR	55	93	1	
VAV 139	Titus HVAC	DESV	8"	560	190	23.0	550	7.0	208/3/60	SCR	55	94	1	
VAV 143	Titus HVAC	DESV	8"	700	240	14.3	400	4.5	208/3/60	SCR	55	87	1	
VAV 200	Titus HVAC	DESV	6"	400	140	15.9	375	5.0	208/3/60	SCR	55	93	1	
VAV 202	Titus HVAC	DESV	6"	300	100	12.5	300	4.0	208/3/60	SCR	55	87	1	
VAV 203	Titus HVAC	DESV	6"	365	130	13.4	350	4.0	208/3/60	SCR	55	90	1	
VAV 203	Titus HVAC	DESV	6"	175	60	7.3	175	2.5	208/1/60	SCR	55	95	1.2	
VAV 212	Titus HVAC	DESV	8"	655	220	15.4	450	4.5	208/3/60	SCR	55	87	1	
VAV 214	Titus HVAC	DESV	6"	220	80	4.0	125	1.5	208/1/60	SCR	55	87	1	
VAV 216	Titus HVAC	DESV	6"	240	90	7.9	225	2.5	208/1/60	SCR	55	87	1	
VAV 218	Titus HVAC	DESV	6"	400	140	9.3	375	3.0	208/1/60	SCR	55	87	1	
VAV 219	Titus HVAC	DESV	6"	410	140	14.7	375	4.5	208/3/60	SCR	55	90	1	
VAV 222	Titus HVAC	DESV	6"	410	140	11.3	325	3.5	208/1/60	SCR	55	87	1	
VAV 224	Titus HVAC	DESV	6"	260	90	6.5	175	2.0	208/1/60	SCR	55	87	1	
VAV 233	Titus HVAC	DESV	7"	390	130	16.7	575	5.0	208/3/60	SCR	55	95	1.2	
VAV 234	Titus HVAC	DESV	7"	390	130	16.7	375	5.0	208/3/60	SCR	55	95	1.2	

GENERAL NOTES (THIS SHEET ONLY):

1. ALL BRANCH CIRCUIT CONDUIT AND WIRE ARE NOT SHOWN. ONLY HOMERUNS AND CIRCUIT NUMBERS ADJACENT TO DEVICES ARE SHOWN. THE REMAINING BRANCH CIRCUIT CONDUIT AND WIRES SHALL BE INSTALLED ACCORDING TO SPECIFICATIONS.

KEYED NOTES (THIS SHEET ONLY):

- 1 NEMA 3R, 30 AMP FUSIBLE DISCONNECT. FUSE AT 15 AMP WITH FRS-R FUSES.
2 NEMA 3R, 100 AMP FUSIBLE DISCONNECT. FUSE AT 90 AMP WITH FRS-R FUSES.
3 NEMA 3R, 200 AMP FUSIBLE DISCONNECT. FUSE AT 110 AMP WITH FRS-R FUSES.
4 NEMA 3R, 200 AMP FUSIBLE DISCONNECT. FUSE AT 175 AMP WITH FRS-R FUSES.
5 NEMA 3R, 200 AMP FUSIBLE DISCONNECT. FUSE AT 200 AMP WITH FRS-R FUSES. (IF ALTERNATIVE IS ACCEPTED).



1 ROOF EQUIPMENT POWER PLAN
1/8" = 1'-0"

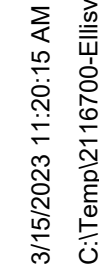
Professional Engineer Seal for Joseph A. Buehler, License No. E-21167, Expiration Date: 12/31/2023.

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HORNER SHIFRIN
401 S. 11TH ST. STE. 100 SAINT LOUIS, MO 63103-2706
314-531-4321 FAX 314-531-6986 WWW.HORNERSHIFRIN.COM
DISCIPLINE: PROFESSIONAL ENGINEERING
EXPIRATION DATE: DECEMBER 31, 2023
Horner & Shifrin, Inc.

