

SECTION 033000 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement.

1.4 INFORMATIONAL SUBMITTALS

- A. Material certificates.
- B. Material test reports.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
- C. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents.
 - 1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

- D. Preinstallation Conference: Conduct conference at Project site, at least two weeks prior to concrete placement.
1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete subcontractor.
 - e. Finish flooring subcontractor(s).
 2. Review testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, forms and form removal limitations, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 1064 plain, fabricated from as-drawn steel wire into flat sheets.
- C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice.

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement: ASTM C 150, Type I, gray. Supplement with the following:
 - a. Fly Ash: ASTM C 618, Class C.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- B. Water: ASTM C 94 and potable.

2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494, Type A.
 - 2. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
 - 3. Plasticizing and Retarding Admixture: ASTM C 1017 Type II.
 - 4. E5 Internal Cure: ASTM C 494. Type S.

2.5 WATERSTOPS

- A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch.
 - 1. Product: CETCO; Volclay Waterstop-RX.

2.6 VAPOR RETARDERS

- A. Sheet Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape. Minimum 15-mil thickness. Maximum 0.01 perms.
- B. Vapor barrier products:
 - 1. Basis of Design: Stego Wrap Vapor Barrier (15-mil) by Stego Industries LLC.
 - 2. Approved Alternate: Vaporguard by Reef Industries.
 - 3. Approved Alternate: Moistop Ultra 15 by Fortifiber.

2.7 FIBER REINFORCEMENT

- A. Synthetic Micro-Fiber: fibrillated polypropylene micro-fibers engineered and designed for use in concrete, complying with ASTM C 1116, Type III. Do not use fiber reinforcing in slabs scheduled to receive polished concrete finish.

2.8 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Curing:
 - 1. Internal Curing Compound: E5 Internal Cure, 4 fl. oz. per 100 lbs. of cementitious material.

2.9 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips.

2.10 CONCRETE MIXTURES

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
- B. Admixtures at Other Concrete: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use water-reducing admixture in pumped concrete, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
 - 4. Use E5 Internal Cure in all interior flatwork. Dosage to be 4 fl. Oz. per 100 lbs. of cementitious material.
- C. Proportion normal-weight concrete mixture as follows:
 - 1. Minimum Compressive Strength at 28 Days: As indicated on Drawings.
 - 2. Maximum Water-Cementitious Materials Ratio: As indicated on Drawings.
 - 3. Slump Limit: As indicated on Drawings.
 - 4. Air Content: As indicated on Drawings.
 - 5. Synthetic Micro-Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd.

2.11 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116 and furnish batch ticket information.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

2.13 LIQUID FLOOR TREATMENT

- A. Liquid Floor Treatment: Biodegradable micro grout that makes troweling smooth by reducing drag, and creates a denser, less permeable surface for resistance to liquid penetration and staining.
 - 1. Products:
 - a. Basis of design: E5 Catalyst, by Specification Products.
 - 2. Coverage: 800 – 1,000 sf/gal.

2.14 SEALERS

- A. Densifier: Environmentally friendly densifier that deeply penetrates and chemically reacts with concrete to evacuate existing contaminants and slow future penetration of chlorides, greases, oils, and acids.
 - 1. Products:
 - a. Basis of design: E5 Protect, by Specification Products.
 - 2. Coverage: 2,000 sf/gal.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Chamfer exterior corners and edges of permanently exposed concrete where exposed.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.4 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - 1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

3.5 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.
- C. Schedule placement to minimize exposure to wind and hot sun before curing materials are applied.
- D. Avoid placing concrete if rain, snow, or frost is forecast within 24 hours. Protect fresh concrete from moisture and freezing.

- E. Schedule delivery of concrete to provide consistent mix times from batching until discharge. Mix times shall meet manufacturer's written recommendations.
- F. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - 1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- G. Cold-Weather Placement: Comply with ACI 306.1.
- H. Hot-Weather Placement: Comply with ACI 301.

3.6 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces exposed to public view.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
 - 1. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.7 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
 - 1. Apply float finish to surfaces to receive trowel finish and non-slip broom finishes.
- C. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - 1. Apply a trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.
 - 2. Finish surfaces to the following tolerances, measured within 24 hours according to ASTM E 1155 for a randomly trafficked floor surface:
 - a. Specified overall values of flatness, F(F) 35; and levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and levelness F(L) 17; for slabs-on-grade.
- D. Broom Finish: Apply a broom finish to exterior concrete stage floor, platforms, steps, ramps, and elsewhere as indicated. Coordinate finish of exterior walks, stoops, pavements, etc. with the Civil Drawings and Specifications.

3.8 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

SECTION 05 12 00 – STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Extent of structural steel work is indicated on the Drawings, including framing plans, schedules, notes, and details to show the size and location of members, typical connections, and type of steel required.

1.3 ACTION SUBMITTALS

- A. Shop Drawings: Submit Shop Drawings to include all information necessary for fabrication and erection as follows:
 1. Details of proposed connections for each member size, steel grade, and connection type indicated on the drawings. Use standard details where appropriate. Refer to Part 2 – Products “Design” for criteria.
 2. Structural calculations prepared and sealed by a qualified engineer licensed in the State of Indiana for each connection condition indicated above. Submit sample calculations for typical connections for review before preparation of Detail Drawings.
 3. Base plate and anchor rod plans showing the location, size and identification marks of all base plate, bolts, grades of steel and setting elevations.
 4. Erection Plans (minimum 1/8”=1'-0” scale) showing type, size, weight and identification marks of all structural steel members. Include temporary members required for erection, dimensions locating all members relative to column grid lines, elevations of all members, and clear cross references with all other related drawings. Also, include the necessary information and instructions regarding field welds and field bolts including type, size and extent of field welds, types of electrodes, joint welding procedures, welding sequence and size and type of field bolts.
 5. Detail Drawings showing complete details for the fabrication of all structural steel members and components including, but not limited to: identification marks, dimensions, size, type, weight and grade of steel; requirements for installation of other materials or parts of construction, such as punched or drilled holes, openings, etc.; type, size and extent of shop and field welds; type of electrodes, joint welding procedures, welding sequences, size and type of shop and field bolts; cleaning requirements prior to painting; type and dry thickness of paint. Use welding symbols used by the American Welding Society.
 6. Drawings of all shop and field modifications and/or remedial work.
 7. Drawing index sheets, including updated sheets, at the same time that details are submitted.
 8. Contract Document plan drawings may be reproduced by the Contractor with the following provisions:

- a. Plan drawings may be reproduced only to locate piece marks. The responsibility for producing complete and accurate shop drawings remains with the Contractor.
 - b. The Contractor must remove all title blocks, notes, references, revision marks, and section marks referring to the Contract Document plan drawings.
 - c. Only the plans, modified as described above, may be reproduced. Contract Document detail drawings may not be reproduced, in whole or in part, for any reason.
- B. Substitutions: Substitutions for the members sizes, type(s) of steel, connection details, or any other modifications proposed by the Contractor will be considered by the Architect/Engineer under the following conditions:
1. The revisions in no case result in additional cost to the Owner. In considering cost savings to the Owner, adequate compensation for the Engineer's review of these substitutions should be considered.
 2. The request is made in writing and accepted prior to the submission of shop drawings.
 3. It is suitably demonstrated that there is a substantial cost or time advantage to the Owner.
 4. Sufficient sketches, and other data submitted to facilitate the review by the Architect/Engineer.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Fabricator and Erector.
- B. Welding certificates.
- C. Paint Compatibility Certificates: From Manufacturers of top coats applied over shop primers, certifying that shop primers are compatible with topcoats.
- D. Product Data: Submit copies of manufacturer's specifications and installation instructions for each proprietary product, including laboratory test reports and such other data as may be required to show compliance with the specifications. Indicate by transmittal form that copies of such data have been distributed to the Fabricator/Installer and the Owner's Testing Laboratory.
 1. Welding electrodes, each type.
 2. Shop coat primer paint(s).
 3. Grout.
- E. Record Surveys: Submit three (3) copies of certified survey(s) by the Contractor's licensed professional surveyor as specified in Part 3-Execution for both the base conditions prior to erection and the final erected steel frame.
- F. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1, "Structural Welding Code - Steel," for each welded joint whether prequalified or qualified by testing, including the following:
 1. Power source (constant current or constant voltage).
 2. Electrode manufacturer and trade name, for demand critical welds.

1.5 QUALITY ASSURANCE

- A. The Fabricator shall have 10 years of comparable experience in installations of this type and shall employ labor and supervisory personnel familiar with the type of installation, experienced in fabrication and erection of structural steel for projects of similar size and complexity. At the time of bid the Fabricator shall be AISC certified to the Standard for Certified Building Fabricator (BU) and must submit proof of these qualifications. The Fabricator's qualifications shall be subject to review by the Architect/Engineer.
- B. The Erector shall have 10 years of successful experience erecting structural steel for structures of this type and complexity in the region of this project. The Erector's qualifications shall be subject to review by the Architect/Engineer.
- C. The Detailer shall have 10 years experience preparing detailed shop drawings for structures of this type and complexity. The Detailer's qualifications shall be subject to review by the Architect/Engineer.
- D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code - Steel."
- E. Pre-Construction Conference:
 - 1. Conduct a meeting prior to the preparation of Shop Drawings to review the detailed requirements for preparing shop drawings, sequence of submittals, erection tolerances, welding qualifications, inspection procedures, surveys, and other similar matters.
 - 2. Responsible representatives from all concerned parties are required to attend the meeting including, but not limited to, the following:
 - a. Contractor's Superintendent.
 - b. Architect/Engineer.
 - c. Structural Steel Fabricator.
 - d. Structural Steel Erector.
 - e. Surveyor.
 - 3. Record and distribute legible meeting minutes within 10 business days to all parties in attendance at the meeting and an additional copy to the Owner's representative.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 - 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.7 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

- A. W-Shapes and Channels: ASTM A 992.
- B. Angles, Plate and Bar: ASTM A 572, Grade 50.
- C. Cold-Formed Hollow Structural Sections: ASTM A 500 Grade C, structural tubing.
- D. Welding Electrodes: Comply with AWS requirements.

2.2 CONNECTORS, AND ANCHOR RODS

- A. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B.
- B. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish.
- C. Unheaded Anchor Rods: ASTM F 1554, Grade 55-weldable.
 1. Configuration: Straight.
 2. Nuts: ASTM A 563 heavy-hex carbon steel.
 3. Plate Washers: ASTM A 36 carbon steel.
 4. Washers: ASTM F 436, Type 1, hardened carbon steel.
 5. Finish: Plain.
- D. Threaded Rods: ASTM A 36.
 1. Nuts: ASTM A 563 hex carbon steel.
 2. Washers: ASTM F 436, Type 1, hardened carbon steel.
 3. Finish: Plain.

2.3 PRIMER

- A. Shop Primer for Interior Structural Steel: Fast-curing, lead-and chromate-free, universal modified-alkyd primer with good resistance to normal atmospheric corrosion, complying with performance requirements of FS TT-P-664.
- B. Shop Primer for Structural Steel Exposed in the Exterior Environment: Zinc-Rich Urethane Primer. Tnemec 90-97 or approved equal.
- C. Galvanizing Repair Paint: SSPC-Paint 20 with dry film containing a minimum of 94 percent zinc dust by weight.
 - 1. Galvilite by ZRC Worldwide.
 - 2. Approved equal.

2.4 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and non-staining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.
 - 1. Fabricate beams with rolling camber up.
 - 2. Mark and match-mark materials for field assembly.
 - 3. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 - 1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.
- C. Bolt Holes: Cut, drill, mechanically thermal cut, or punch standard bolt holes perpendicular to metal surfaces.
- D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 1, "Solvent Cleaning, SSPC-SP 2, "Hand Tool Cleaning or SSPC-SP 3, "Power Tool Cleaning." Remove all materials that might impair proper adhesion of spray fireproofing.
- F. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.

- G. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel framing members.
 - 1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
 - 2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
 - 3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.6 SHOP CONNECTIONS

- A. Weld Connections: Comply with AWS D1.1 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

2.7 SHOP PRIMING

- A. Shop prime steel surfaces except the following:
 - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 - 2. Surfaces to be field welded, including the top surface of beams to receive steel deck and/or shear connectors fastened by welding.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
 - 1. Structural Steel Exposed in the Exterior Environment: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning".
 - 2. Interior Structural Steel: SSPC-SP 3 "Power Tool Cleaning".
- C. Priming of Interior Structural Steel: Immediately after surface preparation, apply Universal Modified-Alkyd Primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 to 2.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces. Steel will receive a finish top coat(s) per Division 9.
- D. Priming of Structural Steel Exposed in the Exterior Environment: Immediately after surface preparation, apply Zinc-Rich Urethane Primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 2.5 to 3.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces. Steel will receive a finish top coat(s) per Division 9.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify, with steel Erector present, elevations of concrete-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
 - 1. Prepare a certified survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Base Plates: Clean concrete surfaces of bond-reducing materials and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on setting nuts with plate washers.
 - 2. Weld plate washers to top of baseplate.
 - 3. Pretension anchor rods after supported members have been positioned and plumbed.
 - 4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."
- D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
 - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- E. Splice members only where indicated.
- F. Do not use thermal cutting during erection unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1.

- G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.
- H. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.

3.4 FIELD CONNECTIONS

- A. Weld Connections: Comply with AWS D1.1 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
 - 2. Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth.
 - 3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.
- B. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened unless indicated as Pretensioned or Slip Critical.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.
- B. Welded Connections: Field welds will be visually inspected according to AWS D1.1.
 - 1. In addition to visual inspection, field welds will be tested and inspected according to AWS D1.1 and the following inspection procedures, at testing agency's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.
- C. In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1 for stud welding and as follows:
 - 1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
 - 2. Conduct tests on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1.
- D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.6 REPAIRS AND PROTECTION

- A. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - 1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

END OF SECTION 05 12 00

SECTION 053100 - STEEL DECKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Roof deck.

- B. Related Requirements:

- 1. Section 03 30 00 "Cast-in-Place Concrete" for structural concrete fill over steel deck.
- 2. Section 05 12 00 "Structural Steel Framing" for shop- and field-welded shear connectors.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of deck, accessory, and product indicated.

- B. Shop Drawings:

- 1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.4 INFORMATIONAL SUBMITTALS

- A. Welding certificates.

- B. Product Certificates: For each type of steel deck.

- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that each of the following complies with requirements:

- 1. Powder-actuated mechanical fasteners.

- D. Evaluation Reports: For steel deck.

- E. Field quality-control reports.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."
- C. FM Global Listing: Provide steel roof deck evaluated by FM Global and listed in its "Approval Guide, Building Materials" for Class 1 fire rating and Class 1-90 windstorm ratings.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 ROOF DECK

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. New Millennium Building Systems, LLC.
 - 2. Nucor Corp.; Vulcraft Group.
 - 3. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.
- B. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:
 - 1. Galvanized and Shop Prime-Painted Steel Sheet: ASTM A 653, Structural Steel (SS), Grade 33 minimum, zinc coating; cleaned, pretreated and primed with manufacturer's standard baked-on, rust-inhibitive primer.
 - a. Color: Manufacturer's standard.
 - 2. Deck Profile: As indicated.
 - 3. Profile Depth: As indicated.
 - 4. Design Uncoated-Steel Thickness: As indicated.
 - 5. Span Condition: Triple span or more.
 - 6. Side Laps: Overlapped.

2.2 ACCESSORIES

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

- B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.
- D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
- E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
- F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile.
- G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.
- H. Flat Sump Plates: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.
- I. Recessed Sump Pans: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck, with 3-inch wide flanges and recessed pans of 1-1/2-inch minimum depth. For drains, cut holes in the field.
- J. Galvanizing Repair Paint: ASTM A 780.
- K. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.
- B. Install temporary shoring before placing deck panels if required to meet deflection limitations.
- C. Locate deck bundles to prevent overloading of supporting members.
- D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

- E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
- H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- I. Mechanical fasteners shall be used in lieu of welding to fasten roof deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.3 ROOF-DECK INSTALLATION

- A. Fasten roof deck panels to steel supporting members using approved powder actuated or pneumatically driven fasteners. Fasteners shall have knurled shanks; minimum 1/2" diameter steel washers and shall be zinc electroplated in conformance with ASTM B 633, SC 1, Type III. Fasteners shall be used in conformance with SDI design procedures and shall be approved by Factory Mutual. Fasteners shall be Hilti "X-ENP-19L15", "X-EDN19THQ12", "X-EDNK22THQ12", or approved equal. Install fasteners in accordance with manufacturer's recommendations.
- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of 1/2 of the span or 18 inches, and as follows:
 - 1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
 - 1. End Joints: Lapped 2 inches minimum or butted at Contractor's option.
- D. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and mechanically fasten flanges to top of deck. Space mechanical fasteners not more than 12 inches apart with at least one fastener at each corner.
 - 1. Install reinforcing channels or zees in ribs to span between supports and mechanically fasten.
- E. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Mechanically fasten to substrate to provide a complete deck installation.
 - 1. Mechanically fasten cover plates at changes in direction of roof-deck panels unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Field welds will be subject to inspection.
- C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.
- D. Remove and replace work that does not comply with specified requirements.
- E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.5 PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.
 - 1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.
- C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 31 00

3. Curing Compounds: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
4. Interior flatwork containing E5 Internal Cure will not require curing unless required by E5 product data.

3.9 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

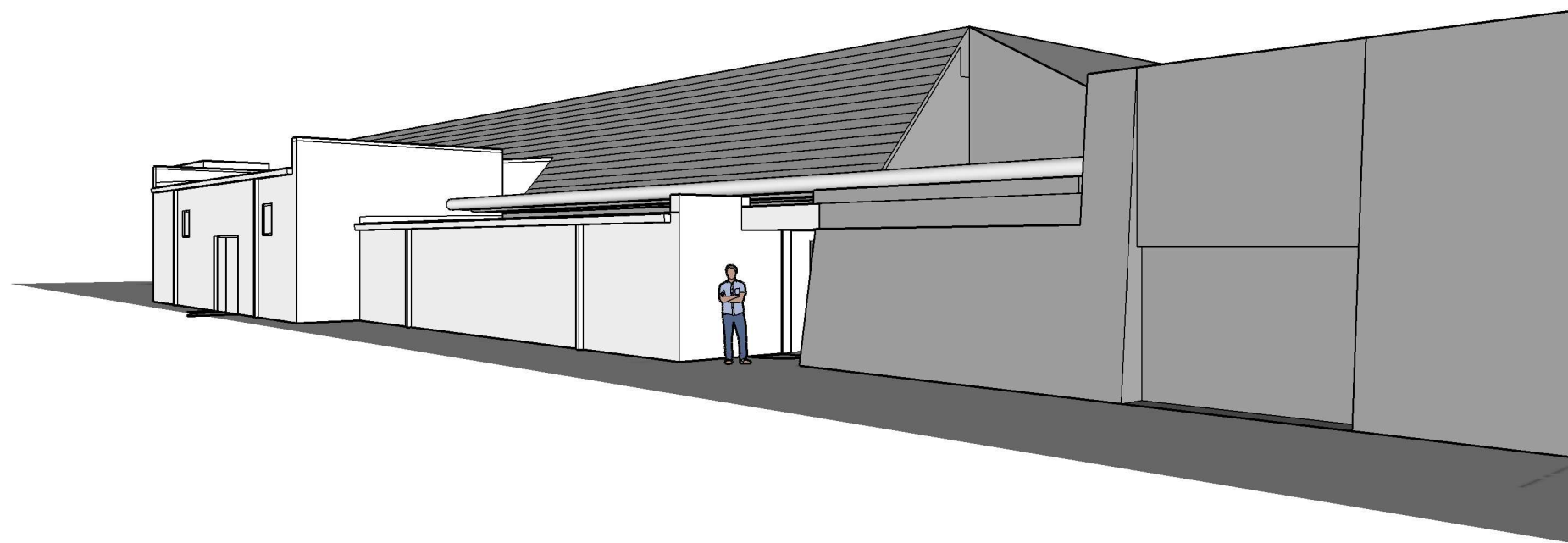
3.10 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

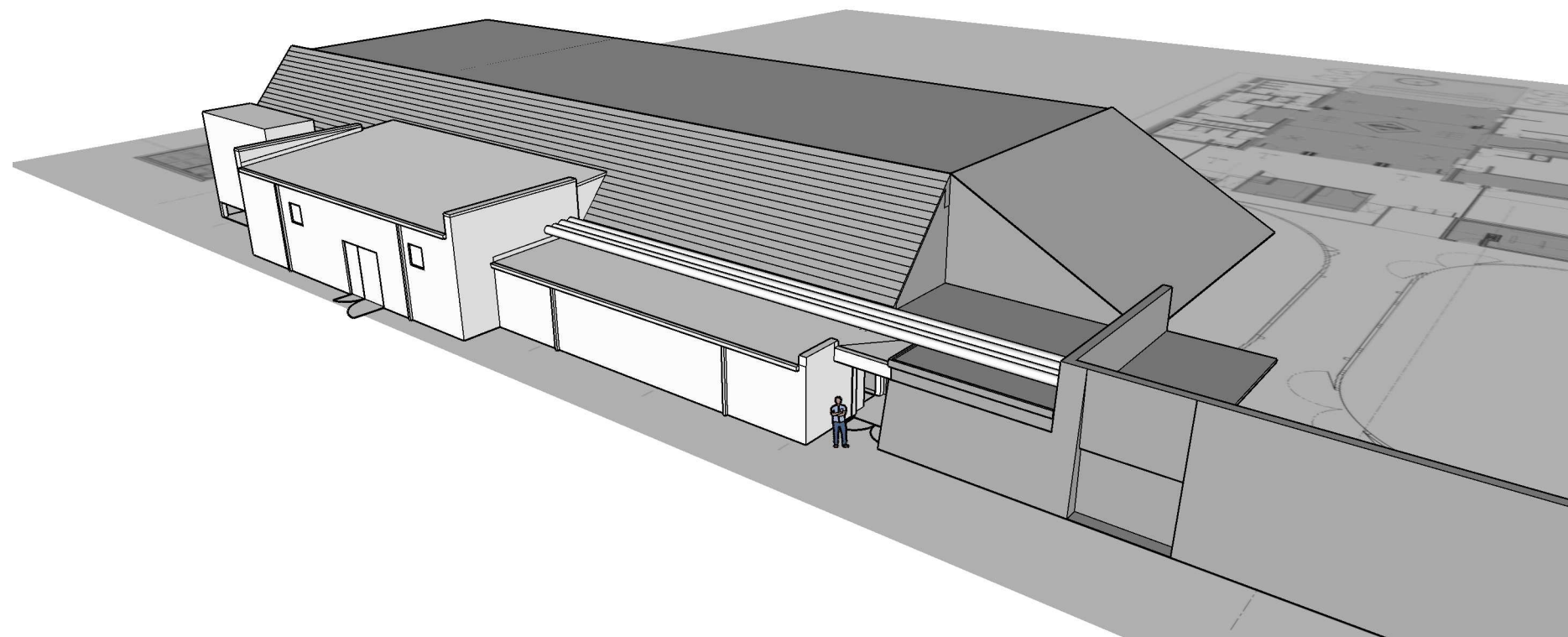
END OF SECTION 03 30 00

HAMILTON CENTER CHILLER PLANT & WOMEN'S LOCKER ROOM SHELL ADDITION

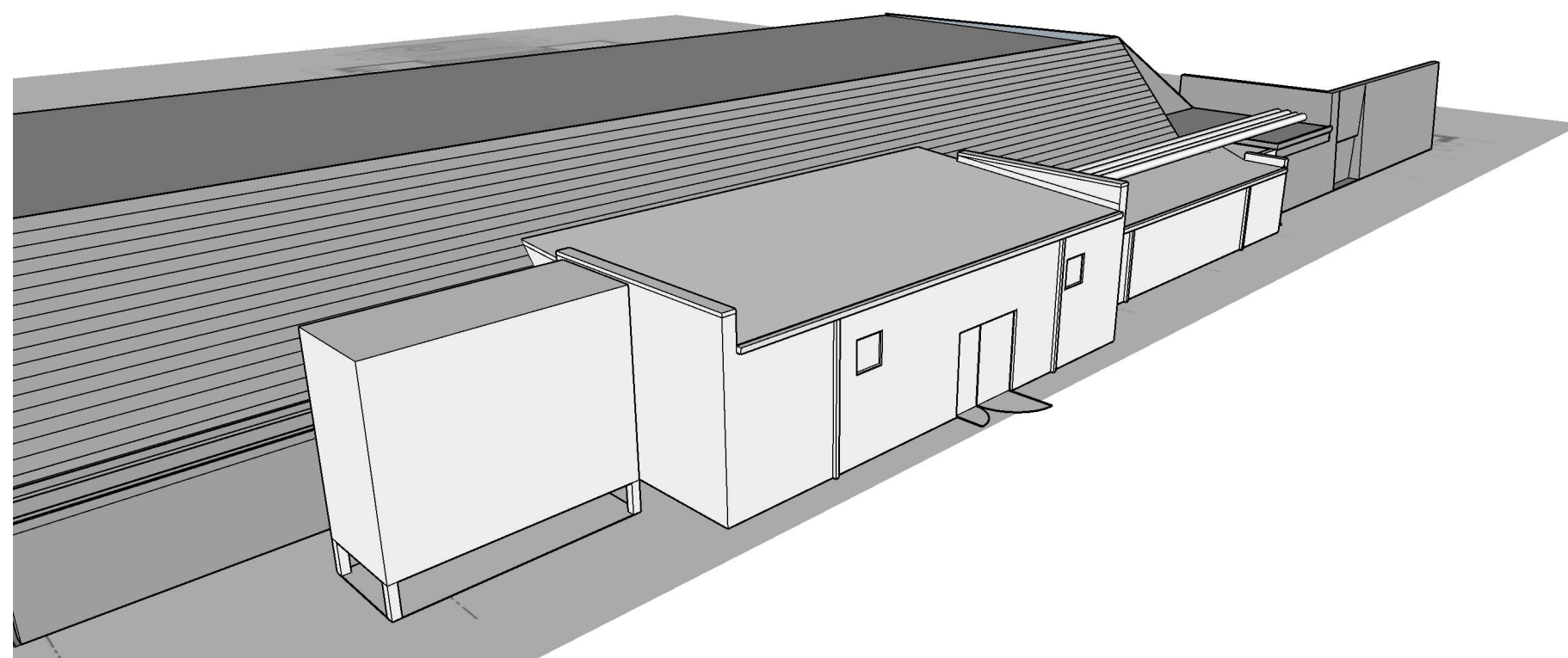
PROGRESS DRAWINGS
DESIGN DEVELOPMENT
13 November 2024