Proposed: RENOVATION & ADDITION
ELLISVILLE CITY HALL &
POLICE STATION
ELLISVILLE, MO 63011
1 WEBAVE

Roof Equipment Power Plan
Project No. 20016
Sheet No. E211
Date: 02/23/23



Panelboard: - LS		Mounting: Surface				Location: Storage 229				Mains:		MLO 80KA SPD - 22.000 AIC...	
Volts: 120/208 Wye		Phases: 3		Wire: 4		Amps: 100		100 A		Feed From:		Panel MDP via ATS LS	
Circuit Description		Amps	Poles	CKT	A	B	C	200 A	Poles	Amps	Circuit Description		
Lighting - Star 1		20 A	1	1	190	50			2	20 A	Outside Lighting Control Panel		
Lighting - Star 2		20 A	1	3		190	282		4	2	20 A Lighting - Building Exterior		
Lighting - Star 3		20 A	1	5				114	282	6	--		
Lighting - Level 2 Exits and Egress		20 A	1	7	236	272			8	2	20 A Lighting - Bollards		
Lighting - Level 2 Restrooms, Storage 202 & 226		20 A	1	9		275	272		10	--	--		
Lighting - Basement Exits and Egress		20 A	1	11				133	620	12	20 A Lighting - Parking Lot		
Lighting - Basement Restrooms, Mechanical, IT		20 A	1	13	970	620			14	--	--		
Lighting - Level 1 Exits and Egress		20 A	1	15		1009	113		16	2	20 A Lighting Street		
Lighting - Level 1 Restrooms, Rooms 116,123,132		20 A	1	17				536	113	18	--		
Lighting - Chambers		20 A	1	19	1403	50			20	1	20 A FACP		
Lighting - Chambers		20 A	1	21		771	0		22	1	20 A Spare		
Lighting - Chambers		20 A	1	23				708	0	24	1	20 A Spare	
Spare		20 A	1	25	0	0				26	3	60 A TVSS	
Spare		20 A	1	27		0	0			28	--	--	
Spare		20 A	1	29				0	0	30	--	--	
Total Load:					3.71 kW	2.88 kW	2.46 kW						
Total Amps:					31.44 A	24.54 A	20.50 A						