View from Southeast



Aerial View from Southeast

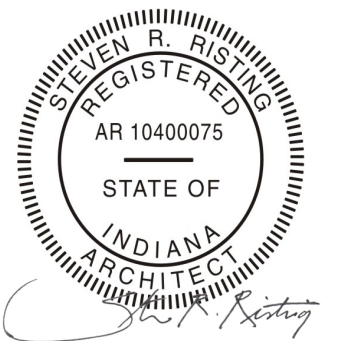


Aerial View from Southwest

3D DRAWINGS FOR REFERENCE ONLY
EXISTING BUILDING PARTIALLY SHOWN

SHEET INDEX

COVER	
A.01	PROJECT SUMMARY, LIFE SAFETY PLAN
A.02	OVERALL BUILDING/SITE PLAN & DEMO
A.03	ADDITION FLOOR PLAN & PLAN DETAILS
A.04	ADDITION ROOF PLAN & ROOF DETAILS
A.05	ADDITION ELEVATIONS
A.06	ADDITION BUILDING/WALL SECTION A
A.07	ADDITION BUILDING/WALL SECTION B
A.08	ADDITION BUILDING/WALL SECTION C
A.09	ADDITION BUILDING/WALL SECTION D1, D2 & D3
A.10	DOOR SCHEDULE & DETAILS
A.11	MECHANICAL ROOM EQUIPMENT LAYOUT PLAN - REFERENCE ONLY
A.12	1974 SOUTH WALL SECTION & DETAIL - REFERENCE ONLY
A.13	1974 MECHANICAL SITE PLAN - REFERENCE ONLY
S.01	GENERAL STRUCTURAL NOTES
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S.04	FOUNDATION & ROOF FRAMING PLANS
S.05	TYPICAL FOUNDATION & SLAB DETAILS
S.06	TYPICAL WALL DETAILS
S.06	TYPICAL WALL DETAILS
S.07	TYPICAL WALL DETAILS
S.08	TYPICAL ROOF FRAMING DETAILS
S.09	FOUNDATION & FRAMING SECTIONS
S.10	FOUNDATION & FRAMING SECTIONS



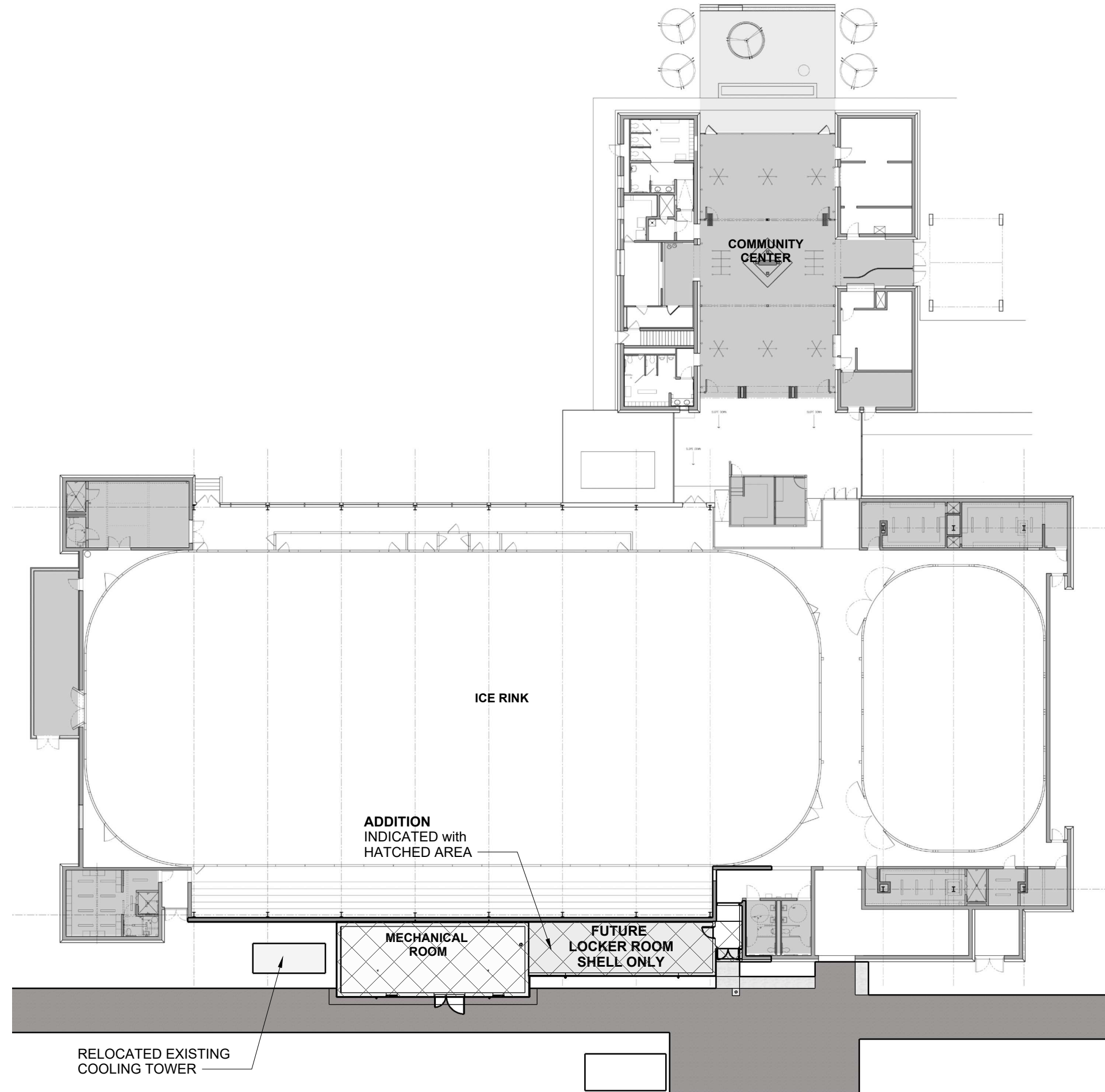
PROJECT SUMMARY

1,890 GROSS SQUARE FEET (G.S.F.) ADDITION (INCL. ENTRY ROOF)
ADDITION CONSTRUCTION TYPE: TYPE 1
(MASONRY BEARING WALLS w/ STRUCTURAL STEEL ROOF STRUCTURE)

EXISTING BUILDING AREA: 40,165 G.S.F.
TOTAL BUILDING AREA with ADDITION: 42,055 G.S.F.

EXISTING BUILDING CONSTRUCTION TYPE: TYPE IV
(MASONRY BEARING WALL with HEAVY TIMBER ROOF STRUCTURE)

OCCUPANCY: A-3 COMMUNITY HALL
A-4 SKATING RINK



LIFE SAFETY PLAN 1
scale: 1"=30' A.01



PROJECT HAMILTON CENTER CHILLER PLANT & WOMEN'S LOCKER ROOM SHELL ADDITION

Project Address:
2510 25th Street
Columbus, IN 47201

OWNER
Columbus Parks & Recreation
739 22nd Street
Columbus, IN 47201
Contact: Casey Ritz
critz@columbus.in.gov
812.372.2680

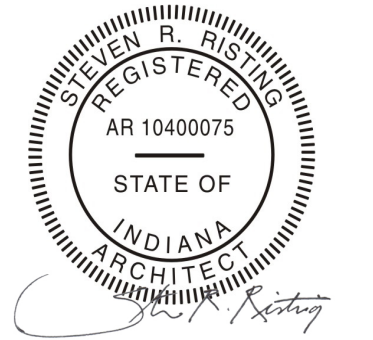
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317.372.6800

STRUCTURAL ENGINEER
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317.423.1550

DATE
2 Dec., 2024

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PROJECT INFO
LIFE SAFETY PLAN

A.01

PROJECT
HAMILTON CENTER
CHILLER PLANT
& WOMEN'S LOCKER ROOM SHELL
ADDITION

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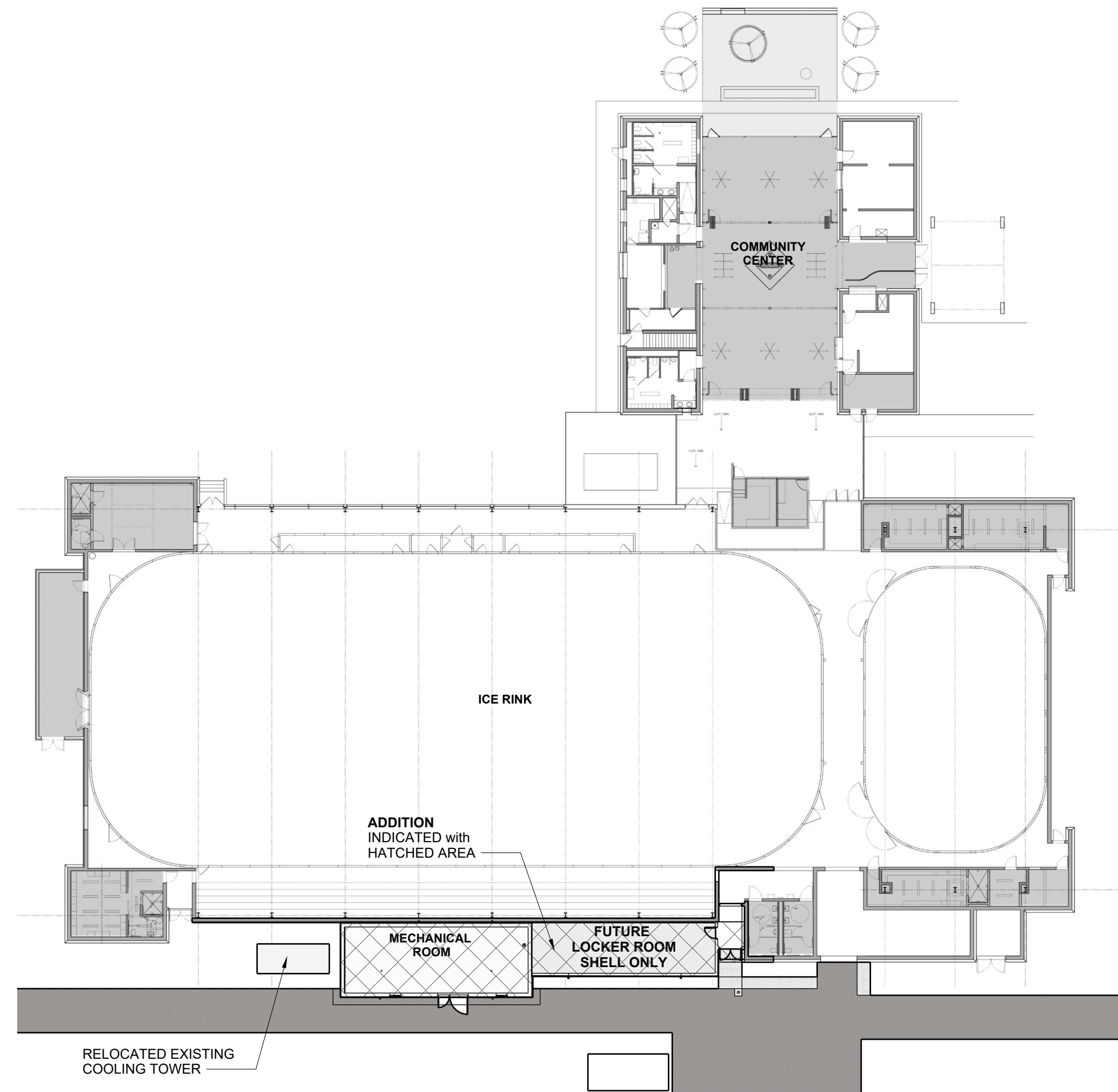
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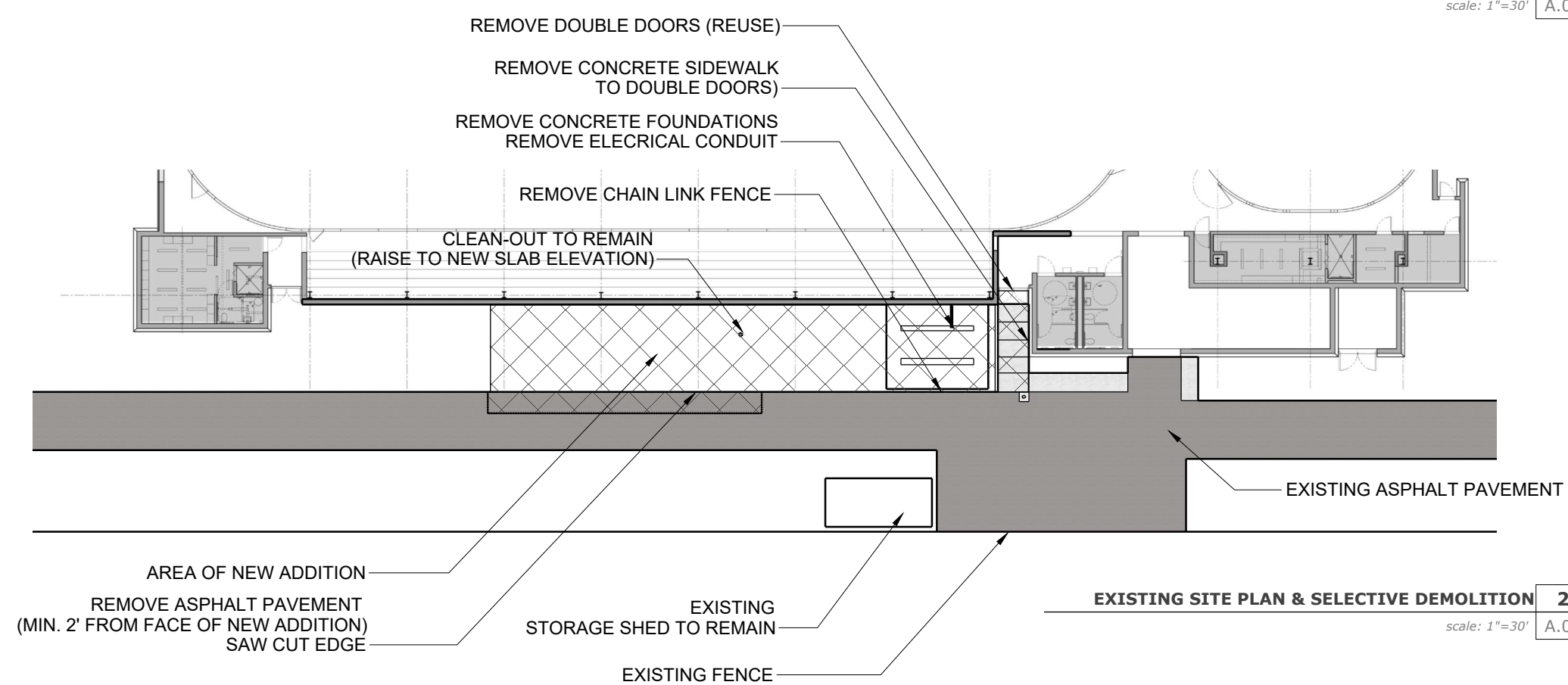
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2 Dec., 2024

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OVERALL BUILDING & SITE PLAN 1
scale: 1"=30' A.02



EXISTING SITE PLAN & SELECTIVE DEMOLITION 2
scale: 1"=30' A.02



**OVERALL BUILDING
& PARTIAL SITE PLAN**

A.02

PROJECT
HAMILTON CENTER
CHILLER PLANT
& WOMEN'S LOCKER ROOM SHELL
ADDITION

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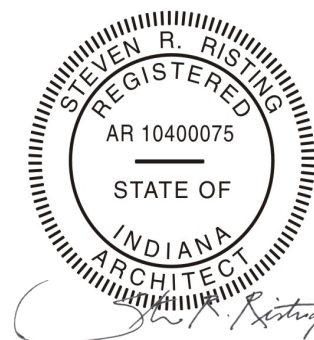
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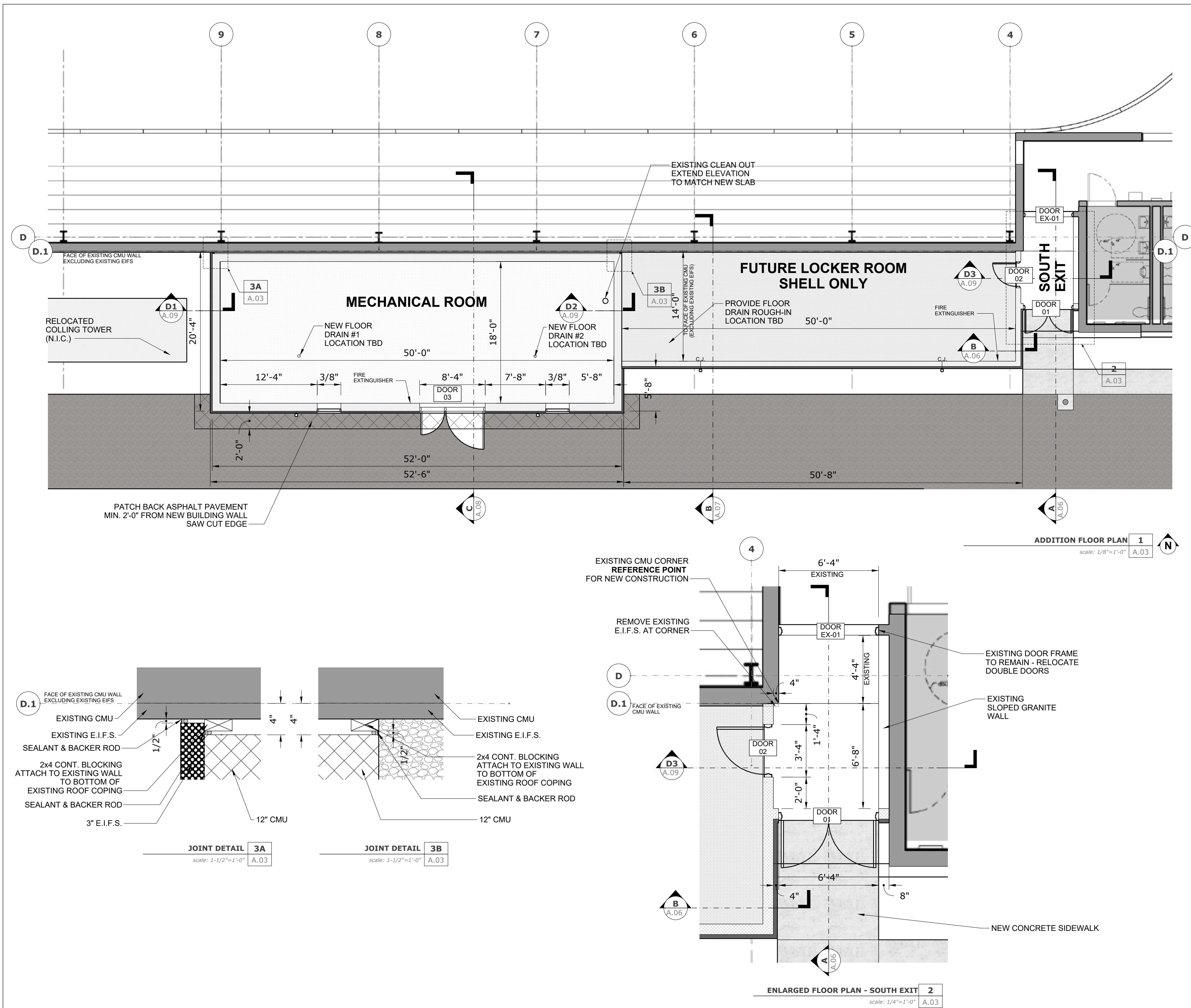
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**ADDITION
FLOOR PLAN**

A.03





PROJECT
HAMILTON CENTER
 CHILLER PLANT
 & WOMEN'S LOCKER ROOM SHELL
 ADDITION

Project Address:
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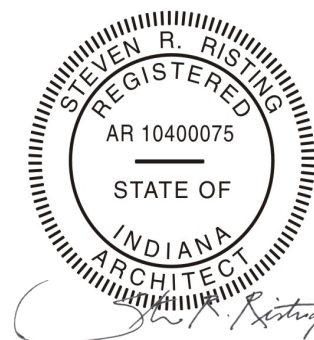
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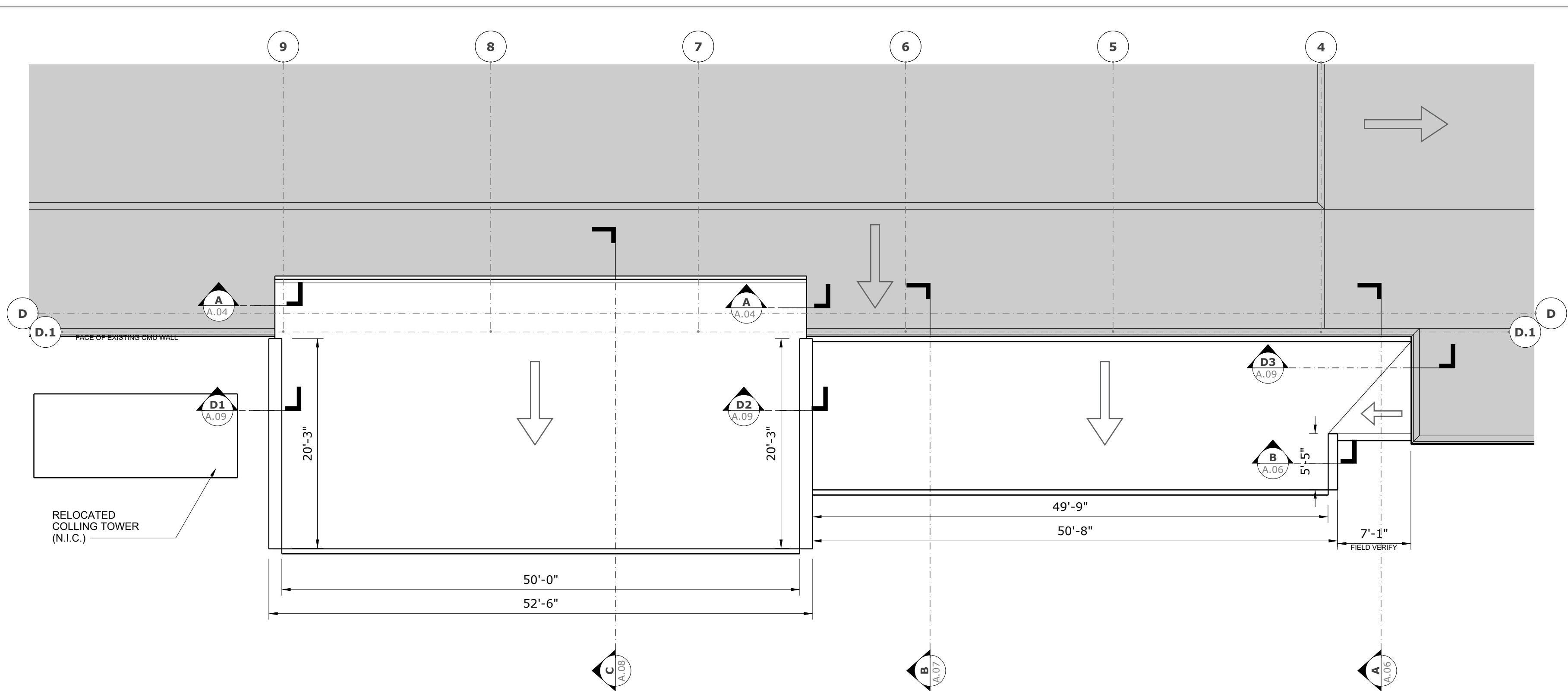
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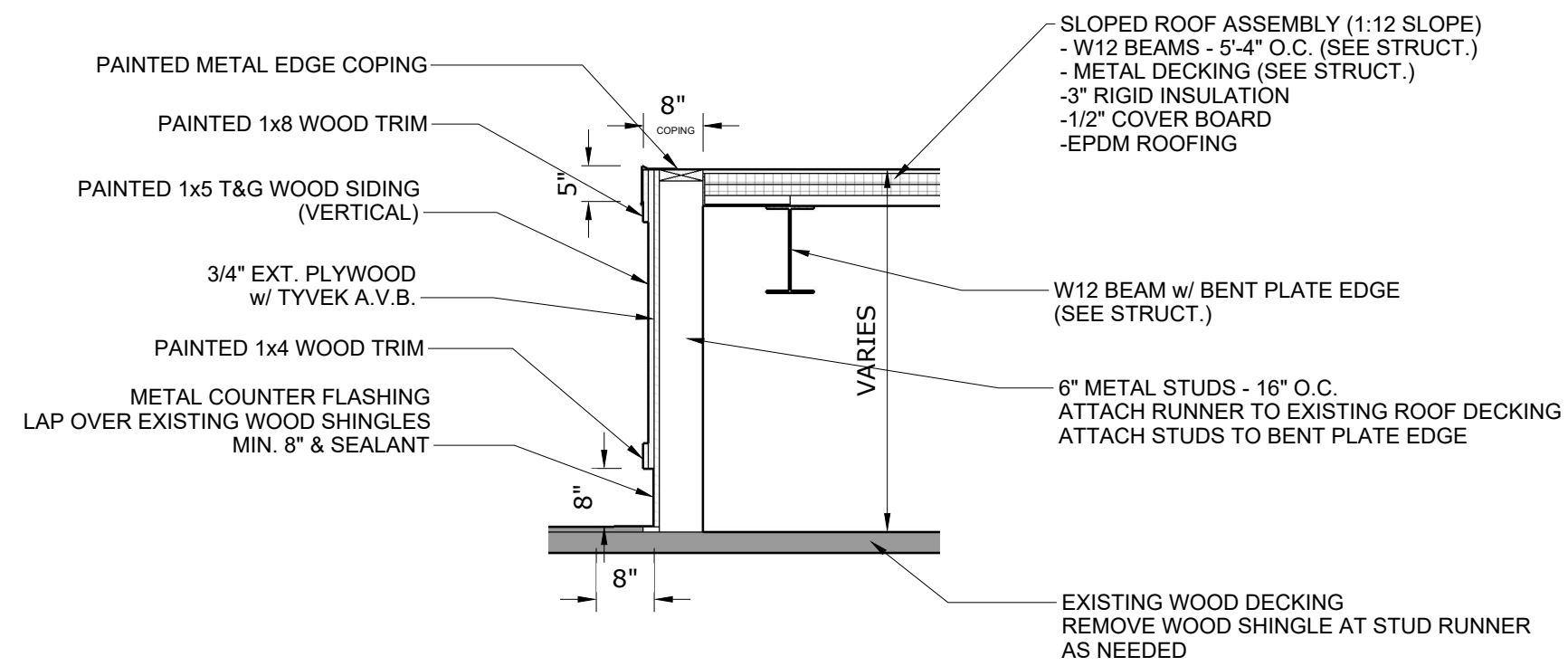