Notes:
* = PANEL SHALL BE BUSSMAN QSCP OR EQUAL FOR COORDINATION PURPOSES

LIGHT FIXTURE SCHEDULE									
MARK	MANUFACTURER	CATALOG	#	LAMP TYPE	FINISH	MOUNTING	REMARKS		
A	Metalux	22C22-44-UNV-L835-CD1-U-C22-EQCLIP-U-PK	44	LED	White	Recessed			
AA	Naillite	RG6-06L35-UNV-D-11-S1T-12	72	LED	White	Recessed			
B	Metalux	22PFS-28C73	24	LED	White	Recessed			Set 3500K Medium Lumens
BB	Metalux	24GRRA-1D5-56-UNV-L835-CD1-U-EQ-CLIP-U	56	LED	White	Recessed			
C	Metalux	24C22-70HE-UNV-L835-CD1-U-C22-EQCLIP-U-PK	70	LED	White	Recessed			
CC	Metalux	22C22-34HE-UNV-L835-CD1-U-C22-EQCLIP-U-PK	34	LED	White	Recessed			
D	Metalux	14GRRA-1D5-43-F-UNV-L835-CD1-PAF-G3-U	43	LED	White	Recessed			
DD	Metalux	24C22-100VE-UNV-L835-CD1-U-C22-EQCLIP-U-PK	100	LED	White	Recessed			
E	Metalux	24C22-79HE-UNV-L835-CD1-U-C22-EQCLIP-U-PK	75	LED	White	Recessed			
F	Portfolio	LD6B15D010 EUG810208035 BL8P51MWIP66	15	LED	White	Recessed			
FF	Portfolio	14GRRA-1D5-43-F-UNV-L835-CD1-PAF-G3-U-D1F-14W-U	43	LED	White	Recessed			
G	Portfolio	LD6B15D010 EUG810208035 BL8P51MW	15	LED	White	Recessed			
GG	Metalux	22C22-55-UNV-L835-CD1-U-C22-EQCLIP	55	LED	White	Recessed			
H	Neoray	S125DR-S1090835-GYP-XXFX-UJD-D-F-W	55	LED	White	Recessed			Field measure length to inch length. Varies per location.
J	Metalux	45WLED-40SL-U-UNV-L835-CD1-SVPD3-ISHH-01	40	LED	White	Surface			Light 50% on when unoccupied 100% upon motion
K	Metalux	4SLSTP4035D0-UNV	40	LED	White	Surface			
L	Metalux	14GRRA-1D5-43-F-UNV-L835-CD1-U	43	LED	White	Recessed			
M	Naillite	RG6-06L35-UNV-D-11-S1T-8	48	LED	White	Recessed			
N	Portfolio	LD5Q6810D10 EUG810208035 BL8SQHMMW	10	LED	White	Recessed			
O	Portfolio	LD5Q6810D10 EUG810208035 BL8SQHMMW EM	10	LED	White	Recessed			Assurance L10-DC-2LED 2 hour battery
NN	Portfolio	LD5Q6C409035D010502H	30	LED	White	Recessed			
P	Metalux	24C22-60-UNV-L835-CD1-U-C22-EQCLIP-U-PK	60	LED	White	Recessed			
PP	Portfolio	LD5Q6C30935D0105QLW2H	30	LED	White	Recessed			
Q	Winneba Lighting	60-38CS F2175 120 LSP STD	F2175	LED	Light Silver	Surface			
QQ	SPI Lighting	API11997-1135W-UNV-3500K-HS-FB80-SIAMB02-144"-PT4-6	LED	Aluminum	Pendant				Fixtures QX & RR shall be interlocking Rings
R	Portfolio	LD6B15D010 EUG810208035 BL8W2H	15	LED	White	Recessed			
RR	Portfolio	SPI 154W-UNV-3500K-HS-FB80-SIAMB01-144"-PT46	15	LED	Aluminum	Pendant			Fixtures QX & RR shall be interlocking Rings
S	Teclighting	700BCMET-CYLED0930	10	LED	Satin Nickel	Wall			Mount horizontal above mirrors
SA	McGraw Edision	GLEON-SAZC-740-U-73-BK-AHD255-BPC-MA1036-BK	LED	Black	Pole				Provide with 16" square steel pole.
SB	McGraw Edision	2/GLEON-SAZC-740-U-73-BK-AHD255-BPC-MA1037-BK	LED	Black	Pole				Provide with 16" square steel pole. 2 Fixtures at 180°.
SC	McGraw Edision	2/GLEON-SAZC-740-U-73-BK-AHD255-BPC-MA1037-BK with LUMARK NFLFD-C40-D-UNV-35-BK-TS2NFDLO-BK	LED	Black	Pole				Provide with 16" square steel pole. 2 Fixtures at 180°. Provide mount bracket (1/2" for floodlight. Aim at entry sign).
SD	McGraw Edision	GLEON-SAZC-740-U-73-BK-AHD255-HSS-BPC-MA1036-BK	LED	Black	Pole				Provide with 16" square steel pole.
SE	Invee	ABB-B2-LE-42-D1-S-BK-ABA	40	LED	Black	Grade			
SF	Kim	AWL10-NF-54-4K-35-UV-BL-HDS-SM18-BL	54	LED	Black	Grade			
SG	Sysa Lighting	OW1043-40K(H)-MVOL-T-BSL	LED	Silver	Surface				
SH	Invee	VFS-K360-73-E-E-MST-BK-SM-BK	40	LED	Black	Grade			
SJ	Lumark	XTORBLR2-W-BK-PC1	LED	Black	Wall				
SK	Lumark	XTOR3B-W-BK-PC1	LED	Black	Wall				
SL	Sternberg	PT-4850-9P-VCOB-4L27TS-MDLO5-A/512ETBKPFA-188-GFI PLUIC-BK(2700K CCT)	LED	Black	Pole				
T	T-Fair-Safe	FMX-R-12-4L-D4-2LO-35-UNV-82-96-EDC-1-L1NL-SWB9	50	LED	White	Recessed			
TT	Ellipirap	S104-M112-E-22-Mxxx-0-835-XZ	LED	Matte White					
V	T-Fair-Safe	FMX-R-24-4L-D4-2STD-35-UNV-80-84-EDC-1-SWB9	80	LED	White	Recessed			
W	T-Fair-Safe	FMX-R-12-4L-D4-2LO-35-UNV-80-84-EDC-1-SWB9	50	LED	White	Recessed			
X	Sure-Lites	CY	LED	Aluminum	Varies				Faces as per drawings
Y4	Naillite	RF6-06L35-UNV-R-11-STF-4	24	LED	White	Recessed			