ADDITION ROOF PLAN
& ROOF DETAILS

A.04



ADDITION ROOF PLAN 1
 scale: 1/8"=1'-0" A.04



ADDITION ROOF DETAIL A
 scale: 1/2"=1'-0" A.04

PROJECT
HAMILTON CENTER
CHILLER PLANT
& WOMEN'S LOCKER ROOM SHELL
ADDITION

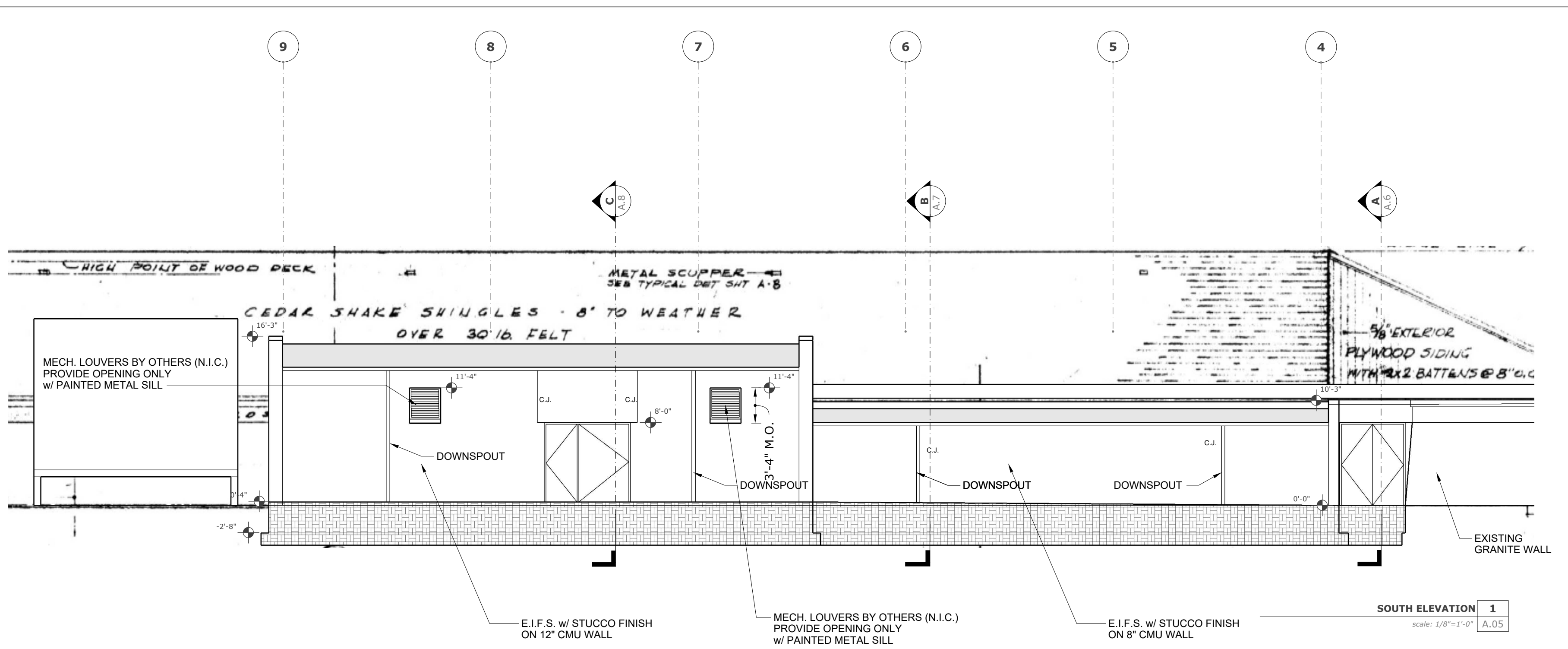
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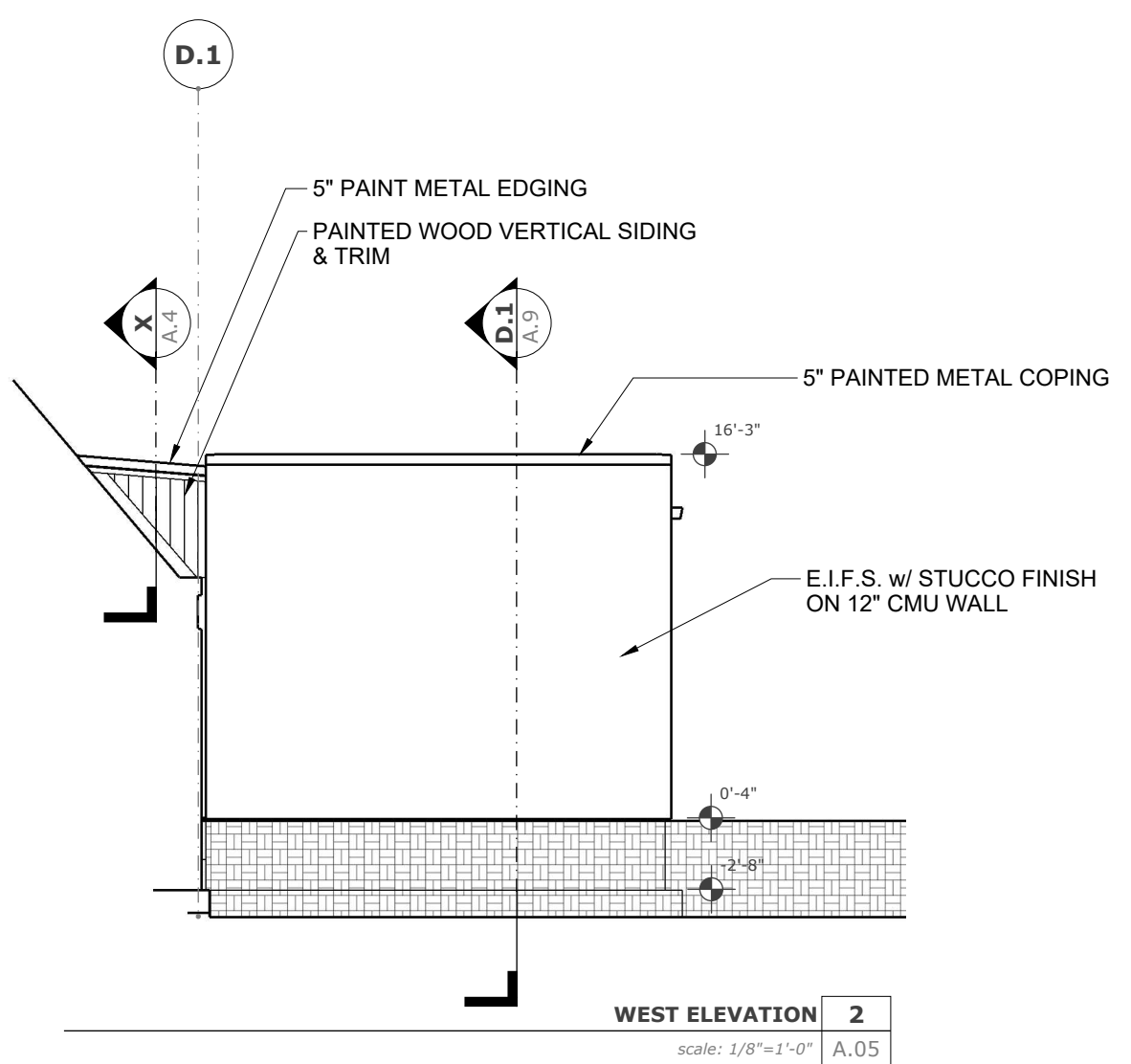
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SOUTH ELEVATION 1
scale: 1/8"=1'-0" A.05



WEST ELEVATION 2
scale: 1/8"=1'-0" A.05

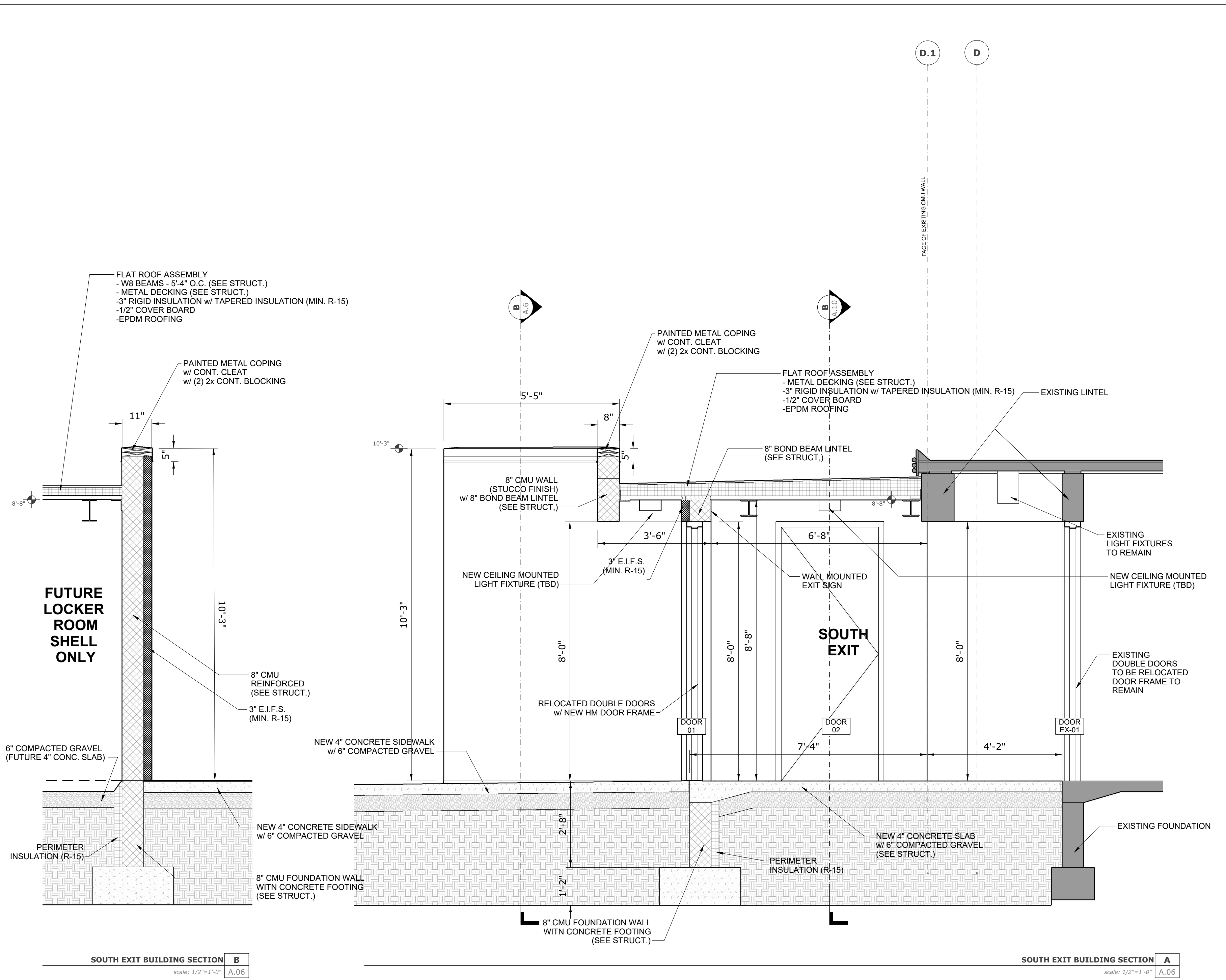
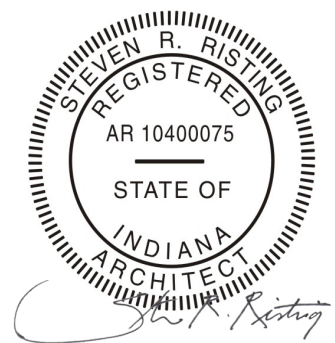
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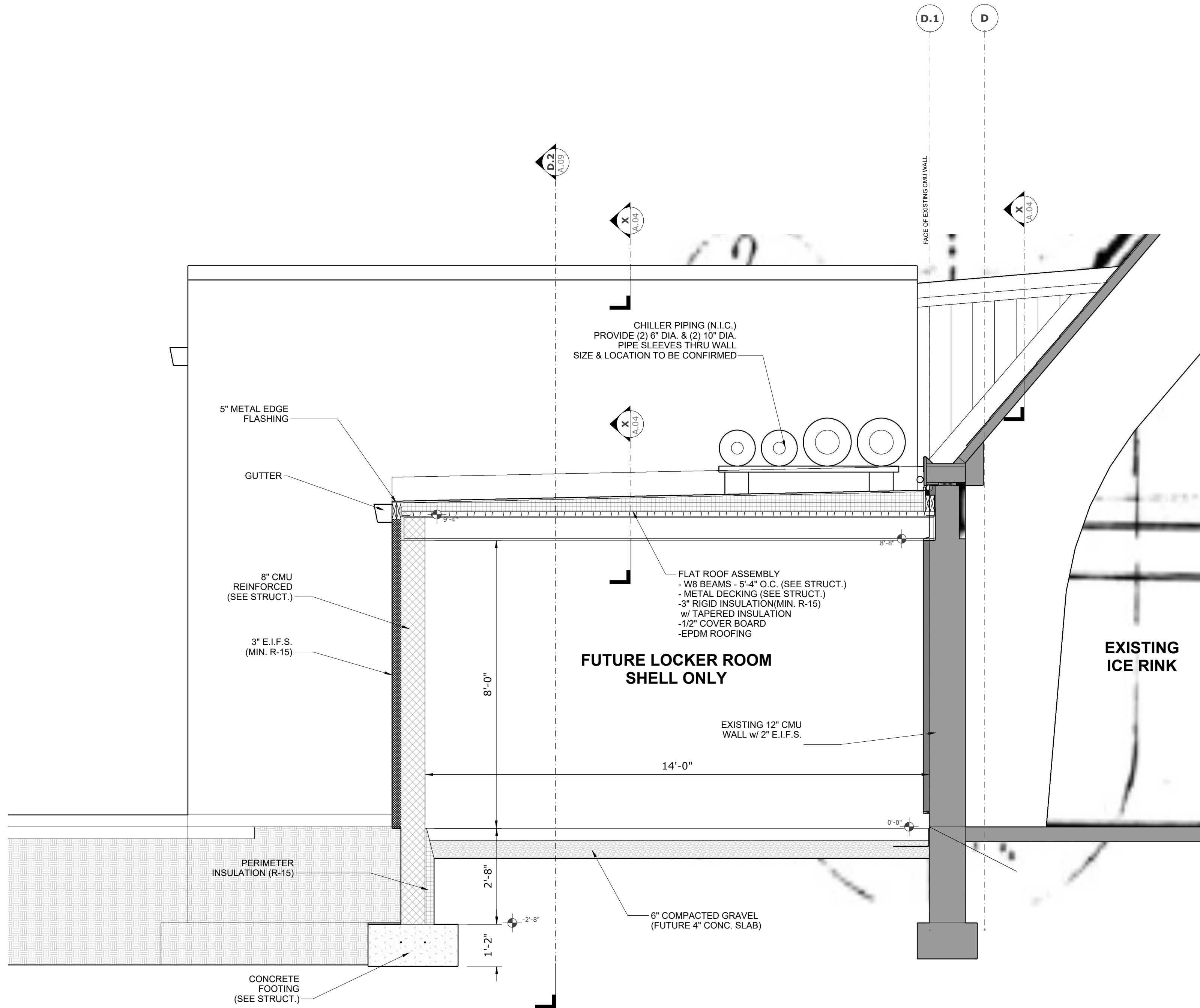


ADDITION
ELEVATIONS

A.05



BUILDING/WALL SECTION



LOCKER ROOM SHELL BUILDING SECTION B
scale: 1/2"=1'-0" A.07

PROJECT
HAMILTON CENTER
CHILLER PLANT
& WOMEN'S LOCKER ROOM SHELL
ADDITION

Project Address:
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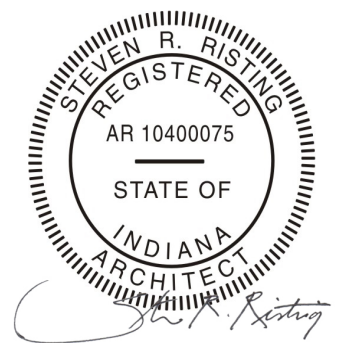
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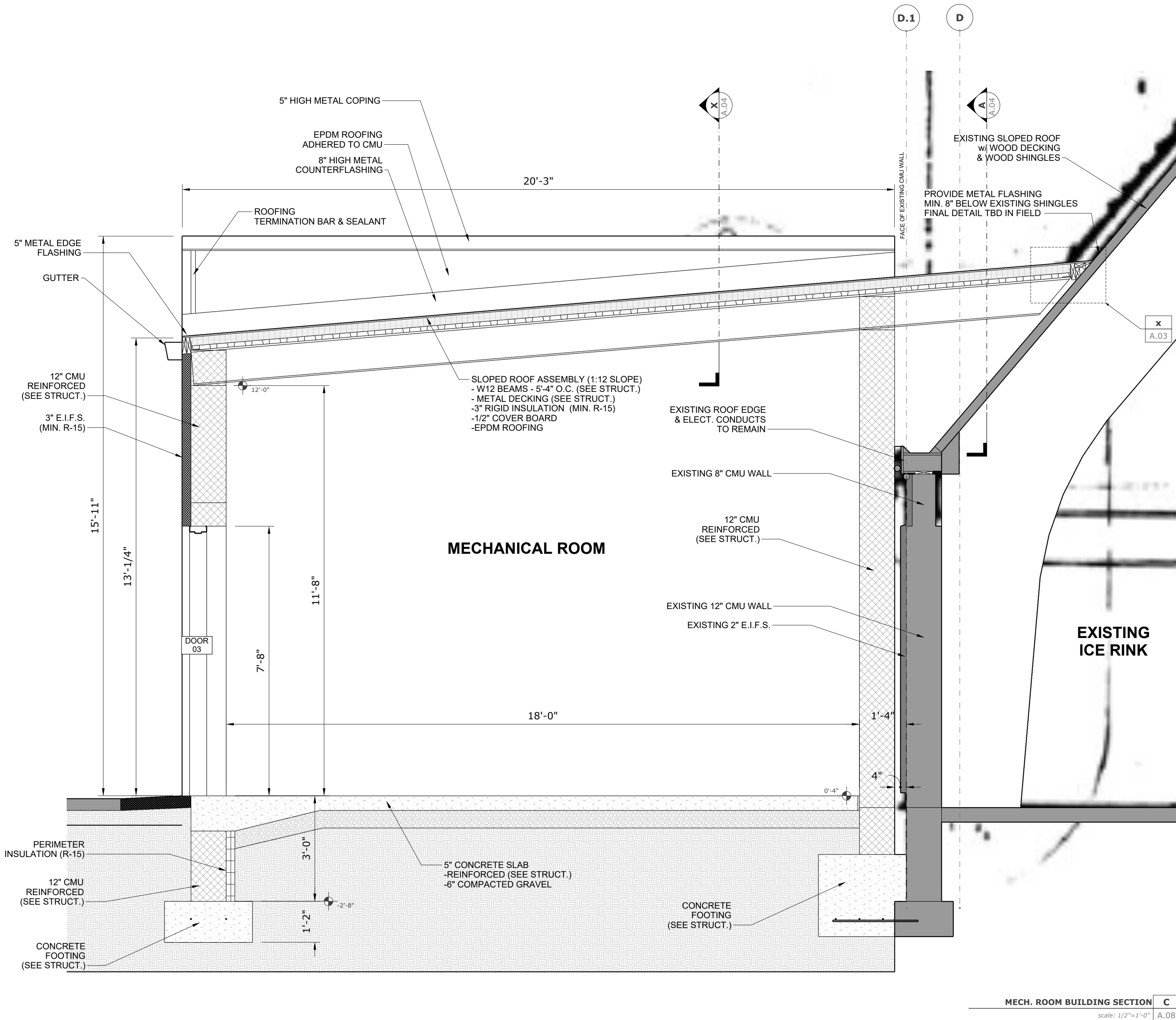
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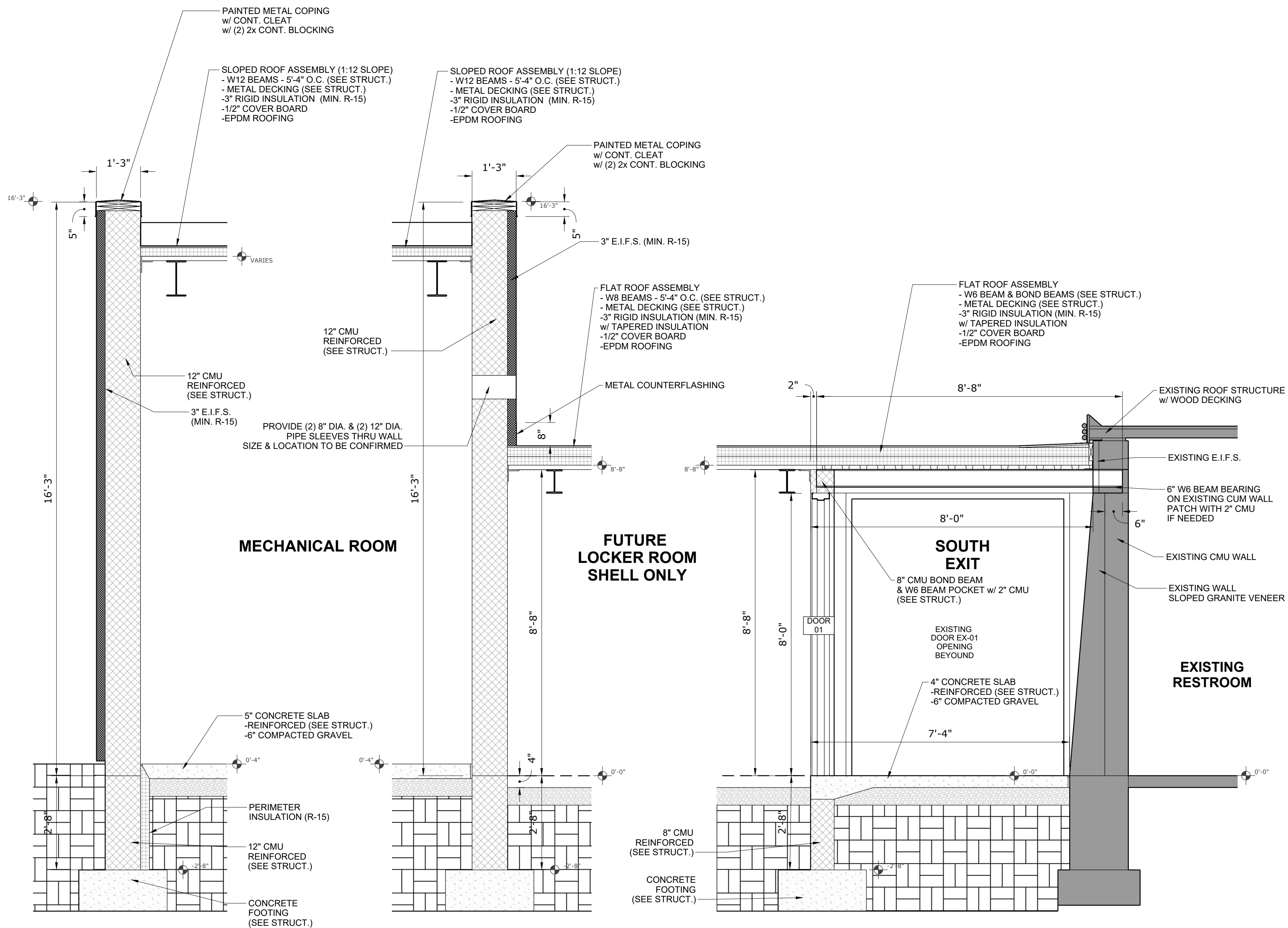