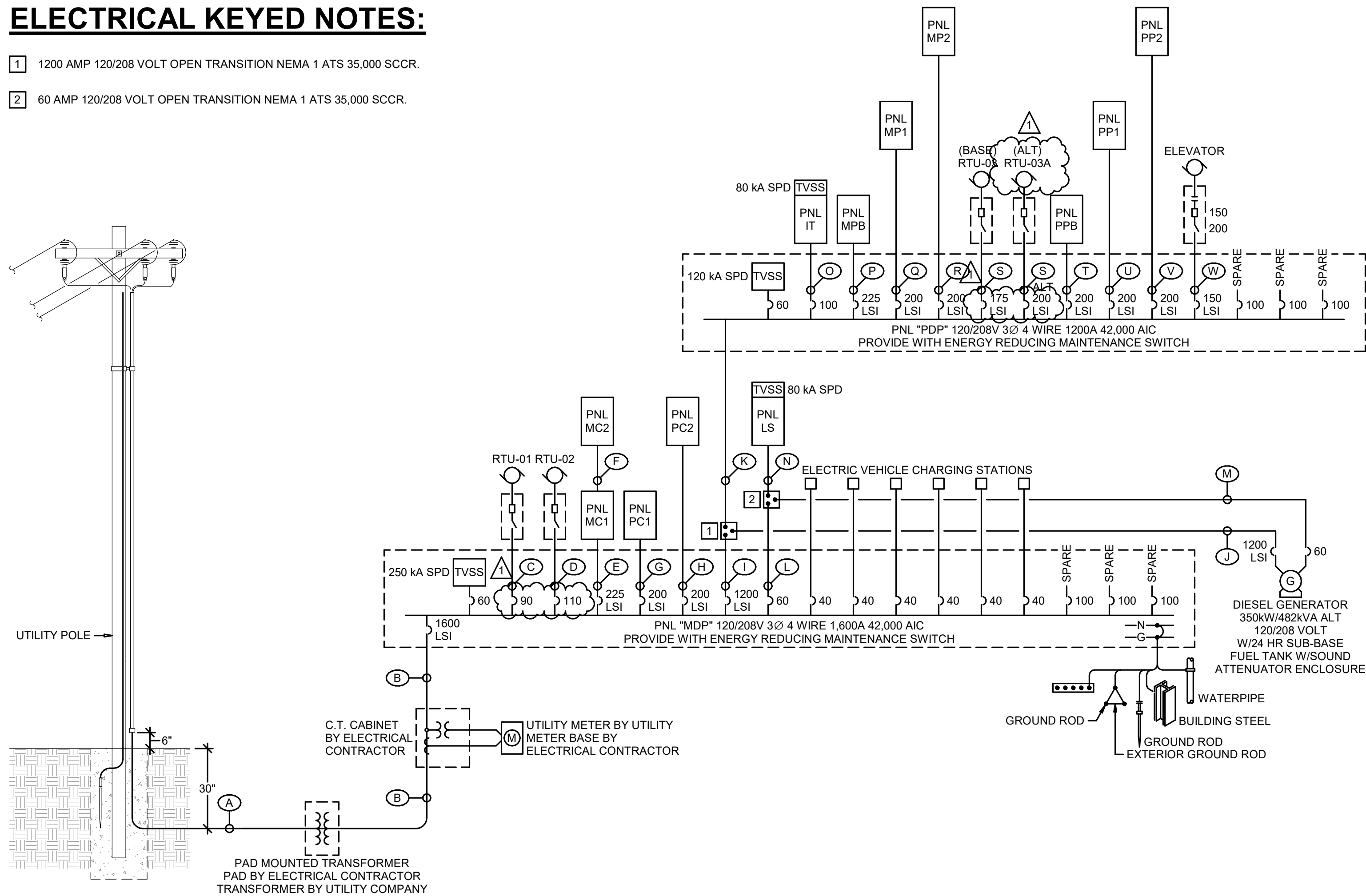
EQUIVALENT FIXTURES AS MANUFACTURED BY LITHONIA, DAYBRITE & COOPER WILL BE ACCEPTABLE UPON APPROVAL OF SPECIFIC MODEL NUMBERS BY ENGINEER.

[illegible]

FEEDER SCHEDULE				
MARK	CONDUCTOR	CONDUIT	FROM	TO
A	By Utility	4" PVC Steel Elbows	UTILITY	Pad Mounted XFMR
B	4 Sets 4 #000	4" Each Set	Pad Mounted XFMR	Panel MDP
C	3 #2 1 #6 G	1-1/4"	Panel MDP	RTU-01
D	3 #1 1 #6 G	1-1/2"	Panel MDP	RTU-02
E	4 #4/0 1 #4 G	2-1/2"	Panel MDP	Panel MC1
F	4 #3/0 1 #4 G	2-1/2"	Panel MC1	Panel MC2
G	4 #3/0	2-1/2"	Panel MDP	Panel PC1
H	4 #3/0 1 #4 G	2-1/2"	Panel MDP	Panel PC2
I	4 Sets 4 #350 1 #3/0 G	3" Each Set	Panel MDP	ATS PDP
J	4 Sets 4 #350 1 #3/0 G	3" Each Set	Generator	ATS PDP
K	4 Sets 4 #350 1 #3/0 G	3" Each Set	ATS PDP	Panel PDP
L	4 #3 1 #6 G	1-1/4"	Panel MDP	ATS LS
M	4 #3 1 #6 G	1-1/4"	Generator	ATS LS
N	4 #3 1 #6 G	1-1/4"	ATS LS	Panel LS
O	4 #3 1 #6 G	1-1/4"	Panel PDP	Panel IT
P	4 #4/0 1 #4 G	2-1/2"	Panel PDP	Panel MPB
Q	4 #3/0 1 #4 G	2-1/2"	Panel PDP	Panel MP1
R	4 #3/0 1 #4 G	2-1/2"	Panel PDP	Panel MP2
S	3 #2/0 1 #6 G	2"	Panel PDP	RTU-03
S (ALT)	3 #3/0 1 #6 G	2"	Panel PDP	RTU-03A
T	4 #3/0 1 #4 G	2-1/2"	Panel PDP	Panel PP1
V	4 #3/0 1 #4 G	2-1/2"	Panel PDP	Panel PP2
W	3 #1/0 1 #6 G	2"	Panel PDP	Elevator

ELECTRICAL KEYED NOTES:

- 1 1200 AMP 120/208 VOLT OPEN TRANSITION NEMA 1 ATS 35,000 SCCR.
- 2 60 AMP 120/208 VOLT OPEN TRANSITION NEMA 1 ATS 35,000 SCCR.



ONE-LINE DIAGRAM
SCALE: N.T.S.