**BUILDING/WALL
SECTION**

A.08



MECH. ROOM BUILDING SECTION C
scale: 1/2"=1'-0" A.08



DOOR SCHEDULE



PROJECT
HAMILTON CENTER
 CHILLER PLANT
 & WOMEN'S LOCKER ROOM SHELL
 ADDITION

Project Address:
 2510 25th Street
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OWNER
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 critz@columbus.in.gov
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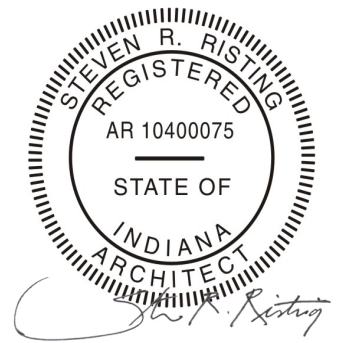
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DATE
 2 Dec., 2024

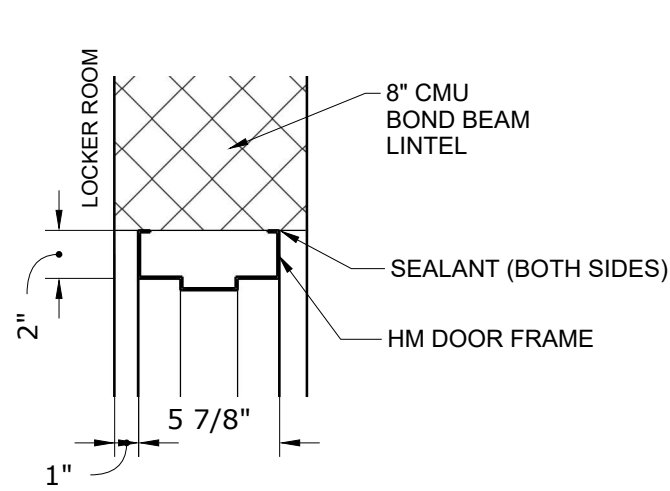
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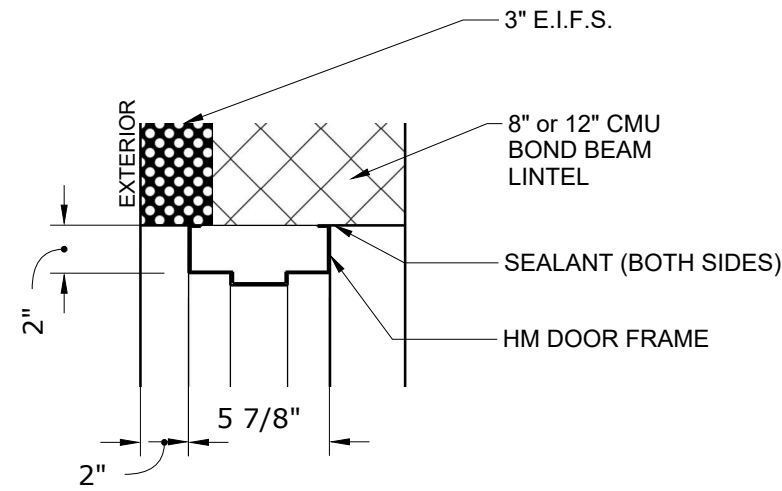
#	LOCATION	DOOR/OPENING				FRAME					HARDWARE	COMMENTS	
		TYPE	MATERIAL	FINISH	SIZE (Width x Height x Thickness)	MATERIAL	TYPE	FINISH	HEAD	JAMB			SILL
EX-01	SOUTH EXIT	Opening				Existing HM	Existing	PAINT	EXISTING	EXISTING	CONC.		Relocate existing doors to Door 1, frame to remain - patch hinge cutouts. Repaint frame. Remove existing Threshold.
1	SOUTH EXIT	Double Doors	Existing EX-01 doors relocated		(2) @ 3'-0" x 7'-10" x 1 3/4"	HM	FR1	PAINT	H1	J1	ALUM.	EXISTING including panic bars and closers.	
2	LOCKER ROOM	Single Door	HM - HONEYCOMB CORE	PAINT	(1) @ 3'-0" x 7'-10" x 1 3/4"	HM	FR2	PAINT	H2	J2	CONC.	CONTINUOUS HINGE. 12"x34" KICK PLATES BOTH SIDES, DEAD BOLT with THUMB SCREW, PUSH PLATE, PULL (TO MATCH EXISTING LOCKER ROOM HARDWARE)	
3	MECH. ROOM	Double Doors	HM - POLYSTYRENE CORE	PAINT	(1) @ 3'-0" x 7'-6" x 1 3/4" (1) @ 4'-10" x 7'-6" x 1 3/4"	HM	FR3	PAINT	H1	J1	ALUM.	CONTINUOUS HINGES. PANIC BAR & CLOSER FOR 3' DOOR. DEAD BOLT & THUMB SCREW FOR 4'-10" DOOR.	FRAME with REMOVABLE CENTER MULLION

MH - Hollow Metal
 CONC. - CONCRETE SLAB
 ALUM. - ALUMINUM

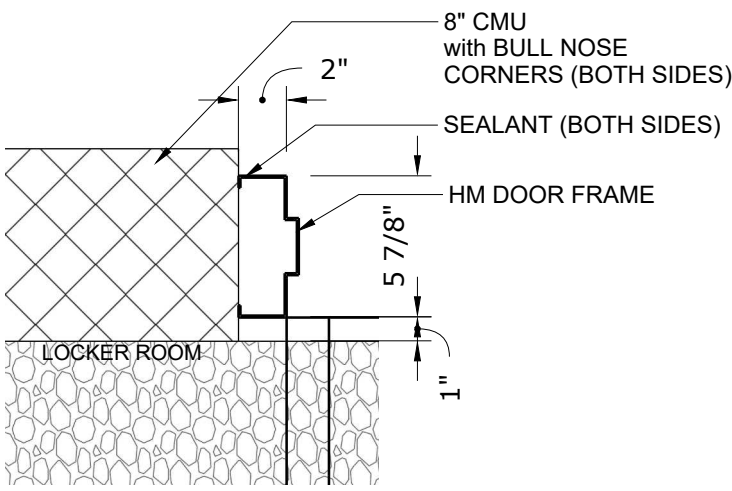
ALL HM DOORS TO BE 16 GA. COLD STEEL PANELS, 16 GA FRAME (HEAVY DUTY), PRIME PAINTED.
 HM FRAMES TO BE 16 GA. COLD ROLLED STEEL, PRIME PAINTED, MASONRY WIRE ANCHORS



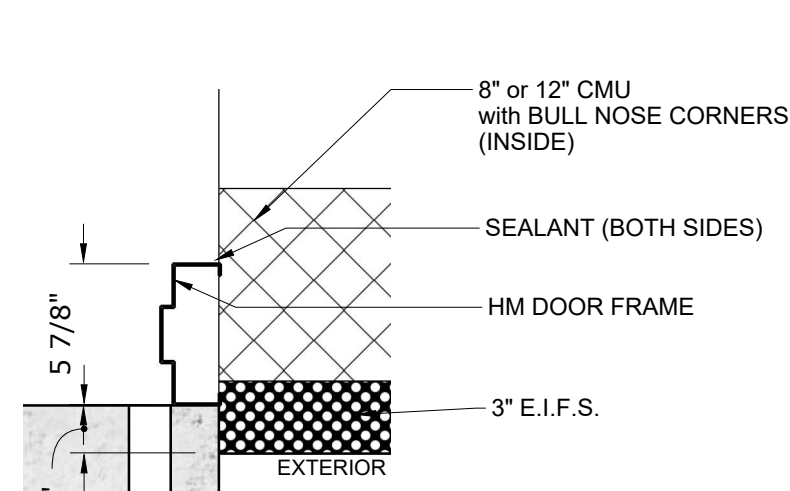
H2 - INTERIOR FRAME HEAD DETAIL



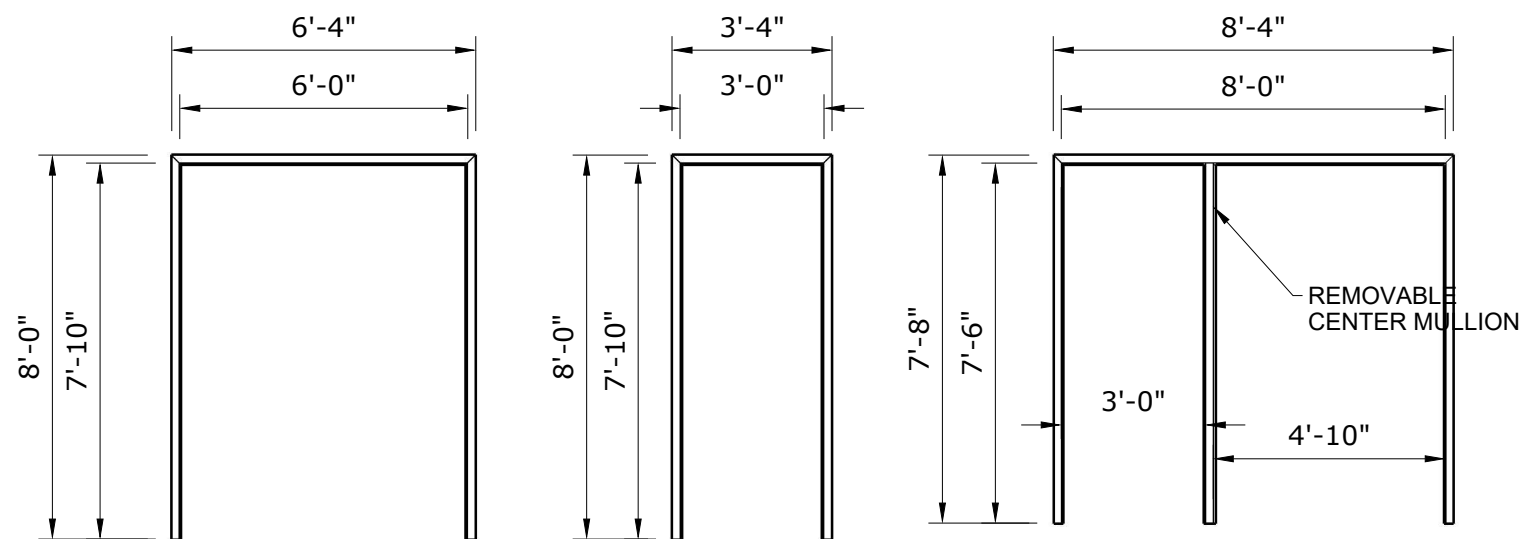
J2 - EXTERIOR FRAME HEAD DETAIL



J2 - INTERIOR FRAME JAMB DETAIL



J1 - EXTERIOR FRAME JAMB DETAIL



FR1 - SOUTH EXIT

FR2 - LOCKER ROOM

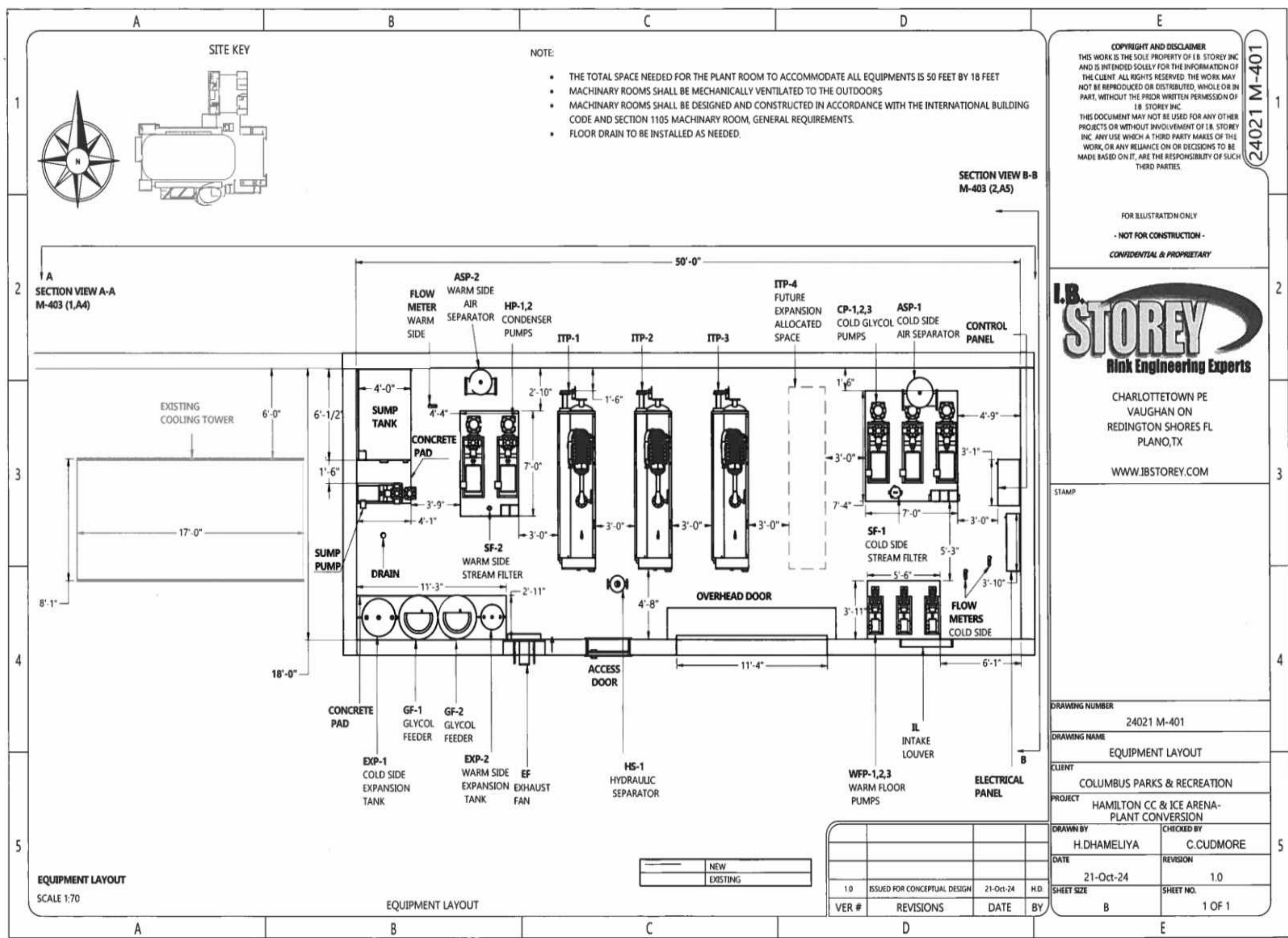
FR3 - MECHANICAL ROOM

DOOR DETAILS 2
 scale: 1/4"=1'-0" A.10

DOOR FRAMES 1
 scale: 1/4"=1'-0" A.10

DOOR SCHEDULE
DOOR DETAILS

A.10



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I.B. STOREY
 Risk Engineering Experts

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 REDINGTON SHORES FL
 PLANO, TX

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STAMP

DRAWING NUMBER	24021 M-401
DRAWING NAME	EQUIPMENT LAYOUT
CLIENT	COLUMBUS PARKS & RECREATION
PROJECT	HAMILTON CC & ICE ARENA- PLANT CONVERSION
DRAWN BY	H.DHAMELIYA
CHECKED BY	C.CUDMORE
DATE	21-Oct-24
REVISION	1.0
SHEET SIZE	B
SHEET NO.	1 OF 1

PROJECT
 HAMILTON CENTER
 CHILLER PLANT
 & WOMEN'S LOCKER ROOM SHELL
 ADDITION

Project Address:
 2510 25th Street
 Columbus, IN 47201

OWNER
 Columbus Parks & Recreation
 739 22nd Street
 Columbus, IN 47201
 Contact: Casey Ritz
 critz@columbus.in.gov
 812.372.2680

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 317.372.6800

STRUCTURAL ENGINEER
 Lynch, Harrison & Brumleve, Inc.
 Contact: Jim Osborne, P.E.
 josborne@lhb-eng.com
 317.423.1550

DATE
 2 Dec., 2024

DRAWN BY
 SRR

MECH. ROOM EQUIP.
 LAYOUT PLAN
 REFERENCE DRAWING

REFERENCE DRAWING - MECHANICAL ROOM EQUIPMENT LAYOUT PLAN 1
 FOR REFERENCE ONLY - EQUIPMENT NOT IN CONTRACT scale: NOT TO SCALE A.11

A.11

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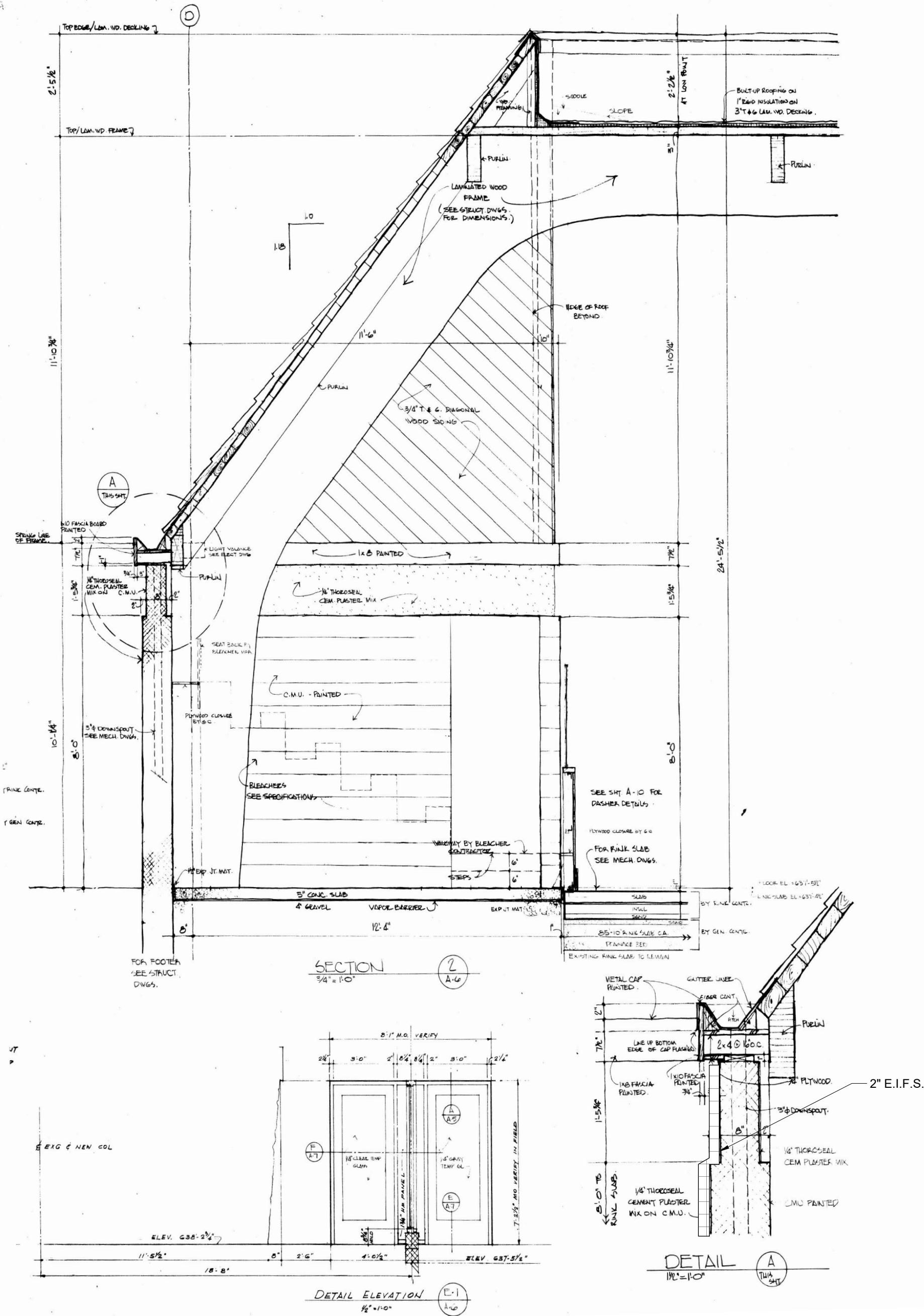
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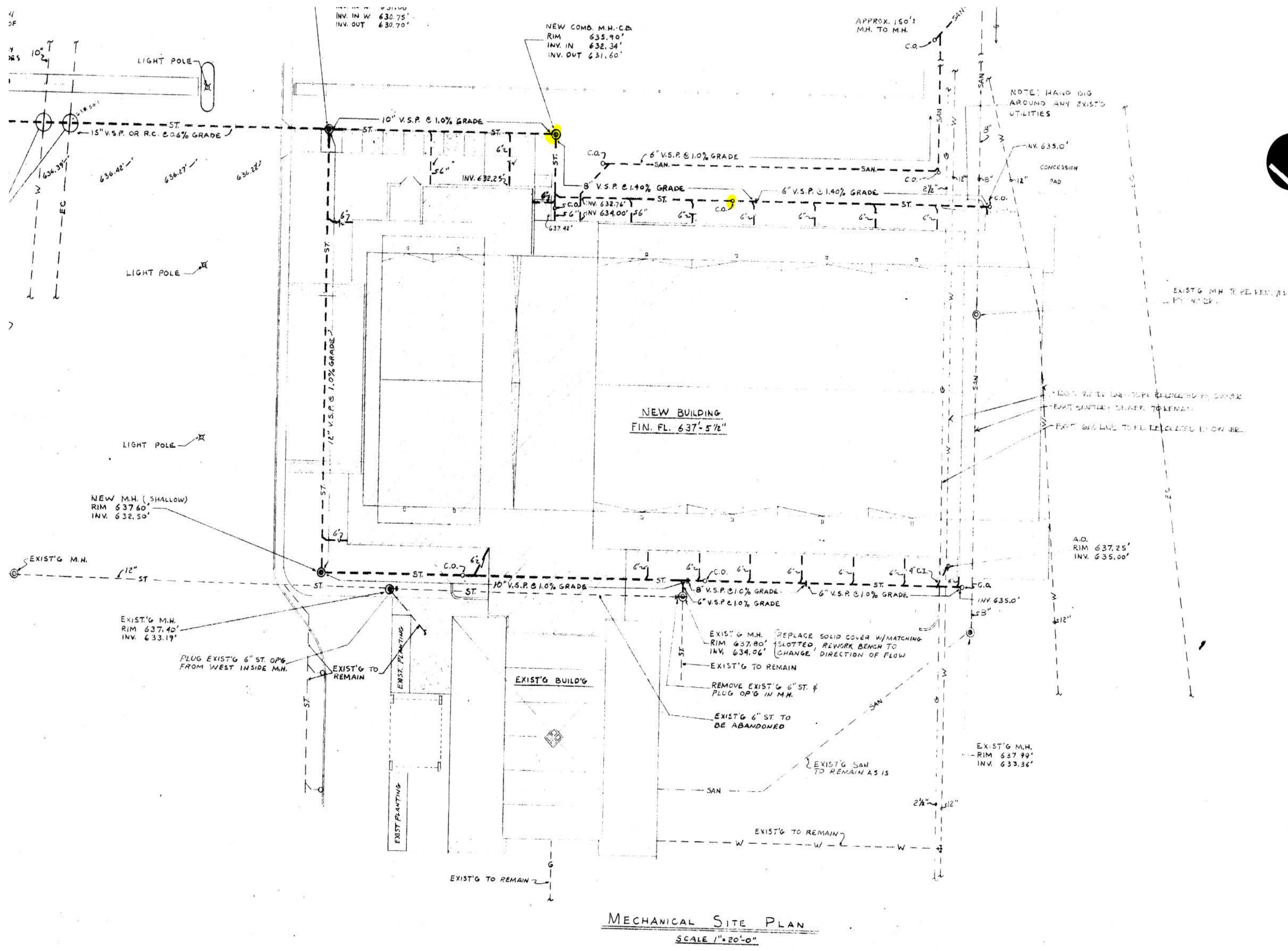
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EXISTING WALL SECTION
REFERENCE DRAWING



LINCOLN CENTER ICE RINK
 2501 TWENTY FIFTH STREET
 COLUMBUS, INDIANA 47201
 MAYOR
 MAX ADDRESS.

SCALE: AS NOTED
 MECHANICAL
 SITE PLAN

MECHANICAL SITE PLAN
 SCALE 1"=20'-0"

PROJECT
 HAMILTON CENTER
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DRAWN BY
 SRR

EXISTING CONSTRUCTION

- The Contractor shall field verify the dimensions, elevations, etc. necessary for the proper construction and alignment of the new portions of the work to the existing work. The Contractor shall make all necessary measurements for fabrication and erection of the structural members. Any discrepancy shall be brought to the attention of the Structural Engineer of Record (SER).
- Before proceeding with any work within the existing facility, the Contractor shall familiarize himself with existing structural and other conditions. Any shoring shown or noted on the Plans is a partial and schematic representation of that required. It shall be the Contractor's responsibility to provide all necessary bracing, shoring, and other safeguards to maintain all parts of the work in a safe condition during the progress of demolition and construction, and to protect from damage those portions of the existing work which are to remain. Shoring shall remain in place until the structural work is complete, has been inspected by the Testing Agency, and is certified to be in substantial compliance with the Contract Documents.
- Welding to and within an existing facility presents potential hazards including:
 - Fire Hazard—Due to the existing construction and building contents.
 - Structural Liquifaction—Due to welding across the full section of the structural members.

Recommendations to prevent these hazards include:

- Fire Hazard—Protect existing combustibles prior to welding. Keep a separate watchman and several fire extinguishers on hand.
- Structural Liquifaction—weld in small increments. Allow welds to harden before continuing to the next increment.
- Do not leave the site until satisfied that no fire hazard exists.
- Preference should be given to the use of beam clamps, mechanical fasteners, or bolted connections in lieu of welding within existing facilities, whenever possible. Do not field-drill existing structural members without the written permission of the SER.

COORDINATION WITH OTHER TRADES

- The Contractor shall coordinate and check all dimensions relating to Architectural finishes, mechanical equipment and openings, elevator shafts and overrides, etc. and notify the Architect/Engineer of any discrepancies before proceeding with any work in the area under question.
- The Structural Drawings shall be used in conjunction with the Drawings of all other disciplines and the Specifications. The Contractor shall verify the requirements of other trades as to sleeves, chases, hangers, inserts, anchors, holes, and other items to be placed or set in the Structural Work.
- There shall be no vertical or horizontal sleeves set, or holes cut or drilled in any beam or column unless it is shown on the Structural Drawings or approved in writing by the SER.
- Mechanical and electrical openings through supported slabs and walls, 8" diameter or larger, not shown on the Structural Drawings must be approved by the SER. Openings less than 8" diameter shall have at least 1'-0" clear between openings, unless approved in writing by the SER.
- Verify locations and dimensions of mechanical and electrical openings through supported slabs and walls shown on the Structural Drawings with the Mechanical and Electrical Contractors.
- Do not install conduit in supported slabs, slabs on grade, or concrete walls unless explicitly shown or noted on the Structural Drawings.
- Do not suspend any items, such as ductwork, mechanical or electrical fixtures, ceilings, etc. from steel roof deck or wood roof sheathing.
- The Mechanical Contractor shall verify that mechanical units supported by steel framing are capable of spanning the distance between the supporting members indicated on the Structural Drawings. The Mechanical Contractor shall supply additional support framing as required.
- If the Drawings and Specifications are in conflict, the most stringent restrictions and requirements shall govern.

GENERAL NOTES

- The Contractor shall be responsible for complying with all safety precautions and regulations during the work. The SER will not advise on, nor issue direction as to safety precautions and programs.
- The Structural Drawings herein represent the finished structure. The Contractor shall provide all temporary guying and bracing required to erect and hold the structure in proper alignment until all Structural Work and connections have been completed. The investigation, design, safety, adequacy and inspection of the bracing, shoring, temporary supports, etc. is the sole responsibility of the Contractor.
- The SER shall not be responsible for the methods, techniques, and sequences of procedures to perform the Work. The supervision of the Work is the sole responsibility of the Contractor.
- The Drawings indicate general and typical details of construction. Where conditions are not specifically shown, similar details of construction shall be used, subject to approval of the SER.
- All structural systems which are to be composed of components to be field erected shall be supervised by the Supplier during manufacturing, delivery, handling, storage, and erection in accordance with the Supplier's instructions and requirements.
- Loading applied to the structure during the process of construction shall not exceed the safe load-carrying capacity of the structural members. The live loads used in the design of this structure are indicated in the "Design Criteria Notes". Do not apply any construction loads until structural framing is properly connected together and until all permanent bracing is in place.
- All ASTM and other referenced standards and codes are for the latest editions of these publications, unless noted otherwise.
- Shop Drawings and other items shall be submitted to the SER for review prior to fabrication. All shop drawings shall be reviewed by the Contractor before submittal. The SER's review is to be for conformance with the design concept and general compliance with the relevant Contract Documents. The SER's review does not relieve the Contractor of the sole responsibility to review, check, and coordinate the Shop Drawings prior to submission. The Contractor remains solely responsible for errors and omissions associated with the preparation of Shop Drawings as they pertain to member sizes, details, dimensions, etc.
- Submit Shop Drawings in the form of blue/line/blackline prints (min. 2 sets/ max. 5 sets), unless the use of electronic submittals has been addressed in the Specifications or approved by the SER in writing. In no case shall reproductions of the Contract Documents be used as Shop Drawings. As a minimum, submit the following items for review:
 - Concrete Mix Design(s).
 - Reinforcing Steel Shop Drawings.
 - Structural Steel Shop Drawings.
 - Steel Deck Shop Drawings.
- Resubmitted Shop Drawings: Resubmitted shop drawings are reviewed only for responses to comments made in the previous submittal.
- When calculations are included in the submittal for components of Work designed and certified by a Specialty Structural Engineer (SSE), the review by the Structural Engineer of Record (SER) shall be for conformance with the relevant Contract Documents. The SER's review does not relieve the SSE from responsibility for the design of their system(s) and the coordination with the elements of the structure under the certification of the SER, or other SSE's. The SER's review does not constitute a warrant of the accuracy or completeness of the SSE's design.
- Contractors shall visit the site prior to bid to ascertain conditions which may adversely affect the Work or cost thereof.
- No structural member may be cut, notched, or otherwise reduced in strength without written direction from the SER.
- When modifications are proposed to structural elements under the design and certification of a SSE, written authorization by the SSE must be obtained and submitted to the SER for review prior to performing the proposed modifications.

DESIGN CRITERIA

- DESIGN STANDARDS: The intended design standards are as follows:

General	The 2014 Indiana Building Code (2012 International Building Code (IBC) with Indiana Amendments)
Concrete	ACI 318
Masonry	ACI 530
Steel	AISC Manual, Allowable Stress Design (ASD)
Steel Deck	Steel Deck Institute
Cold-Formed Metal	AISI-ASD

All referenced standards and codes, as well as ASTM numbers, are for the editions of these publications referenced in the Building Code listed above, unless noted otherwise.

- DEAD LOADS: Gravity dead loads used in the design of the structure are as computed for the materials of construction incorporated into the building, including but not limited to walls, floors, roofs, ceilings, stairways, fixed partitions, finishes, cladding, and other similar architectural and structural items, as well as mechanical, electrical and plumbing equipment and fixtures, and material handling and fixed service equipment, including the weight of cranes.
- COLLATERAL LOAD: Unless otherwise noted, a minimum uniform collateral load of 10 PSF has been used to account for ductwork, ceilings, sprinklers, lighting, etc. The collateral load is in addition to the weight of mechanical units, larger piping (greater than 4" diameter) and suspended fixtures or equipment that have been specifically accounted for in the design.
- COLLATERAL LOADS ABOVE MECHANICAL ROOM: A minimum uniform collateral load of 20 PSF has been used to account for large ductwork, sprinkler mains, concentrations of piping, and electrical distribution above corridors and mechanical rooms. The collateral load is in addition to the weight of mechanical units and larger piping (greater than 4" diameter) and suspended fixtures or equipment that have been specifically accounted for in the design.
- ROOF LIVE/SNOW LOADS: Gravity live loads used in the design of the roof structure meet or exceed the following table:

A. Snow Load		
Ground Snow Load, Pg	20 PSF	
Flat Roof Snow Load, Pf	14 PSF	
Low Slope Minimum Snow Load, Pm	20 PSF	
Exposure Factor, Ce	1.0	
Risk Category (IBC Table 1604.5)	II	
Snow Importance Factor, Is	1.00	
Thermal Factor, Ct	1.0	
B. Minimum Roof Live Load	20 PSF	
C. Overhanging Eaves & Projections	28 PSF	

- Sloped roof snow loads calculated in accordance with Sec. 7.4, ASCE 7.
- Unbalanced roof snow loads calculated in accordance with Sec. 7.6, ASCE 7. Specialty Structural Engineers (SSE) must consider unbalanced snow loads in the design of pre-engineered trusses, frames, skylights, curtain walls, cold-formed steel framing, canopies, etc.
- Drift loads calculated in accordance with Section 7.7, ASCE 7.
- Roofs used for roof gardens or assembly purposes have been designed for a minimum live load of 100 PSF.

- LATERAL LOADS: Lateral loads were computed using the following criteria:

A. Wind Load		
Ultimate Design Wind Speed, Vult	115 MPH	
Nominal Design Wind Speed, Vasd	89 MPH	
Wind Exposure Category	B	
Risk Category (IBC Table 1604.5)	II	
Internal Pressure Coefficient, GCpi	±0.18	
B. Seismic Load		
Site Class	D (assumed)	
Risk Category (IBC Table 1604.5)	II	
Seismic Importance Factor, Ie	1.00	
Mapped Spectral Response Acceleration, Ss	0.171g	
Mapped Spectral Response Acceleration, S1	0.092g	
Design Spectral Response Acceleration, Sds	0.182g	
Design Spectral Response Acceleration, Sd1	0.147g	
Seismic Design Category, SDC	C	
Response Modification Factor, R	3	
Seismic Response Coefficient, Cs	0.075	
Design Base Shear, V	0.075W	
Analysis Procedure	Equivalent Lateral Force	
Basic Seismic Force—Resisting System	Ordinary Masonry Shear Walls	

PROJECT HAMILTON CENTER CHILLER PLANT & WOMEN'S LOCKER ROOM SHELL ADDITION

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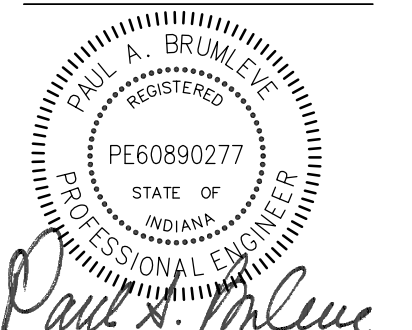
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**CONSTRUCTION DOCUMENTS
DATE**
27 Nov. 2024

DRAWN BY
JRO



GENERAL NOTES

S.01

FOUNDATIONS

1. Proofroll slab on grade areas with a medium-weight roller or other suitable equipment to check for pockets of soft material hidden beneath a thin crust of better soil. Any unsuitable materials thus exposed should be removed and replaced with compacted, engineered fill as outlined in the specifications. Proofrolling operations shall be monitored by the Geotechnical Testing Agency.
2. All engineered fill beneath slabs and over footings should be compacted to a dry density of at least 93% of the Modified Proctor maximum dry density (ASTM D-1557). All fill which shall be stressed by foundation loads shall be approved granular materials compacted to a dry density of at least 95% (ASTM D-1557). Coordinate all fill and compaction operations with the Specifications and the Subsurface Investigation.
3. Compaction shall be accomplished by placing fill in approximate 8" lifts and mechanically compacting each lift to at least the specified minimum dry density. For large areas of fill, field density tests shall be performed for each 3,000 square feet of building area for each lift as necessary to insure adequate compaction is being achieved.
4. Column footings and wall footings to bear on firm natural soils or well-compacted engineered fill with assumed allowable bearing pressures of 2,000 PSF and 1,600 PSF for column and wall footings respectively.

It is essential that the foundations be inspected to insure that all loose, soft, or otherwise undesirable material (such as organics, existing uncontrolled fill, etc.) is removed and that the foundations will bear on satisfactory material. The Geotechnical Testing Agency shall inspect the subgrade and perform any necessary tests to insure that the actual bearing capacities meet or exceed the design capacities. The Geotechnical Testing Agency shall verify the bearing capacity at each spread column footing and every 10 feet on center for strip footings prior to placement of concrete.

5. Place footings the same day the excavation is performed. If this is not possible, the footings shall be adequately protected against any detrimental change in condition, such as from disturbance, rain, or freezing.
6. It is the responsibility of the Contractor and each Sub-Contractor to verify the location of all utilities and services shown, or not shown; and establish safe working conditions before commencing work.
7. The Contractor shall layout the entire building and field verify all dimensions prior to excavation.

CONCRETE REINFORCING

1. Reinforcement, other than cold drawn wire for spirals and welded wire fabric, shall have deformed surfaces in accordance with ASTM A305.
2. Reinforcing steel shall conform to ASTM A615, Grade 60, unless noted.
3. Welded wire fabric shall conform to ASTM A1064, unless noted.
4. Where hooks are indicated, provide standard hooks per ACI and CRSI for all bars unless other hook dimensions are shown on the plans or details.
5. Reinforcement in footings, walls and beams shall be continuous. Lap bars a minimum of 36 bar diameters, unless noted otherwise.
6. Reinforcement shall be supported and secured against displacement in accordance with the CRSI 'Manual of Standard Practice'.
7. Details of reinforcing steel fabrication and placement shall conform to ACI 315 'Details and Detailing of Concrete Reinforcement' and ACI 315R 'Manual of Engineering and Placing Drawings for Reinforced Concrete Structures', unless otherwise indicated.
8. Spread reinforcing steel around small openings and sleeves in slabs and walls, where possible, and where bar spacing will not exceed 1.5 times the normal spacing. Discontinue bars at all large openings where necessary, and provide an area of reinforcement, equal to the interrupted reinforcement, in full length bars, distributing one-half each side of the opening. Where shrinkage and temperature reinforcement is interrupted, add (2) #5 x opening dimension + 4'-0" on each side of the opening. Provide #5 x 4'-0" long diagonal bars in both faces, at each corner of openings larger than 12" in any direction.
9. Provide individual high chairs with support bars, as required for the support of top reinforcement for support slabs. Do not provide standees.
10. Provide snap-on plastic spacer wheels to maintain required cover for vertical wall reinforcement.
11. Field bending of reinforcing steel is prohibited, unless noted on the drawings.
12. Minimum concrete cover over reinforcing steel shall be as follows, unless noted otherwise on plan, section or note:

MINIMUM COVER FOR REINFORCEMENT	
FOOTINGS & BASE SLABS	MINIMUM COVER, IN
AT FORMED SURFACES & BOTTOMS BEARING ON CONCRETE WORK MAT	2"
AT UNFORMED SURFACES & BOTTOMS IN CONTACT WITH EARTH	3"
TOP OF FOOTINGS	SAME AS SLABS
OVER TOP OF PILES	2"

CAST IN PLACE CONCRETE

1. Details of fabrication of reinforcement, handling, and placing of the concrete, construction of forms and placement of reinforcement not otherwise covered by the Plans and Specifications, shall comply with the ACI Code requirements of the latest revised date.
2. Cold weather concreting shall be in accordance with ACI 306. Cold weather is defined as a period when for more than 3 successive days the average daily air temperature drops below 40F and stays below 50F. The Contractor shall maintain a copy of this publication on site.
3. Hot weather concreting shall be in accordance with ACI 305. Hot weather is defined as any combination of the following conditions that tends to impair the quality of the freshly mixed or hardened concrete: high ambient temperature, high concrete temperature, low relative humidity, wind speed, or solar radiation. The Contractor shall maintain a copy of this publication on site.
4. A certified Testing Agency shall be retained to perform industry standard testing including measurement of slump, air temperature, concrete cylinder testing, etc. to insure conformance with the Contract Documents. Submit reports to the Architect/Engineer.
5. FINISHING OF SLABS: After screeding, bull floating and floating operations have been completed, apply final finish as indicated below, and as described in the Division 3 Cast In Place Concrete Specification of the Project Manual.

A. Floor Slabs	Trowel Finish
B. Ramps, Stairs, & Sidewalks	Broom Finish

Sample Finishes: See the Specifications for sample and mockup requirements, if any.

Floor Tolerances: See the Specifications for specified Ff and Fl tolerances. Ff and Fl testing shall be performed by the Testing Agency in accordance with ASTM E 1155. Results, including acceptance or rejection of the work will be provided to the Contractor and the Architect/Engineer within 48 hours after data collection. Remedies for out-of-tolerance work shall be in accordance with the Specifications. When approved by the SER, measurement of the gaps beneath a 10-foot straightedge may be used in lieu of Ff and Fl testing. Approval must be obtained in writing prior to the beginning of concrete operations.

6. FINISHING OF FORMED SURFACES: Finish formed surfaces as indicated below, and as described in the Division 3 Cast In Place Concrete Specification of the Project Manual.

A. Sides of Footings	Rough Form Finish
----------------------	-------------------
7. Sawn or tooled control/contraction joints shall be provided in all slabs on grade. Exterior slabs and interior slabs without columns shall have joints spaced a maximum of 15'-0" apart. Layout joints so that maximum aspect ratio (ratio of long side to short side) does not exceed 1.5.
8. Where vinyl composition tile, vinyl sheets goods, thin-set epoxy terrazzo, or other similar material is the specified finish floor material, the Contractor shall coordinate the locations of control/contraction and construction joints with the Finish Flooring Contractor. Submit a dimensioned plan showing joint locations and proposed sequence of floor pours.
9. Joints in slabs to receive a finish floor may remain unfilled, unless required by the Finish Flooring Contractor. All exposed slabs shall be filled with sealant as specified in Division 7. Defer filling of joints as long as possible, preferably a minimum of 4 to 6 weeks after the slab has been cured. Prior to filling, remove all debris from the slab joints, then fill in accordance with the manufacturer's recommendations.
10. Refer to the Architectural Drawings for locations and details of reveals (1" maximum depth) in exposed walls.
11. Refer to the Architectural Drawings for chamfer requirements for corners of concrete. Where not indicated, provide 3/4" chamfers on exposed corners of concrete except those abutting masonry.
12. Refer to the Architectural Drawings for exact locations and dimensions of recessed slabs, ramps, stairs, thickened slabs, etc. Slope slabs to drains where shown on the Architectural and Plumbing Drawings.
13. Sidewalks, stoops, aprons, drives, exterior retaining walls, and other site concrete are not indicated on the Structural Drawings. Refer to the Site/Civil and Architectural Drawings for locations, dimensions, elevations, jointing and finishing details.

CONCRETE MIX CLASSES	
FOOTINGS	
COMPRESSIVE STRENGTH	4000 PSI
MAXIMUM WATER/CEMENT RATIO	0.50
AIR CONTENT	0-3 PERCENT
WATER-REDUCING ADMIXTURE	REQUIRED
SLUMP	4" ± 1"
INTERIOR CONCRETE SLABS ON GRADE	
COMPRESSIVE STRENGTH	4000 PSI
MINIMUM CEMENTITIOUS MATERIAL CONTENT	517 LB/CU YD
AIR CONTENT	0-3 PERCENT
WATER-REDUCING ADMIXTURE	REQUIRED
SLUMP	4" ± 1"
EXTERIOR CONCRETE SUBJECT TO FREEZE-THAW	
COMPRESSIVE STRENGTH	4000 PSI
MINIMUM CEMENTITIOUS MATERIAL CONTENT	564 LB/CU YD
AIR CONTENT	6 ± 1 PERCENT
WATER-REDUCING ADMIXTURE	REQUIRED
SLUMP	4" TO 6"
COARSE AGGREGATE	CRUSHED STONE
INCREASE COMPRESSIVE STRENGTH TO 4500 PSI FOR EXTERIOR REINFORCED CONCRETE SUBJECT TO THE USE OF DEICERS.	
LEAN CONCRETE FILL	
COMPRESSIVE STRENGTH	2000 PSI
MAXIMUM WATER/CEMENT RATIO	0.65
AIR CONTENT	OPTIONAL
WATER-REDUCING ADMIXTURE	OPTIONAL
SLUMP	4" ± 1"

1. SLUMP:

MIXES CONTAINING TYPE A WRDA	5 IN. MAXIMUM
MIXES CONTAINING MID-RANGE WRDA	5-6 1/2" IN.
MIXES CONTAINING HIGH-RANGE WRDA	5-8 IN.
2. SPECIFIED MINIMUM CEMENTITIOUS MATERIAL CONTENTS ARE BASED ON THE USE OF WATER REDUCING ADMIXTURES.
3. INCLUDE AN AIR-ENTRAINING ADMIXTURE FOR ALL CONCRETE EXPOSED TO FREEZING AND THAWING IN SERVICE AND FOR ALL CONCRETE EXPOSED TO COLD WEATHER DURING CONSTRUCTION, BEFORE ATTAINING ITS SPECIFIED DESIGN COMPRESSIVE STRENGTH. REF. ACI 306 FOR DEFINITION OF COLD WEATHER.
4. CLASS C FLY ASH MAY BE USED AS A CEMENT SUBSTITUTE WITH A MAXIMUM 20% SUBSTITUTION RATE ON A POUND-PER-POUND BASIS.
5. FOR CONCRETE TO BE CAST DURING COLD WEATHER, THE MAXIMUM SUBSTITUTION RATE FOR SLAG CEMENT SHALL BE 30%. IF SLAG CEMENT AND FLY ASH ARE USED IN THE SAME MIX, THE MAXIMUM SUBSTITUTION RATES SHALL COMPLY WITH A RATIO OF PORTLAND CEMENT/SLAG/FLYASH OF 70%/20%/10%.
6. PROPORTION CONCRETE MIXES TO PROVIDE WORKABILITY AND CONSISTENCY TO PERMIT CONCRETE TO BE WORKED READILY INTO THE CORNERS AND ANGLES OF THE FORMS AND AROUND REINFORCEMENT BY THE METHODS OF PLACEMENT AND CONSOLIDATION TO BE EMPLOYED, WITHOUT SEGREGATION AND EXCESSIVE BLEEDING.
7. ADJUSTMENTS TO THE APPROVED MIX DESIGNS MAY BE REQUESTED BY THE CONTRACTOR WHEN JOB CONDITIONS, WEATHER, TEST RESULTS, OR OTHER CIRCUMSTANCES WARRANT. THESE REVISED MIX DESIGNS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR APPROVAL PRIOR TO USE.

PROJECT HAMILTON CENTER CHILLER PLANT & WOMEN'S LOCKER ROOM SHELL ADDITION

Project Address:
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Columbus, IN 47201

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739 22nd Street
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Contact: Casey Ritz
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CONSTRUCTION MANAGER as ADVISOR

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ARCHITECT

atelierRISTING LLC
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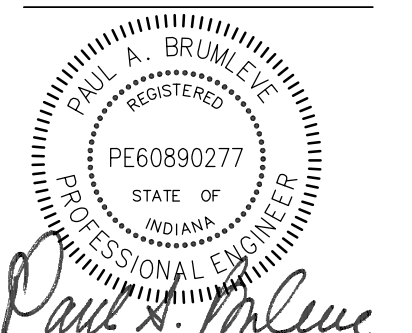
STRUCTURAL ENGINEER

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317.423.1550

CONSTRUCTION DOCUMENTS DATE

27 Nov. 2024

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GENERAL NOTES

S.02

REINFORCED MASONRY NOTES

- All construction of reinforced masonry walls to be in accordance with the Building Code Requirements for Concrete Masonry Structures (ACI 530) and Commentary.
 - f'm = 2000 PSI
 - Maximum height of masonry lift: 5'-0"
 - Maximum height of grout lift: 5'-0"
 - See the Specifications for additional masonry wall information.
- CONCRETE BLOCK: Minimum compressive test strength on the net cross-sectional area: 2800 PSI.
- MORTAR: Type S required.
- GROUT: ASTM C476, 2500 PSI with a slump of 8" min. and 11" max.
- REINFORCING: fy = 60000 PSI with a min. lap of 48 bar diameters.

LINTEL SCHEDULE

- Where lintels are not specifically shown or noted on the Structural or Architectural Drawings, provide the following lintels over all openings and recesses in both interior and exterior, non-load bearing walls.

A) Brick:	Masonry Opening	Angle Size
	Up to 5'-0"	L4 x 4 x $\frac{5}{16}$
	Over 5'-0" & up to 7'-0"	L6 x 4 x $\frac{5}{16}$
	Over 7'-0" & up to 12'-0"	L7 x 4 x $\frac{3}{8}$

All angles are LLV (long leg vertical), unless noted otherwise. Provide 1" of bearing per foot of span each end with minimum 8". All steel lintels shall be galvanized.
- Block: For openings up to 8'-0" long exposed in the finished room, use lintel block filled with grout. Grout all exposed joints and reinforce as follows:
 - For 6" thick block: 1-#5 bar
 - For 8" thick block: 2-#5 bars
 - For 10" thick block: 2-#6 bars
 - For 12" thick block: 2-#6 bars
- Block: For openings over 8'-0" & up to 12'-0" long exposed in the finished room, use lintel block filled with grout. Grout all exposed joints and reinforce per the "Long Masonry Lintel Detail" on the Typical Masonry Detail Drawing.

STRUCTURAL STEEL NOTES

- Structural steel construction shall conform to the American Institute of Steel Construction "Specification for Structural Steel Buildings".
- All structural wide flange members shall be ASTM A992, Fy=50 ksi.
- All plates, channels, bars, angles, and rods shall be ASTM A36, unless noted.
- All rectangular structural tube members shall be ASTM A500, Grade C, Fy = 50 ksi unless noted.
- All round structural tube members shall be ASTM A500, Grade C, Fy=46 ksi unless noted.
- All structural pipe members shall be ASTM A53, Grade B, Fy=35 ksi unless noted.
- Details for design, fabrication and erection of all structural steel shall be in accordance with the latest AISC Standards, unless otherwise noted or specified.
- Provide temporary erection guying and bracing as required.
- Unless otherwise shown or noted on the Drawings, provide 8" minimum bearing each end for all loose lintels and beams.
- For loose lintels, masonry shelf angles and other such items generally not shown on the Structural Drawings, refer to the Architectural Drawings. See general notes on lintels this sheet for sizes, reinforcing, etc.
- Steel columns below grade shall be encased in a minimum of 4" concrete or pointed with 2 coats of asphaltum paint, unless otherwise shown.
- Fabricate simple span beams not specifically noted to receive camber so that after erection, any minor camber due to rolling or shop assembly be upward.
- Refer to the Division 5 Structural Steel Specification of the Project Manual for structural steel surface preparations and prime painting requirements.
- The Erector shall shim between parallel roof beams and joists with differential mill and induced cambers for level deck bearing.
- Provide cap plates/end plates to close off exposed, open ends of all tubular members, unless noted. Seal weld with partial penetration square groove welds for watertight condition.
- Typical beam-to-beam and beam-to-column connections shall be bearing type using A325 bolts, unless noted otherwise.
- Continuous bent plate and angle slab closures, roof edges, diaphragm chords, etc. around the perimeter of the floor and roof, as well as around openings shall be welded with a minimum $\frac{1}{4}$ " fillet weld x 3" long at 12" o.c., top & bottom, unless noted otherwise. Butt weld joints in continuous diaphragm chords for continuity. For continuous perimeter angles and bent plates perpendicular-to and connected to the top chords of joists, provide a minimum 3" of $\frac{1}{4}$ " weld at each joist. Continuous angle and bent plate closures may be shop-applied to the supporting structural members only when requested and approved in writing by the SER.