EQUIPMENT DATA SCHEDULE																
MARK	EQUIPMENT	LOCATION	FURN. BY (DIV)	MOTOR OR EQUIPMENT DATA			DISCONNECT SWITCH AT EQUIPMENT			STARTER		REMOTE CONTROLS			REMARKS	
				HP/KW MCA (1)	VOLTS/ PHASE	INST. BY CONN. BY	TYPE	FURN. BY	INST. BY CONN. BY	TYPE (2)	ACCESSORIES (3)	FURN. BY	INST. BY CONN. BY	TYPE (3)		FURN. BY
CU-01	Air Cooled Condenser #1	A/V 142	23	7.8 MCA	208/1	23/26	NF	26	26/26	PWCP	-	23	23/23	SS	23	23/23
CU-02	Air Cooled Condenser #2	Server 231	23	13.4 MCA	208/1	23/26	NF	26	26/26	PWCP	-	23	23/23	SS	23	23/23
CU-03	Air Cooled Condenser #3	IT, 007	23	13.4 MCA	208/1	23/26	NF	26	26/26	PWCP	-	23	23/23	SS	23	23/23
CU-04	Air Cooled Condenser #4	Elevator Equip 003	23	7.8 MCA	208/1	23/26	NF	26	26/26	PWCP	-	23	23/23	SS	23	23/23
SF-01	Supply Fan #3	Roof	23	1/16 HP	120/1	23/26	M	26	26/26	-	-	-	-	SS	23	23/23
EF-02	Exhaust Fan #2	Roof	23	1/4 HP	208/1	23/26	M	26	26/26	FVNR	HOA, 2 N.O., 2 N.C.	26	26/26	SS	23	23/23
EF-03	Exhaust Fan #3	Roof	23	1.0 HP	208/3	23/26	M	26	26/26	FVNR	HOA, 2 N.O., 2 N.C.	26	26/26	SS	23	23/23
EUH-01	Electric Unit Heater #1	Stair 1	23	4.8 kW	208/3	23/26	NF	23	23/26	PWCP	-	23	23/23	SS	23	23/23
EUH-02	Electric Unit Heater #2	Stair 2	23	4.8 kW	208/3	23/26	NF	23	23/26	PWCP	-	23	23/23	SS	23	23/23
EUH-03	Electric Unit Heater #3	Existing Armory 008	23	3.0 kW	208/1	23/26	M	23	23/26	PWCP	-	23	23/23	SS	23	23/23
EUH-04	Electric Unit Heater #4	Vestibule 138	23	4.0 kW	208/1	23/26	M	23	23/26	PWCP	-	23	23/23	SS	23	23/23
EUH-05	Electric Unit Heater #5	Stair 3	23	4.0 kW	208/1	23/26	M	23	23/26	PWCP	-	23	23/23	SS	23	23/23
EUH-06	Electric Unit Heater #6	Mechanical 019	23	5.0 kW	208/3	23/26	NF	23	23/26	PWCP	-	23	23/23	SS	23	23/23
FCU-01	Fan Coil Unit #1	A/V 142	23	7.8 MCA	208/1	23/26	M	26	26/26	PWCP	-	23	23/23	SS	23	23/23
FCU-02	Fan Coil Unit #2	Server 231	23	13.4 MCA	208/1	23/26	M	26	26/26	PWCP	-	23	23/23	SS	23	23/23
FCU-03	Fan Coil Unit #3	IT, 007	23	13.4 MCA	208/1	23/26	M	26	26/26	PWCP	-	23	23/23	SS	23	23/23
FCU-04	Fan Coil Unit #4	Elevator Equip 003	23	7.8 MCA	208/1	23/26	M	26	26/26	PWCP	-	23	23/23	SS	23	23/23
RTU-01	Rooftop Unit #1	Roof	23	66 MCA	208/3	23/26	FS	26	26/26	PWCP	-	23	23/23	SS - FAI	23 - 26	23/23 - 26/26
RTU-02	Rooftop Unit #2	Roof	23	96 MCA	208/3	23/26	FS	26	26/26	PWCP	-	23	23/23	SS - FAI	23 - 26	23/23 - 26/26
RTU-03	Rooftop Unit #3	Roof	23	134 MCA	208/3	23/26	FS	26	26/26	PWCP	-	23	23/23	SS - FAI	23 - 26	23/23 - 26/26
RTU-03A	Rooftop Unit #3 Alternative	Roof	23	156 MCA	208/3	23/26	FS	26	26/26	PWCP	-	23	23/23	SS - FAI	23 - 26	23/23 - 26/26
VAV-002	Variable Air Volume #1	xxx	23	3.0 kW	208/1	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-006	Variable Air Volume #2	xxx	23	3.5 kW	208/1	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-016	Variable Air Volume #3	xxx	23	2.5 kW	208/1	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-103	Variable Air Volume #4	xxx	23	6.0 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-106	Variable Air Volume #5	xxx	23	4.0 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-111	Variable Air Volume #6	xxx	23	5.0 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-115	Variable Air Volume #7	xxx	23	7.5 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-117	Variable Air Volume #8	xxx	23	0.5 kW	208/1	23/26	M	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-118	Variable Air Volume #9	xxx	23	1.0 kW	208/1	23/26	M	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-120	Variable Air Volume #10	xxx	23	6.5 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-128	Variable Air Volume #11	xxx	23	3.0 kW	208/1	23/26	M	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-129	Variable Air Volume #12	xxx	23	3.0 kW	208/1	23/26	M	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-130	Variable Air Volume #13	xxx	23	1.0 kW	208/1	23/26	M	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-133	Variable Air Volume #14	xxx	23	1.5 kW	208/1	23/26	M	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-137	Variable Air Volume #15	xxx	23	4.5 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-139	Variable Air Volume #16	xxx	23	7.0 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-143	Variable Air Volume #17	xxx	23	4.5 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-200	Variable Air Volume #18	xxx	23	5.0 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-202	Variable Air Volume #19	xxx	23	4.0 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-203	Variable Air Volume #20	xxx	23	4.0 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-203A	Variable Air Volume #21	xxx	23	2.5 kW	208/1	23/26	M	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-212	Variable Air Volume #22	xxx	23	4.5 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-214	Variable Air Volume #23	xxx	23	1.5 kW	208/1	23/26	M	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-216	Variable Air Volume #24	xxx	23	2.5 kW	208/1	23/26	M	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-218	Variable Air Volume #25	xxx	23	3.0 kW	208/1	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-219	Variable Air Volume #26	xxx	23	4.5 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-222	Variable Air Volume #27	xxx	23	3.5 kW	208/1	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-224	Variable Air Volume #28	xxx	23	2.0 kW	208/1	23/26	M	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-233A	Variable Air Volume #29	xxx	23	5.0 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23
VAV-234A	Variable Air Volume #30	xxx	23	5.0 kW	208/3	23/26	FS	26	23/26	PWCP	-	23	23/23	SS	23	23/23