- A qualified independent Testing Agency shall be retained to perform inspection and testing of structural steel field weldments as follows:

WELD INSPECTION SCHEDULE

WELD TYPE	VT	MT	UT	PT	RT	COMMENTS
FILLET (SINGLE PASS)	25%	-	-	-	-	ROOT PASS AND FINISHED WELD
FILLET (MULTIPLE PASS)	50%	25%	-	-	-	
FLARE BEVEL/FLARE V	25%	-	-	-	-	
GROOVE (PARTIAL PENETRATION)	100%	-	100%	-	-	REFERENCE NOTE 'E' BELOW
GROOVE (FULL PENETRATION)	100%	-	100%	-	-	ALL FULL PENE-TRATION WELDS

- Test procedures:
 - VT = Visual Test (inspection)
 - MT = Magnetic Particle Test: ASTM E109, cracks or incomplete fusion or penetration not acceptable.
 - UT = Ultrasonic Test: ASTM E164.
 - PT = Penetrant Test, ASTM E165.
 - RT = Radiographic Test, ASTM E94 and ASTM E142, min. quality level 2-21.
- Acceptance standards in AWS D1.1 shall be followed for each test procedure.
- Test procedures may be substituted to meet feasibility requirements of test based upon weld geometry or other factors with the approval of the SER.
- Samples shall occur at random locations; additional tests may be required at locations noted on the Drawings.
- Groove welds include square, bevel, V, U, and J grooves including single and double pass types.
- Partial penetration square groove welds at end seal plates of tubular members do not require inspection.
- Weld Procedure Specifications (WPS) shall be produced and maintained in accordance with AWS D1.1. The independent Testing Agency shall have access to all WPS's during the course of testing and inspection.
- For highly-restrained welded joints, especially in thick plates and/or heavy structural shapes, detail the welds so that shrinkage occurs as much as possible in the direction the steel was rolled. Refer to the AISC Manual for preferred welded-joint arrangements that reduce the possibility for lamellar tearing. Members scheduled to receive highly-restrained connections shall be tested by the independent Testing Agency by Ultrasonic Testing prior to commencing welding.
- In addition to inspection requirements for fillet welds in Table above, 100% of field welding of diagonal bracing members to gusset plates shall be visually inspected (VT).

STEEL DECK NOTES

- All steel deck material, fabrication and installation shall conform to the Steel Deck Institute "SDI SHORT FORM SPECIFICATIONS" and "SDI CODE OF STANDARD PRACTICE," current edition, unless noted.
- Provide members for deck support at all deck span changes. Provide L3x3x $\frac{3}{16}$ deck support at all columns where required.
- All deck shall be provided in a minimum of 3-span lengths where possible.
- All welding of steel deck shall be in conformance with AWS Specification D1.3. Provide welding washers for all floor decks less than 22 gauge in thickness.
- Mechanical fasteners may be used in lieu of welding, providing fasteners meet, or exceed the strength of the specified welds. Submit fastener design data to the SER for review.
- Do not suspend any items, such as ductwork, mechanical and electrical fixtures, ceilings, etc. from steel deck.
- Roof deck sidelaps shall be attached at ends of cantilevers and at a maximum spacing of 12" o.c. from cantilevered deck ends. The roof deck must be completely fastened to the supports and at sidelaps before any loads is applied to the cantilever.
- Submit shop drawings for general conformance to the design concept in accordance with Specifications in the Project Manual. Erection drawings shall show type of deck, shop finish, accessories, method of attachment, edge details, deck openings and reinforcement, and sequence of installation.
- Installation holes shall be sealed with a closure plate 2 gauges thicker than deck and mechanically fastened to the deck. Steel deck holes visible from below will be rejected. Deck units that are bent, warped or damaged in any way which would impair the strength and appearance of the deck shall be removed from the site.
- The Erector shall shim between parallel roof beams and joists with differential mill and induced cambers for level deck bearing.

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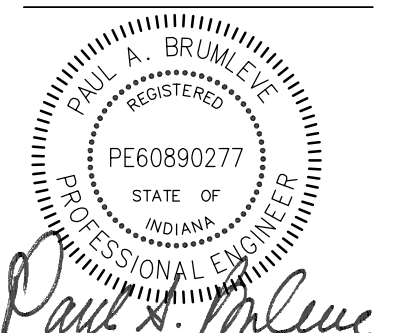
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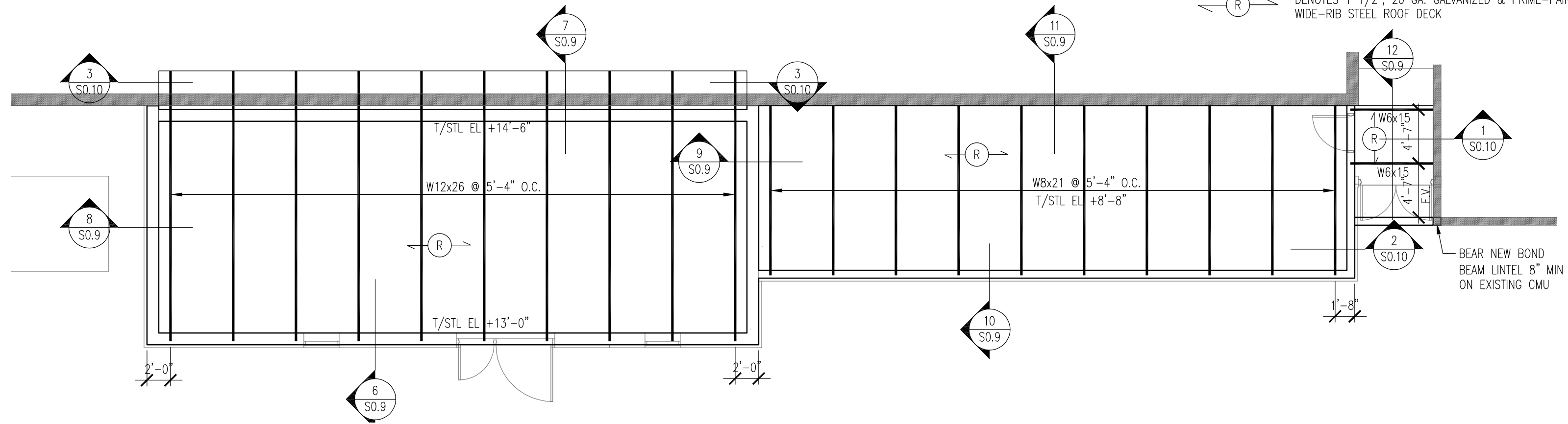
GENERAL NOTES

PLAN NOTES

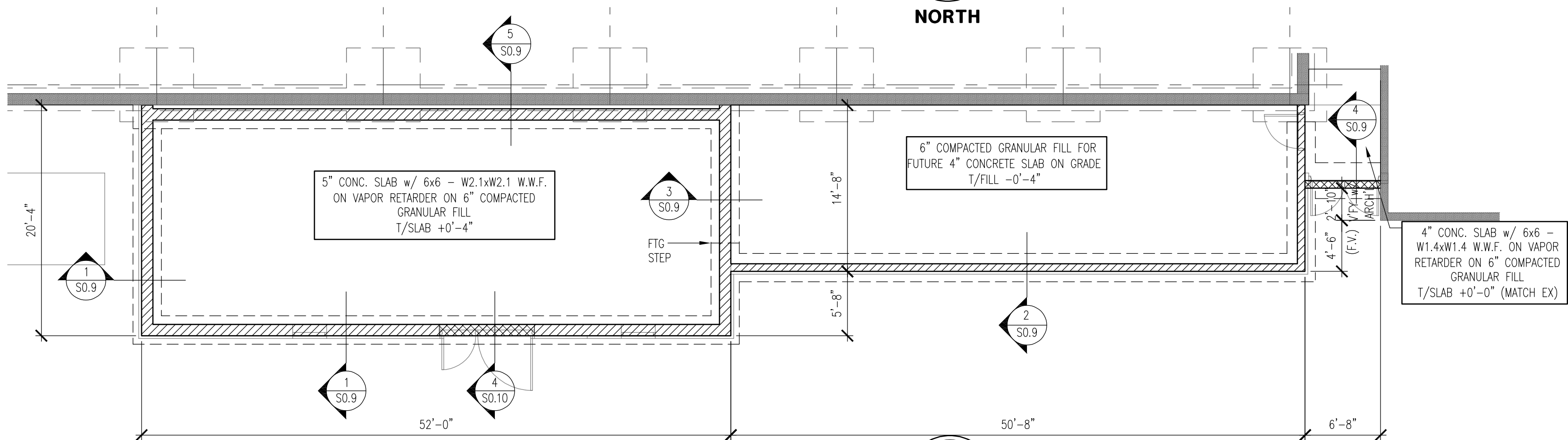
- REF. S0.1-0.4 FOR STRUCTURAL NOTES & DESIGN DATA.
- ALL CONTRACTORS ARE REQUIRED TO COORDINATE THEIR WORK WITH ALL DISCIPLINES TO AVOID CONFLICTS. THE MECHANICAL, ELECTRICAL, AND PLUMBING ASPECTS ARE NOT IN THE SCOPE OF THESE DRAWINGS. THEREFORE, ALL REQUIRED MATERIALS AND WORK MAY NOT BE INDICATED.
- COORDINATE EXACT SIZE & LOCATION OF ALL MECHANICAL OPENINGS IN FOUNDATION WALLS WITH THE MECHANICAL, ELECTRICAL & PLUMBING CONTRACTORS.
- ALL ELEVATIONS ARE REFERENCED FROM THE FIRST FLOOR FINISH FLOOR ELEVATION 0'-0".
- REF. ARCH. DRAWINGS FOR ALL DIMENSIONS NOT SHOWN. CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION AND IMMEDIATELY NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES.
- REF. S0.4-0.6 FOR TYPICAL FOUNDATION DETAILS.
- PERIMETER WALL AND COLUMN FOOTINGS SHALL BE LOWERED AND/OR SLEEVED TO PASS BELOW PLUMBING LINES (I.E. SANITARY & STORM SEWERS, WATER LINES, ETC.) SHOWN ON THE PLUMBING DRAWINGS. PROVIDE FOOTING STEPS AS REQUIRED PER THE TYPICAL DETAILS ON SXXX.
- ALL SLAB RECESSES SHALL BE LOCATED PER THE ARCHITECTURAL DRAWINGS. COORDINATE DEPTHS OF ALL SLAB RECESSES WITH THE ARCHITECTURAL DRAWINGS AND/OR THE FLOORING SUPPLIER.
- COORDINATE REINFORCING DOWELS FOR CMU VERTICAL REINFORCING WITH REINF. NOTED ON PLANS & SECTIONS.
- GROUT ALL CORES OF CMU BELOW FINISH FLOOR SOLID.
- ALL EX. CONSTRUCTION SHOWN IN PLAN AND/OR SECTION WAS DERIVED FROM EXISTING DRAWINGS AND MUST BE FIELD VERIFIED. IF ANY DISCREPANCIES ARE DISCOVERED BETWEEN INFO. SHOWN ON THE DRAWINGS AND ACTUAL CONDITIONS IMMEDIATELY CONTACT ARCHITECT/ENGINEER FOR DIRECTION BEFORE PROCEEDING WITH THE WORK.
- PROVIDE CONTROL/CONTRACTION JOINTS IN SLABS ON GRADE (REF. THE TYPICAL DETAILS ON SXXX). ALL JOINTS IN SLABS TO RECEIVE THIN OR THICK-SET
- FOUNDATION PLAN LEGEND:

F.F.	DENOTES FINISH FLOOR
T/'X'	DENOTES TOP OF FTG., GRADE BEAM, SLAB, PIER, ETC.
B/'X'	DENOTES BOTTOM OF FTG., GRADE BEAM, ETC.
C.J.	DENOTES SLAB ON GRADE CONTROL/CONTRACTION JOINT
- ALL WALLS SHALL BE LAID OUT FROM ARCHITECTURAL DWGS.
- COORDINATE EXACT SIZE & LOCATION OF ANY MECHANICAL OPENINGS IN WALLS WITH THE M.E.P. CONTRACTOR. LOCATION & SIZE OF ALL DUCT OPENINGS, GRILLS, ETC. SHALL BE VERIFIED PRIOR TO CONSTRUCTION.
- ALL ELEVATIONS SHOWN ON PLAN INDICATE TOP OF STEEL BEAM UNLESS NOTED OTHERWISE.
- PROVIDE ANGLE ROOF FRAME @ ALL ROOF DRAINS, ROOF HATCHES & MECH. OPENINGS IN ROOF PER "TYPICAL ROOF OPENING FRAME" DETAIL 3/SO.8. COORD. EXACT NUMBER, LOCATIONS & SIZE w/ THE APPROPRIATE CONTRACTORS AND THE ARCH. DWGS.
- SEE ARCH. DWGS. FOR CMU & BRICK EXPANSION/CONTROL JOINT LOCATIONS.
- TYPICAL CMU WALL REINFORCEMENT SHALL BE #6 @ 32" O.C. UNLESS NOTED OTHERWISE ON PLANS OR DETAILS.
- FRAMING PLAN LEGEND:

F.F.	DENOTES FINISH FLOOR
FV	DENOTES ITEMS TO BE FIELD VERIFIED
T/'X'	DENOTES TOP OF STEEL, SLAB, ETC.
EX.	DENOTES EXISTING CONSTRUCTION
(R)	DENOTES 1 1/2", 20 GA. GALVANIZED & PRIME-PAINTED WIDE-RIB STEEL ROOF DECK



2 ROOF FRAMING PLAN
 S.04 SCALE: 1/8" = 1'-0"
 NORTH



1 FOUNDATION PLAN
 S.04 SCALE: 1/8" = 1'-0"
 NORTH

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 CHILLER PLANT
 & WOMEN'S LOCKER ROOM SHELL
 ADDITION

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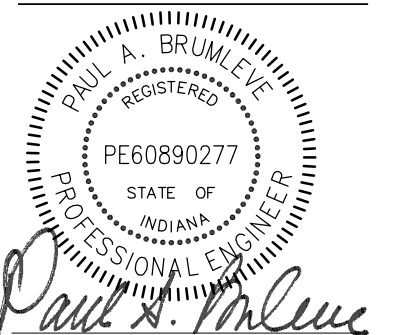
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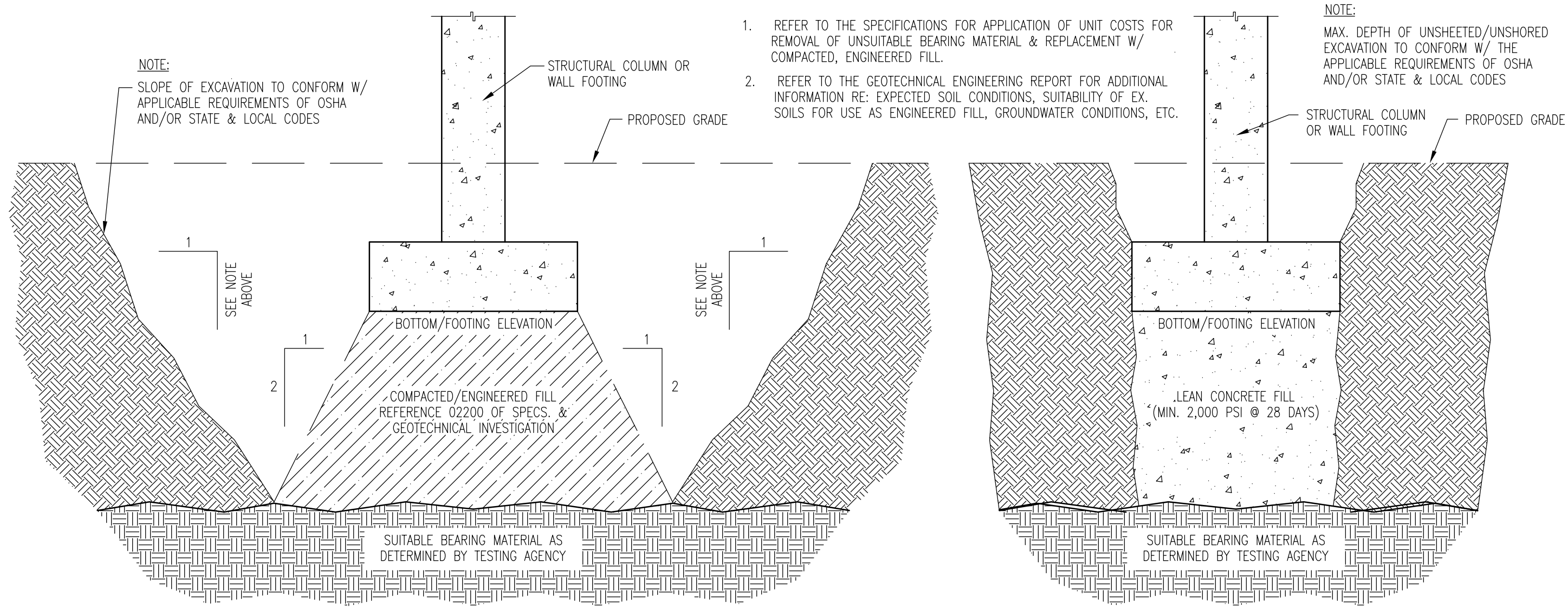
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FOUNDATION & FRAMING PLANS

S.04

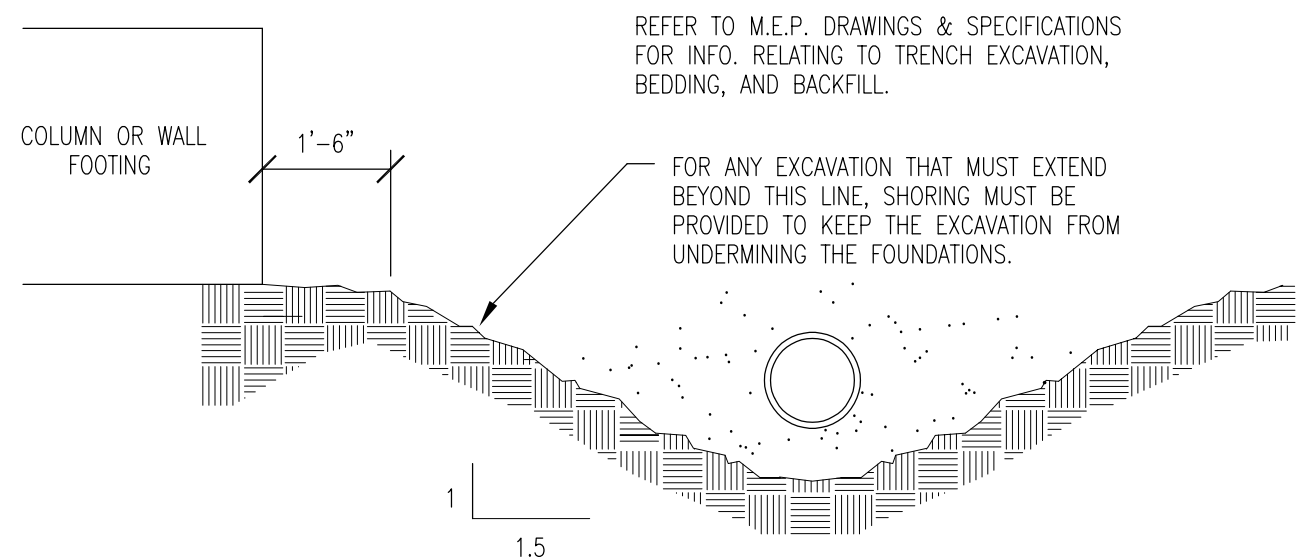


COMPACTED FILL

LEAN CONCRETE FILL

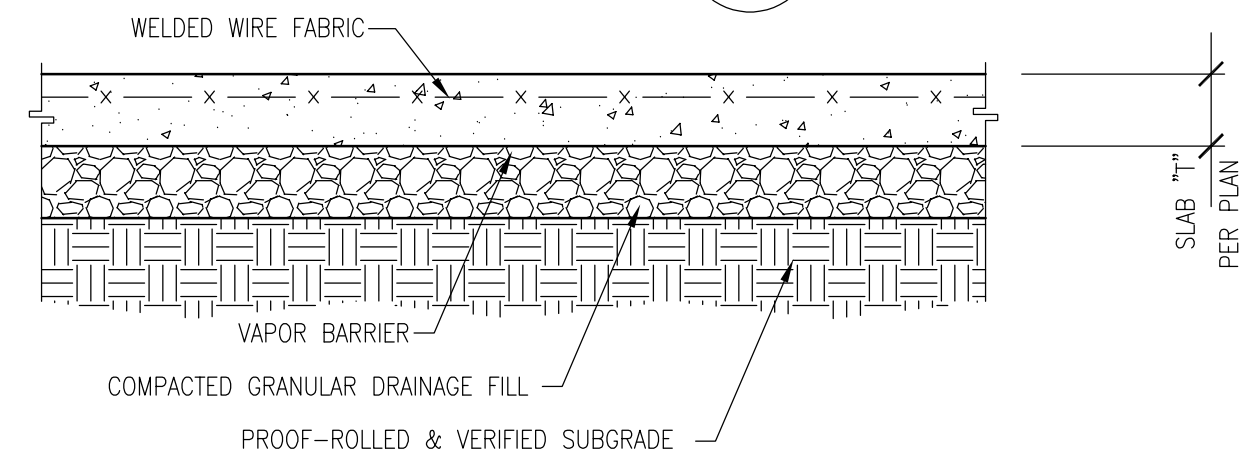
OVEREXCAVATION DETAILS

1
S0.5



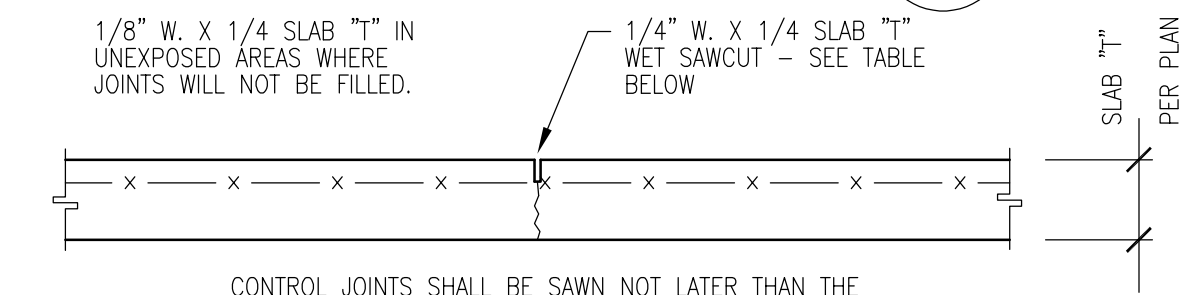
EXCAVATION LIMITS DETAIL

2
S0.5



SLAB ON GRADE CONSTRUCTION

3
S0.5



SLAB CONTROL/CONTRACTION JOINT

4
S0.5

TEMP, F ⁰	TIME, HOURS
< 40 ⁰	16
50 ⁰	14
60 ⁰	8 1/2
70 ⁰	5 1/2
80 ⁰	4
90 ⁰	3

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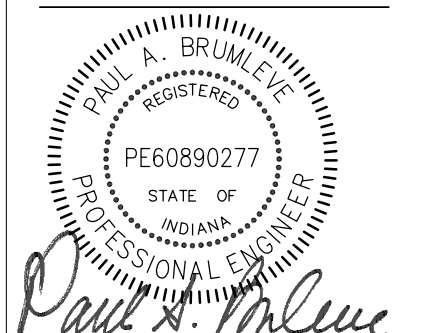
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TYPICAL DETAILS

S.05

NOTE:

MAINTAIN MIN. #5@48" O.C. VERTICAL REINF. AND WITHIN 16" OF ENDS OF WALLS (INCLUDING AT CMU CONTROL JOINTS) UNLESS NOTED OTHERWISE ON PLANS OR DETAILS.

SEE PLAN & SECTIONS FOR VERTICAL REINFORCING SIZE & SPACING. LAP BARS 48 DIA. AT SPLICES

BLOCK CORES W/ REINF. STEEL TO BE FILLED WITH GROUT THE FULL HEIGHT OF WALL

LADDER-TYPE HORIZONTAL JOINT REINF. @ 16" O.C. VERTICALLY (DISCONTINUOUS AT CONTROL JOINTS)

REDUCE SPA. TO 8" AT PARAPETS

CONCRETE FOOTING

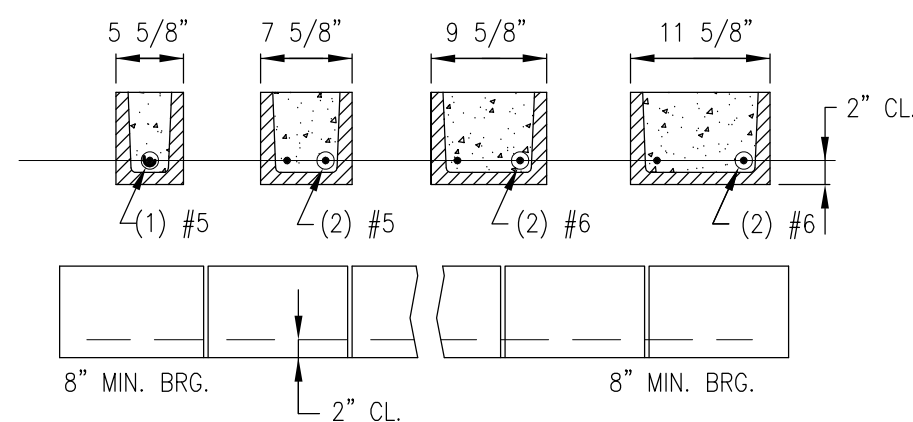
FULLY BED MORTAR JOINTS AT STARTER COURSE OFF FOOTINGS WHERE CELLS ARE NOT GROUTED

CMU SASH BLOCK W/ CRUCIFORM RUBBER OR PVC CONTROL JOINT, SEE SPECIFICATIONS. SEE ARCHITECTURAL DRAWINGS FOR JOINT LOCATIONS

REINFORCED MASONRY DETAIL

NO SCALE

1
S0.6



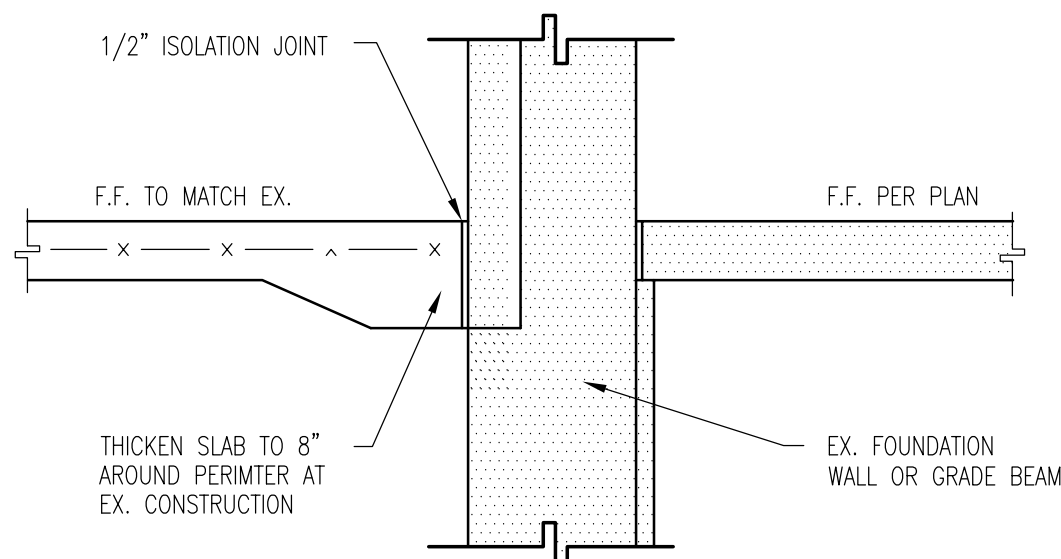
CMU LINTEL NOTES:

1. FILL IS 2,500 PSI (MINIMUM) GROUT.
2. PROVIDE 1" BRG. PER FOOT OF SPAN WITH 8" MIN.
3. LINTELS SHALL BEAR ON SOLIDLY GROUTED CMU
4. THIS SCHEDULE DOES NOT APPLY TO LOAD BEARING WALLS, UNLESS NOTED OTHERWISE.
5. BOND PATTERN OF LINTEL TO BE RUNNING BOND, U.N.O.
6. BOTTOM OF LINTEL SHALL BE SMOOTH MASONRY WITH NO CORES EXPOSED.
7. CONTRACTOR TO PROVIDE TEMPORARY SHORING UNTIL MASONRY HAS PROPERLY SET (3 DAY MINIMUM).
8. PRECAST LINTELS MAY NOT BE SUBSTITUTED FOR BOND BEAM LINTELS IN THE FINISHED STRUCTURE.

TYPICAL CMU LINTEL DETAIL

NO SCALE

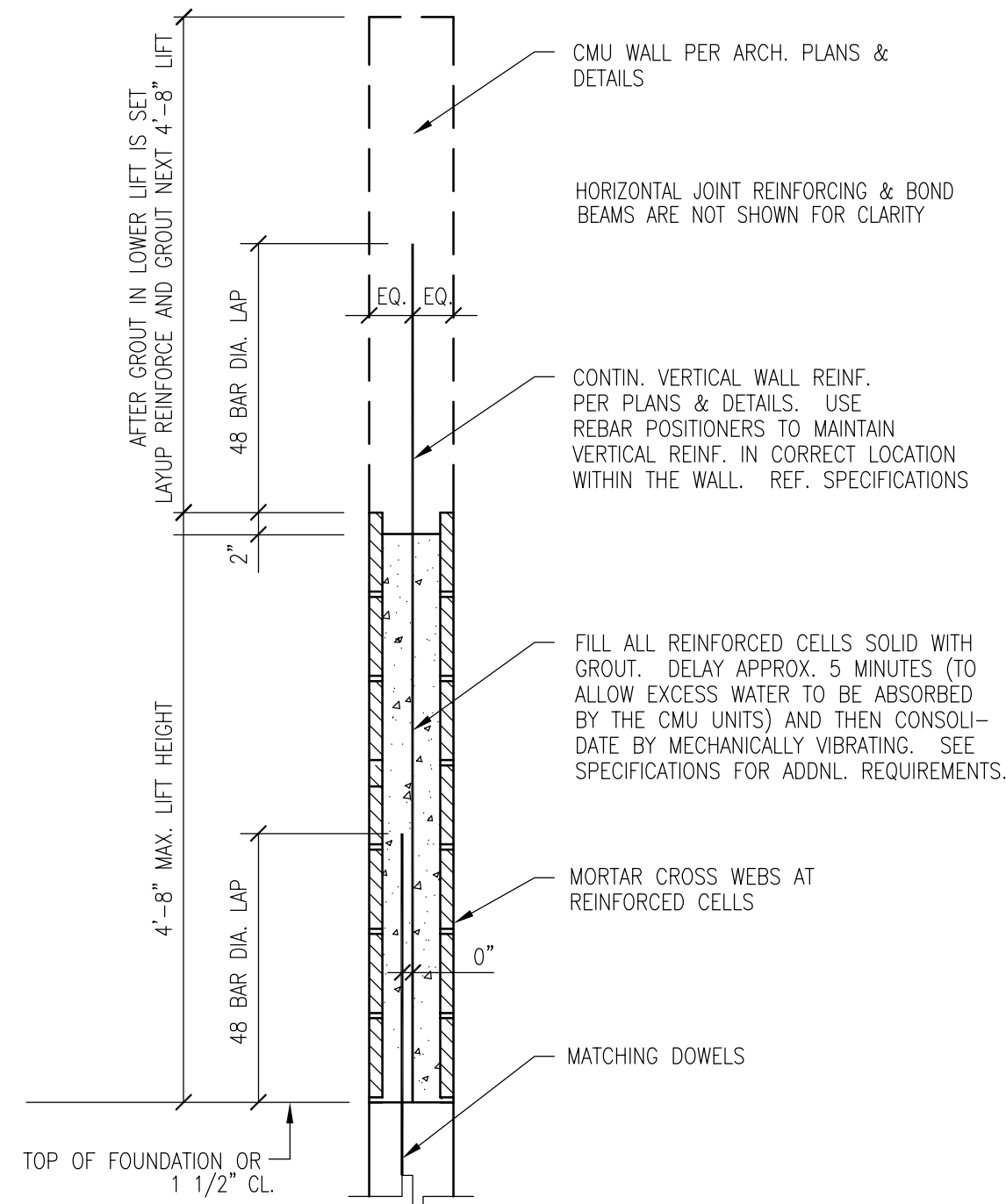
4
S0.6



NEW SLAB AT EXISTING WALL

NO SCALE

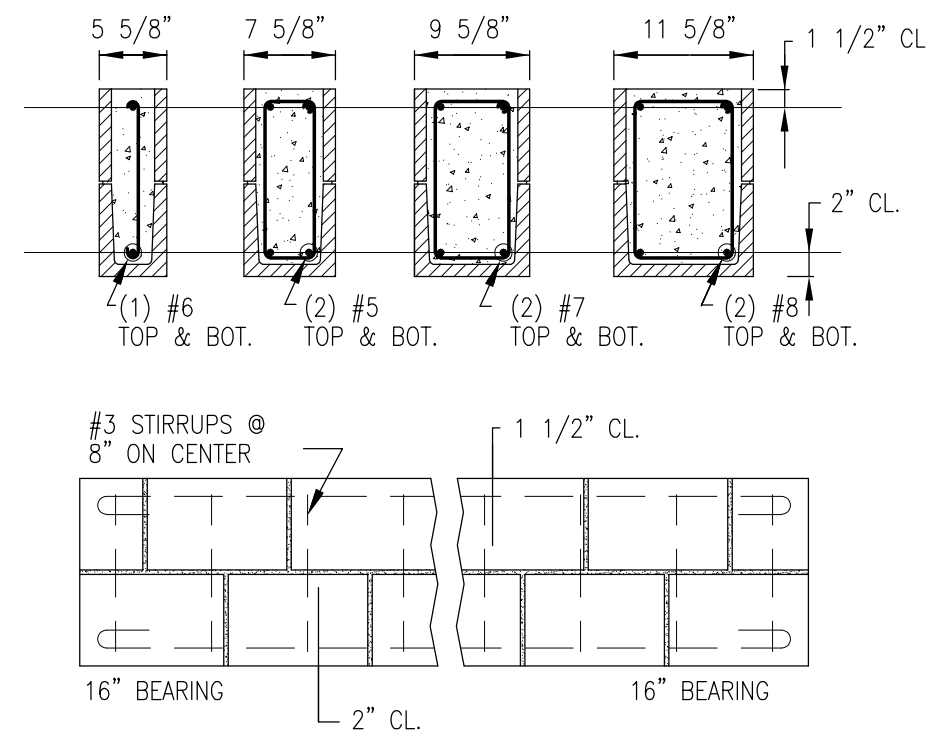
8
S0.6



LOW LIFT WALL CONSTRUCTION

NO SCALE

2
S0.6



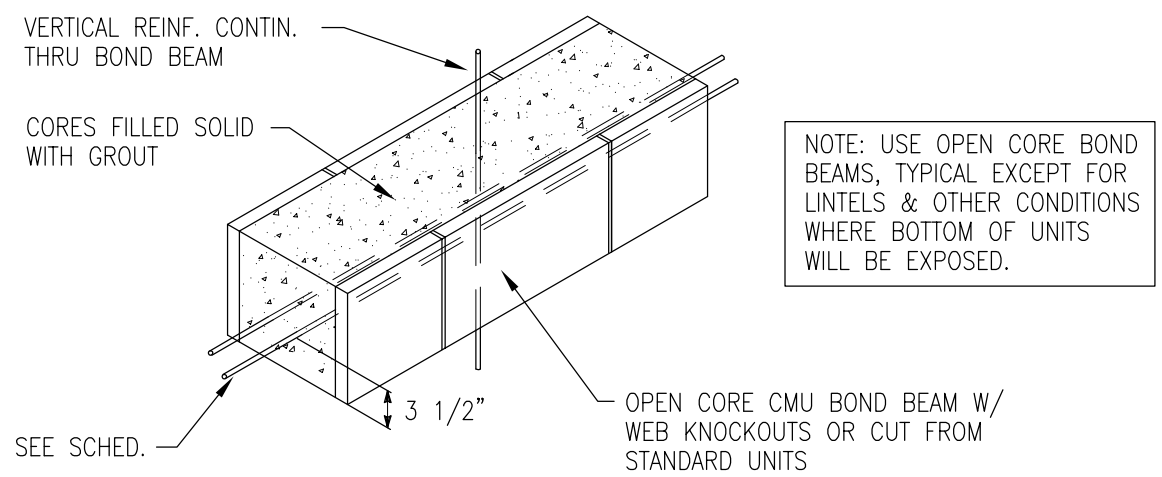
CMU LINTEL NOTES:

1. FILL IS 2,500 PSI (MINIMUM) GROUT.
2. ALL REBARS ARE HOOKED AT THE ENDS.
3. FOR TYPE OF CMU SEE THE SPECS.
4. LINTELS SHALL BEAR ON SOLIDLY GROUTED CMU
5. THIS SCHEDULE DOES NOT APPLY TO LOAD BEARING WALLS, UNLESS NOTED OTHERWISE.
6. BOND PATTERN OF LINTEL TO BE RUNNING BOND, U.N.O.
7. BOTTOM OF LINTEL SHALL BE SMOOTH MASONRY WITH NO CORES EXPOSED.
8. CONTRACTOR TO PROVIDE TEMPORARY SHORING UNTIL MASONRY HAS PROPERLY SET (3 DAY MINIMUM).

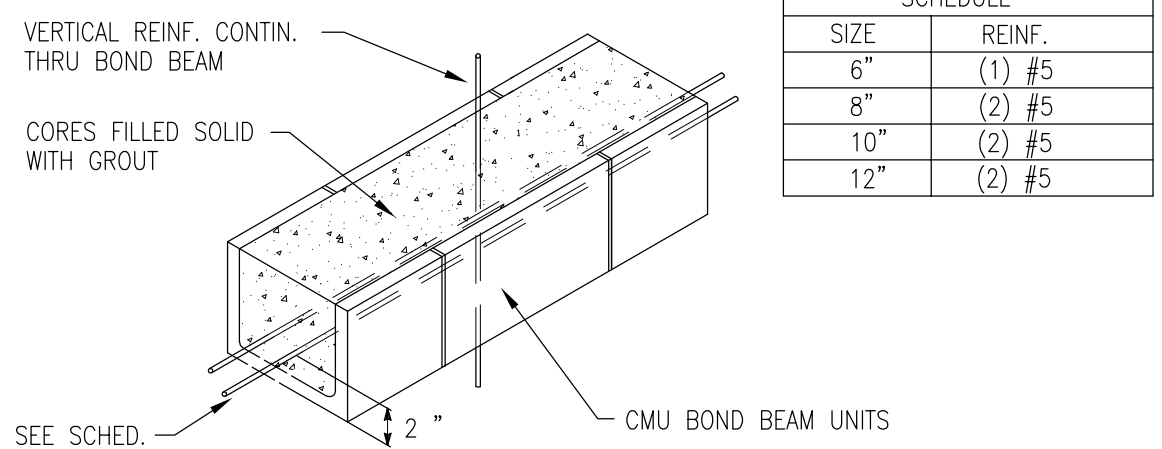
LONG CMU LINTEL DETAIL

NO SCALE

5
S0.6



NOTE: USE OPEN CORE BOND BEAMS, TYPICAL EXCEPT FOR LINTELS & OTHER CONDITIONS WHERE BOTTOM OF UNITS WILL BE EXPOSED.

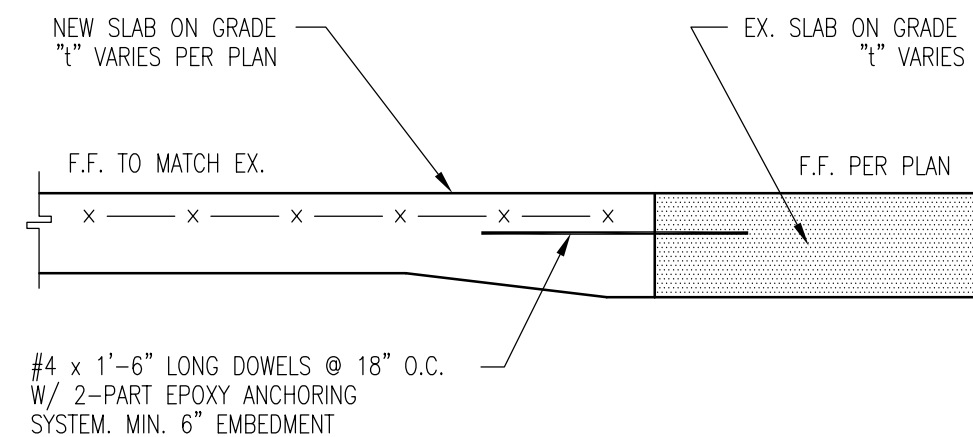


SCHEDULE	
SIZE	REINF.
6"	(1) #5
8"	(2) #5
10"	(2) #5
12"	(2) #5

CMU BOND BEAM DETAIL

NO SCALE

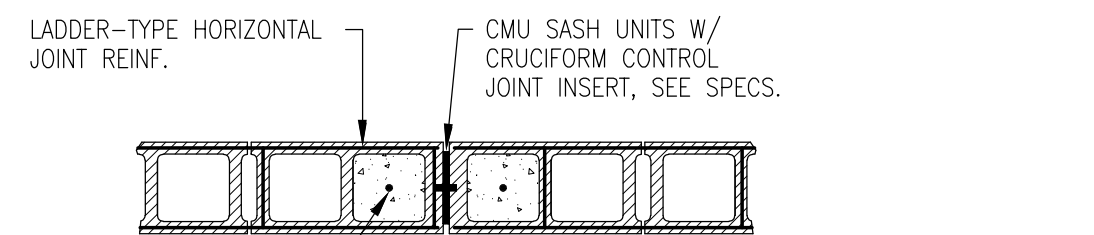
7
S0.6



NEW TO EX. SLAB DETAIL

NO SCALE

9
S0.6

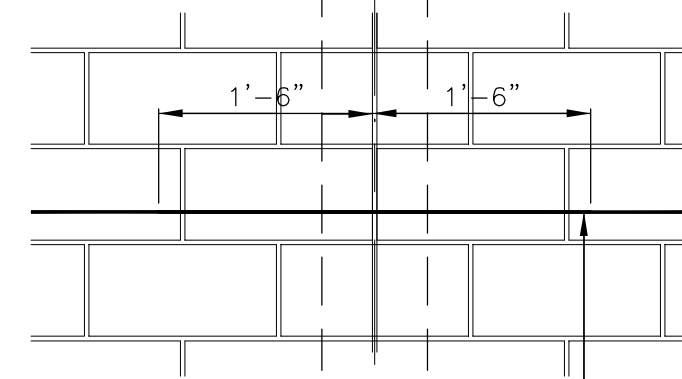


PLAN

VERTICAL WALL REINF. PER PLAN & SECTIONS

NOTE:

1. BOND BEAM REINFORCEMENT SHALL NOT BE LAPPED WITHIN 8'-0" OF CONTROL JOINT.
2. HORIZ. JOINT REINFORCEMENT TO BE DISCONTINUOUS AT CONTROL JOINTS.



ELEVATION

CMU CONTROL JOINT DETAIL

NO SCALE

3
S0.6

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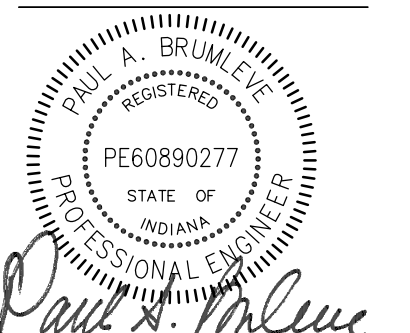
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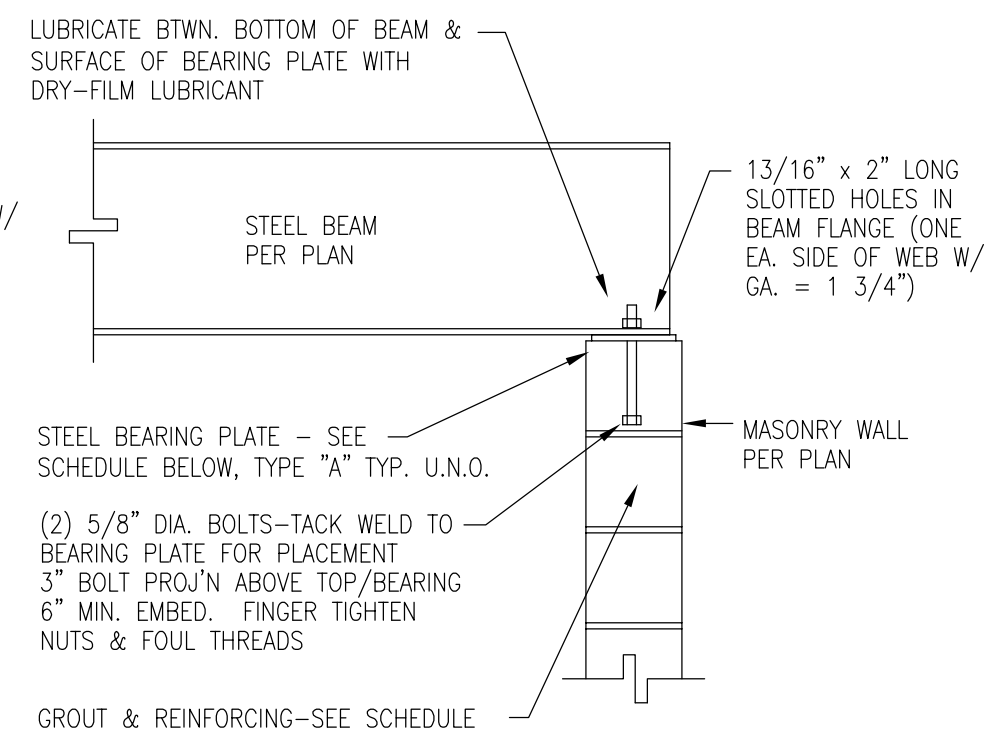
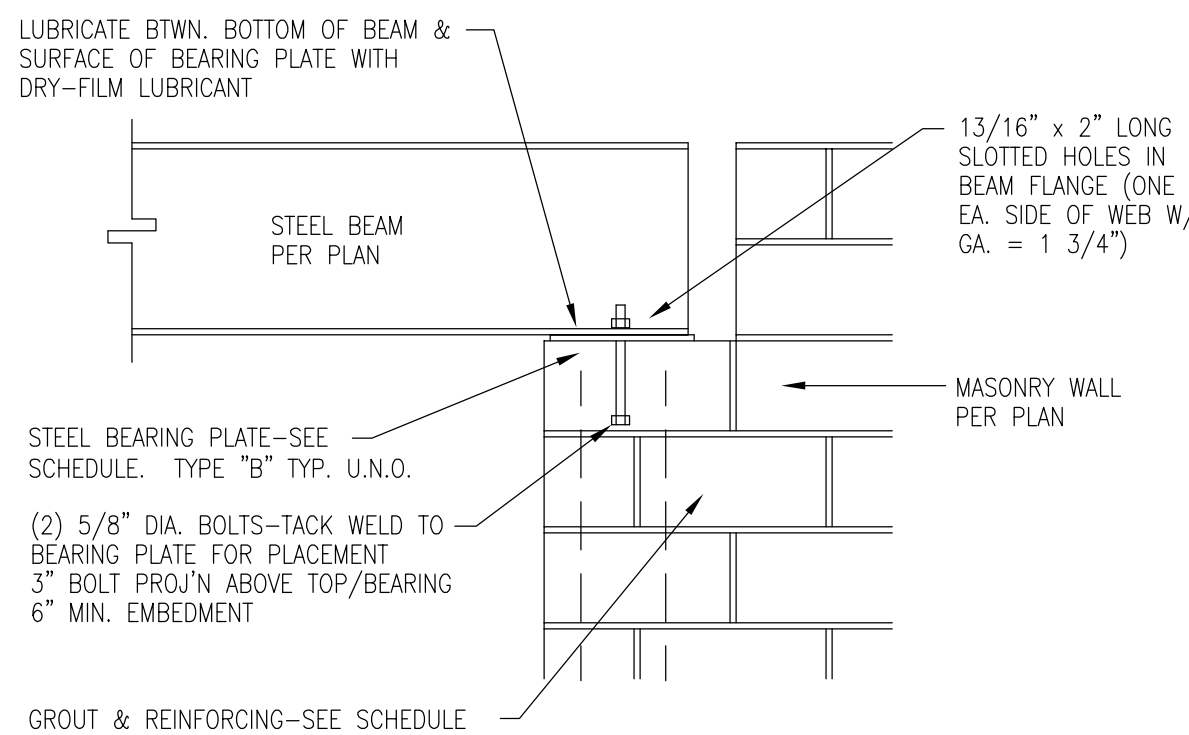
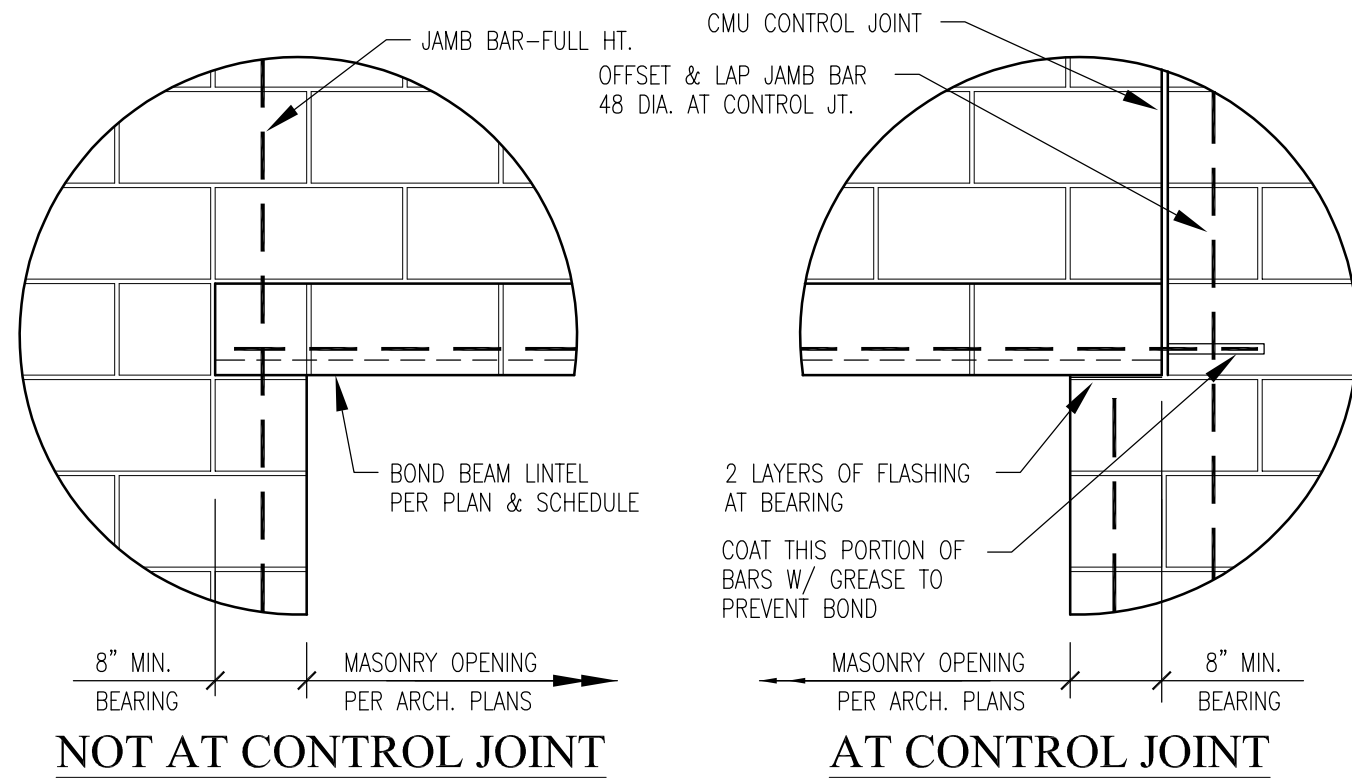
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TYPICAL DETAILS