GENERAL NOTES:

WHEN ELECTRICALLY DRIVEN EQUIPMENT FURNISHED, MATERIALLY DIFFERS FROM THE CONTEMPLATED DESIGN, THE CONTRACTOR SUPPLYING THE DRIVING EQUIPMENT SHALL PAY FOR AND MAKE NECESSARY ADJUSTMENTS TO THE WIRING, DISCONNECT DEVICES AND BRANCH-CIRCUIT PROTECTION TO ACCOMMODATE THE EQUIPMENT ACTUALLY INSTALLED.

11 = EQUIPMENT CONTRACTOR 22 = PLUMBING CONTRACTOR 23 = HVAC CONTRACTOR 26 = ELECTRICAL CONTRACTOR NF = NON-FUSIBLE SWITCH FS = FUSIBLE SWITCH PWCP = PREWIRED CONTROL PANEL
M = MANUAL MOTOR STARTER EC = ELECTRICAL CONTRACTOR MCA = MINIMUM CIRCUIT AMPACITY STCB = SHUNT TRIP CIRCUIT BREAKER

1. HORSEPOWER (HP) IS SHOWN UNLESS AMPS (A), MINIMUM CIRCUIT AMPACITY (MCA) OR KILOWATTS (KW) ARE CALLED OUT.

2. STARTER TYPE:

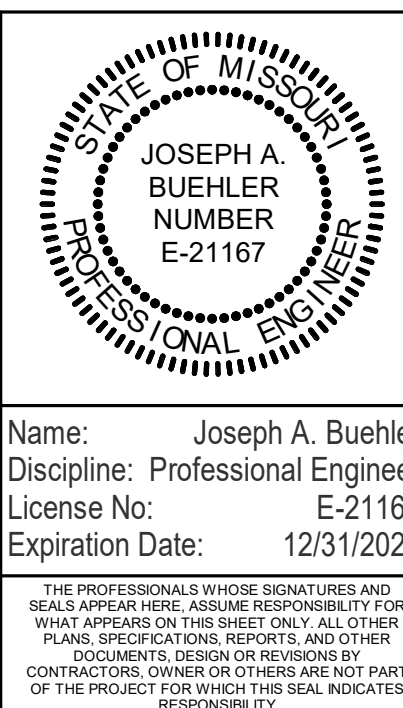
COMB = COMBINATION MAGNETIC FVNR WITH FUSIBLE DISCONNECT SWITCH PWCP = PREWIRED CONTROL PANEL M = MANUAL MOTOR STARTER 2SP = 2 SPEED FVNR = FULL VOLTAGE NON-REVERSIBLE SWITCH

3. ACCESSORIES:

HOA = HAND-OFF AUTO SELECTOR SWITCH N.O. = NORMALLY OPEN AUXILIARY CONTACT N.C. = NORMALLY CLOSED AUXILIARY CONTACT

4. REMOTE CONTROL:

AQ = AQUATSAT FAI = FIRE ALARM INTERLOCK SS = SEE MECHANICAL SPECIFICATIONS SP = SINGLE POLE SINGLE THROW TOGGLE WITH PILOT LIGHT TS = THERMOSTAT (LINE VOLTAGE) TC = TIME CLOCK O/A = ON/AUTO SWITCH O/A/O = ON/AUTO/OFF SWITCH O/A/O/L = OUTSIDE AIR/AUTO/OFF WITH LAMPS TO SHOW POSITION



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Proposed: RENOVATION & ADDITION
ELLISVILLE CITY HALL &
POLICE STATION

1 WEB AVE

ELLISVILLE, MO 63011

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