S.06



BOND BEAM LINTEL BEARING DETAIL
NO SCALE

1
S0.7

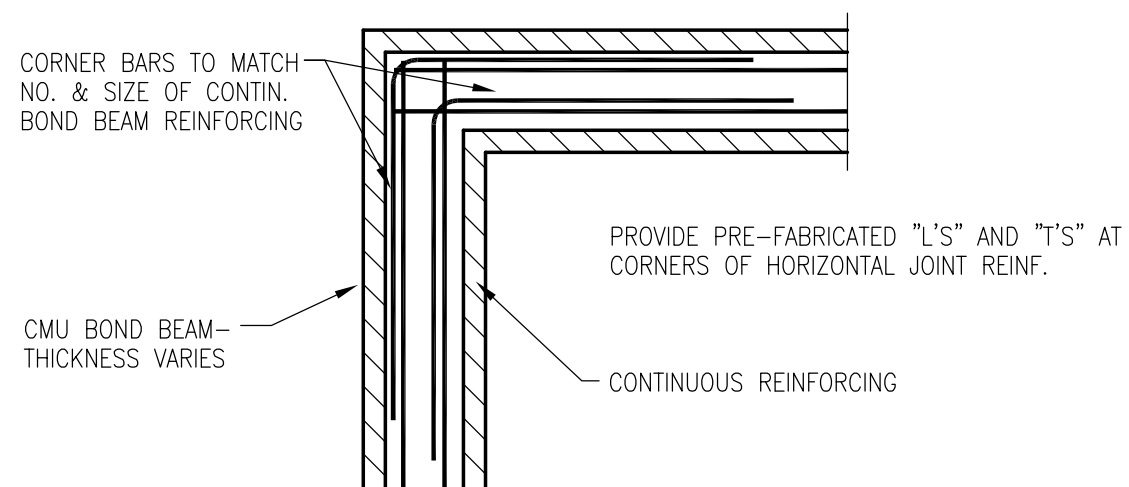
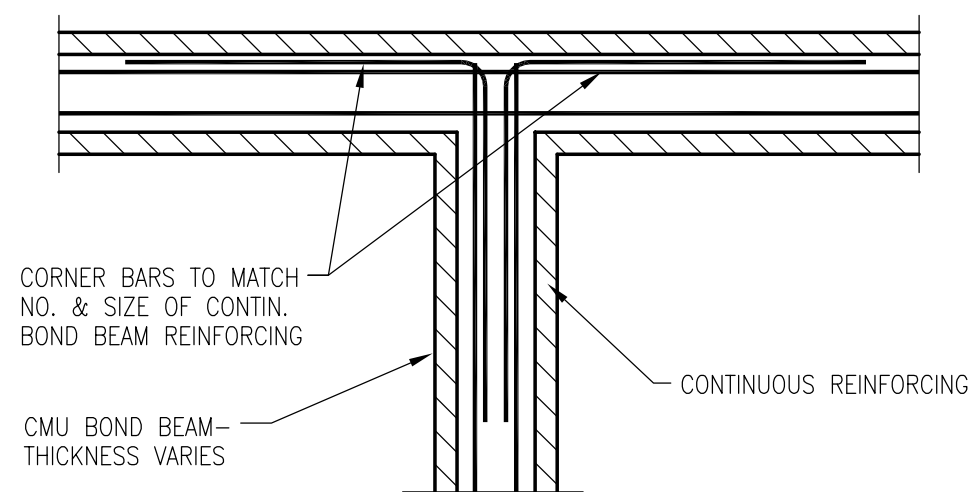
BEAM PARALLEL TO WALL

BEAM PERPENDICULAR TO WALL

BEARING PLATE SCHEDULE			
MARK	BEARING PLATE SIZE	GROUT REQUIREMENTS	REINFORCING
A	3/4 x 6 1/2 x 1'-0	MIN. 3 COURSES DEEP x 24" LONG	NONE UNLESS LOCATED AT DISCONTINUOUS END OF WALL
B	1/2 x 6 1/2 x 1'-0	GROUT SOLID TO FTG. x 24" LONG	2 VERTICALS FULL HEIGHT OF WALL.

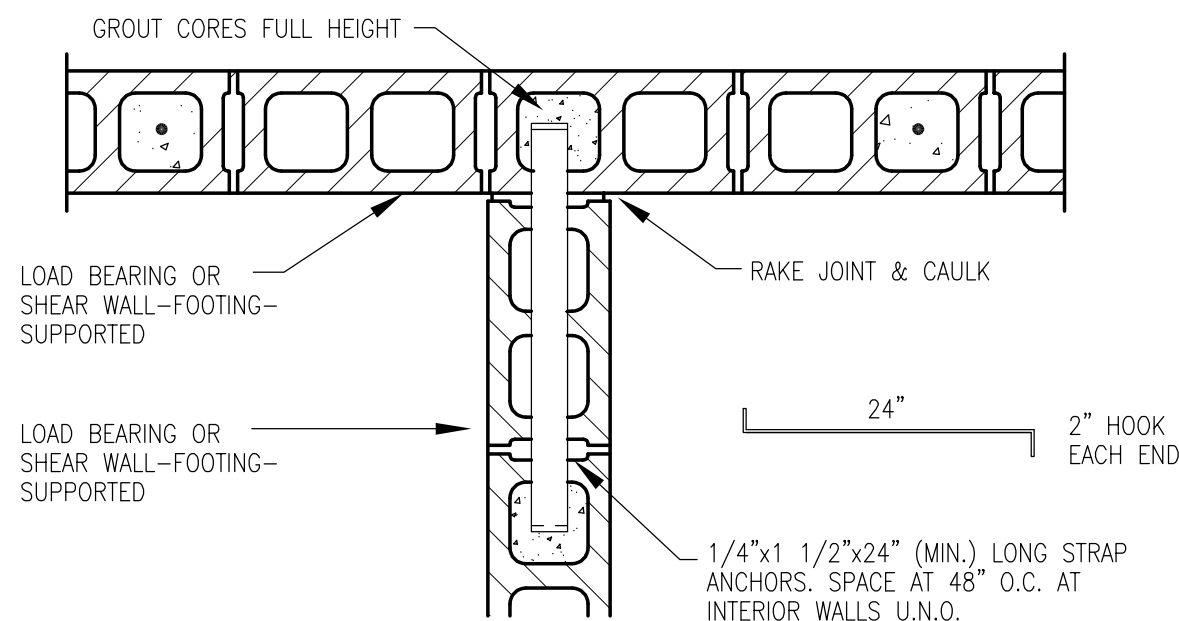
STEEL BEAM BEARING DETAILS
NO SCALE

2
S0.7



BOND BEAM INTERSECTION DETAILS
NO SCALE

3
S0.7



TYPICAL AT INTERSECTION BETWEEN FOOTING-SUPPORTED CMU WALLS

WALL INTERSECTION DETAIL
NO SCALE

4
S0.7

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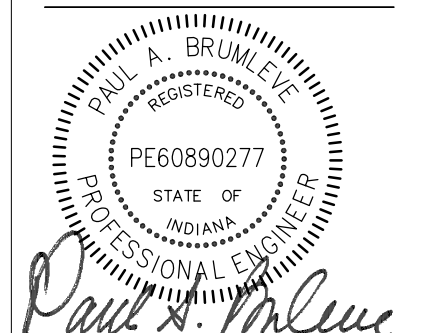
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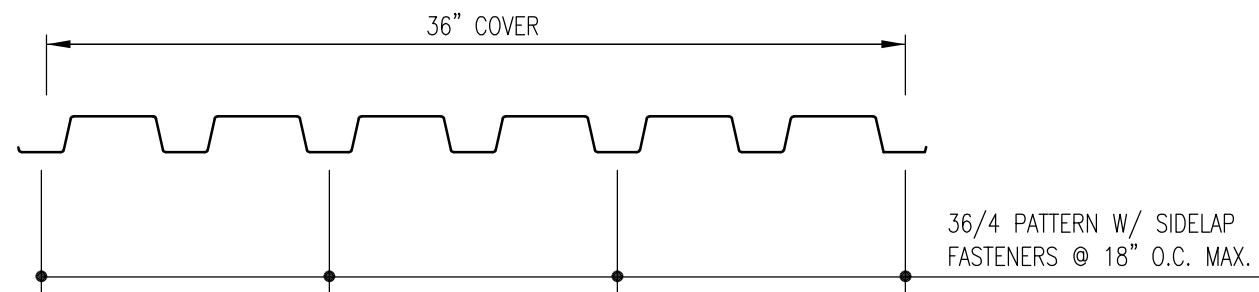
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TYPICAL DETAILS

S.07



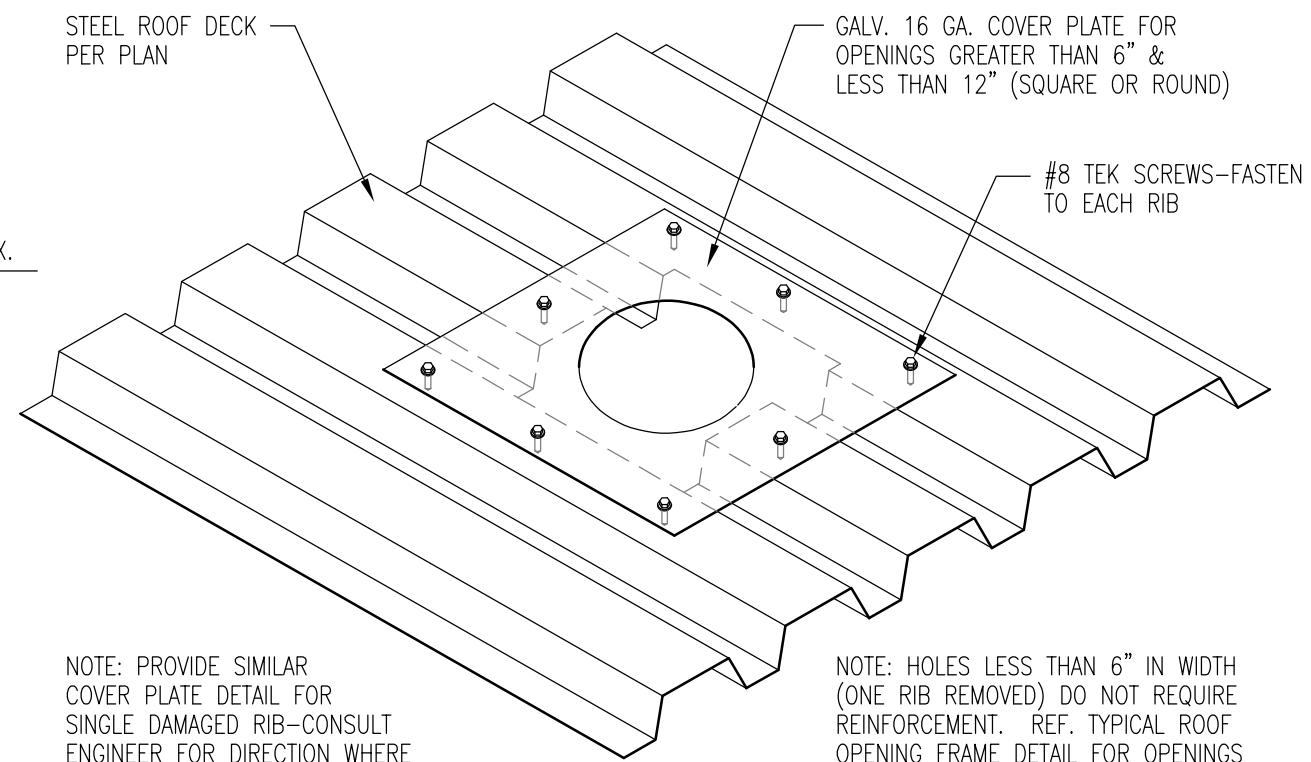
NOTE:

1. 1 1/2", 20 GA. GALVANIZED/PRIME-PAINTED WIDE RIB STEEL ROOF DECK.
2. USE #10 TEK SCREW SIDELAP FASTENERS, U.N.O.
3. MECHANICAL FASTENERS:
USE THE FOLLOWING HILTI POWER ACTUATED FASTENERS:
USE XEDNK22 THQ12HSN FOR STEEL 't' 1/8" THROUGH 1/4"
USE XEDNK19 THQ12HSN FOR STEEL 't' 3/16" THROUGH 3/8"
USE THE FOLLOWING ITW-BUILDEX POWER ACTUATED FASTENERS:
USE BX12 FOR STEEL 't' 1/8" THROUGH 3/16"
USE BX14 FOR STEEL 't' OVER 3/16" THROUGH 3/8"
USE #10 TEK SCREWS FOR FASTENING TO COLD-FORMED STEEL.
SUBMIT PROPOSED FASTENERS & TECHNICAL DATA FOR REVIEW.
4. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
5. REF. DECK TYPE  ON THE FRAMING PLANS.

1 1/2" WIDE RIB STEEL ROOF DECK

NO SCALE

1
S0.8



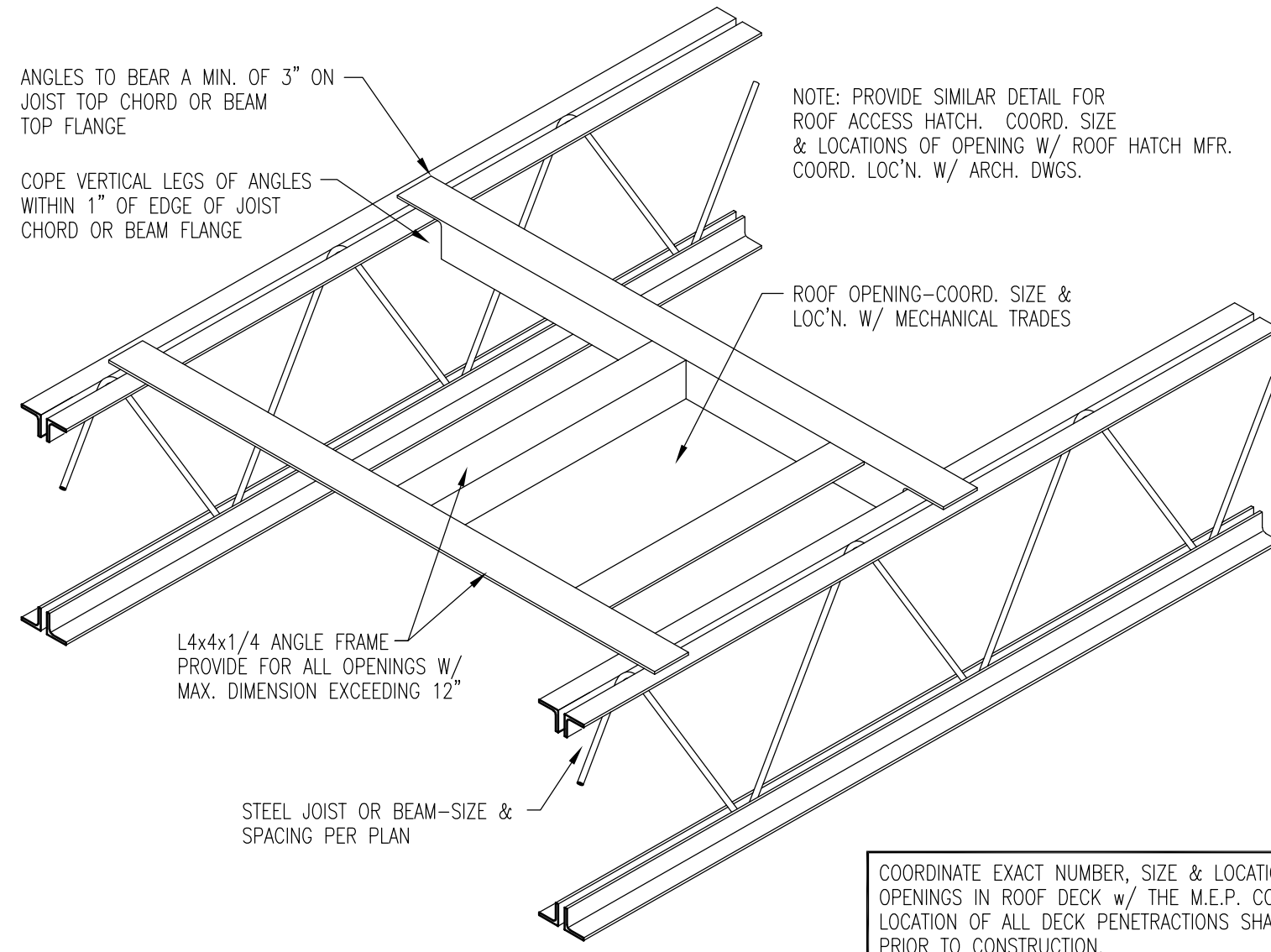
NOTE: PROVIDE SIMILAR COVER PLATE DETAIL FOR SINGLE DAMAGED RIB-CONSULT ENGINEER FOR DIRECTION WHERE MORE THAN ONE ADJ. RIB IS DAMAGED

NOTE: HOLES LESS THAN 6" IN WIDTH (ONE RIB REMOVED) DO NOT REQUIRE REINFORCEMENT. REF. TYPICAL ROOF OPENING FRAME DETAIL FOR OPENINGS W/ MAX. DIMENSION EXCEEDING 12"

SMALL ROOF OPENING DETAIL

NO SCALE

2
S0.8



COORDINATE EXACT NUMBER, SIZE & LOCATION OF ANY MECHANICAL OPENINGS IN ROOF DECK w/ THE M.E.P. CONTRACTOR. LOCATION OF ALL DECK PENETRATIONS SHALL BE VERIFIED PRIOR TO CONSTRUCTION.

TYPICAL ROOF OPENING FRAME DETAILS, 1.5" DECK

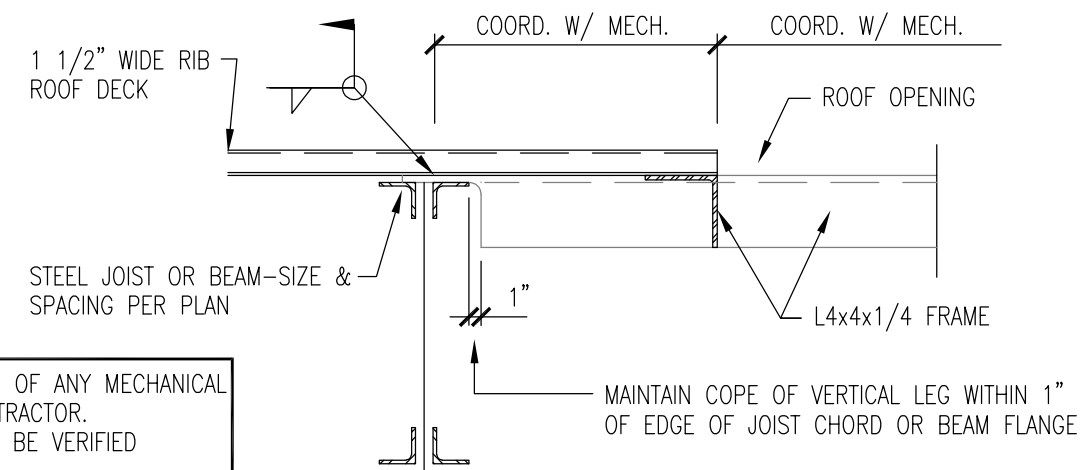
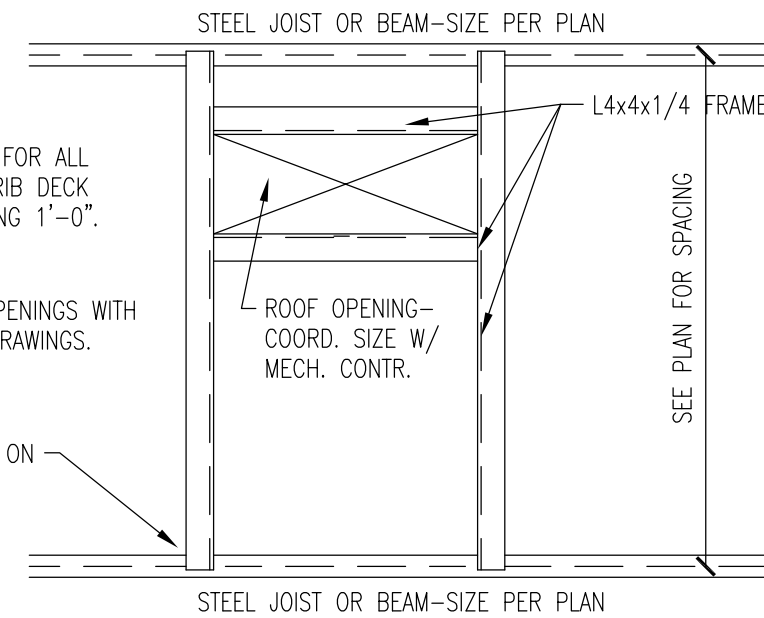
NO SCALE

3
S0.8

NOTES:

1. PROVIDE ANGLE FRAME AS SHOWN FOR ALL ROOF OPENINGS IN 1 1/2" WIDE RIB DECK WITH MAXIMUM DIMENSION EXCEEDING 1'-0".
2. USE: L4 x 4 x 1/4 TYPICAL.
3. COORDINATE LOCATION OF ROOF OPENINGS WITH MECHANICAL AND ARCHITECTURAL DRAWINGS.

ANGLES TO BEAR A MIN. OF 3" ON JOIST TOP CHORD OR BEAM TOP FLANGE



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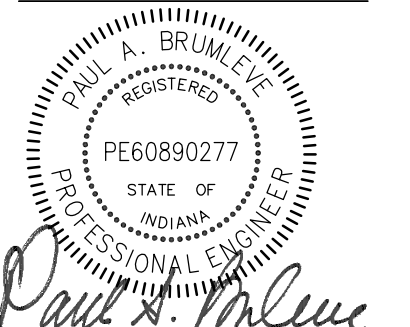
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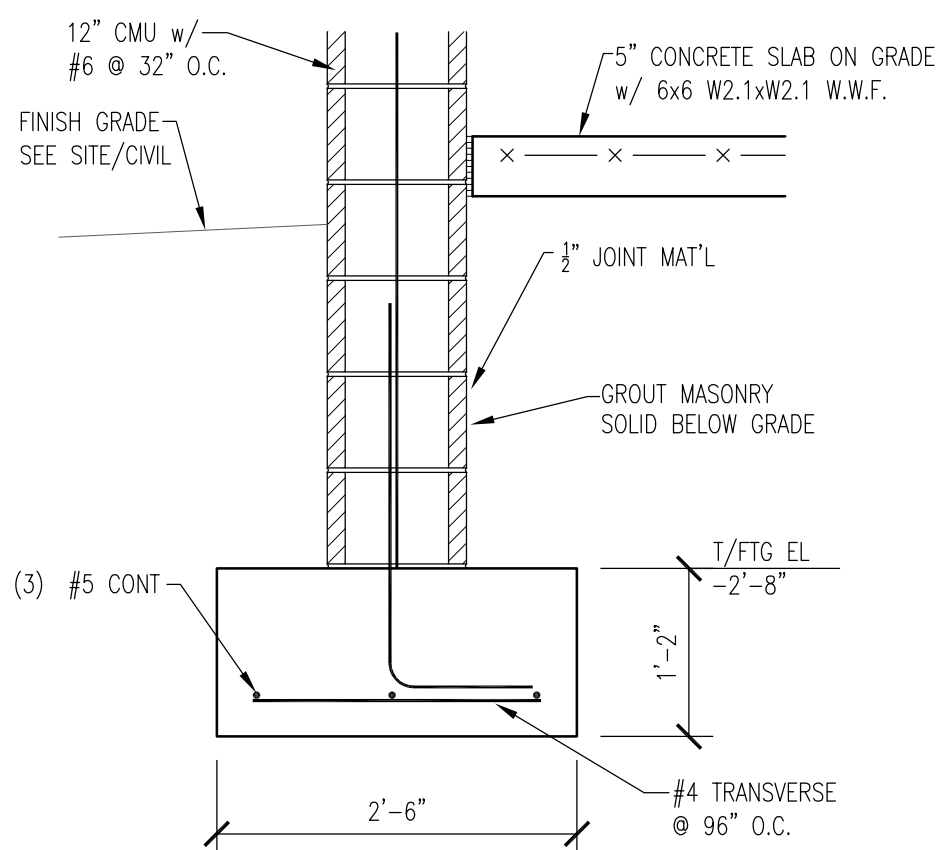
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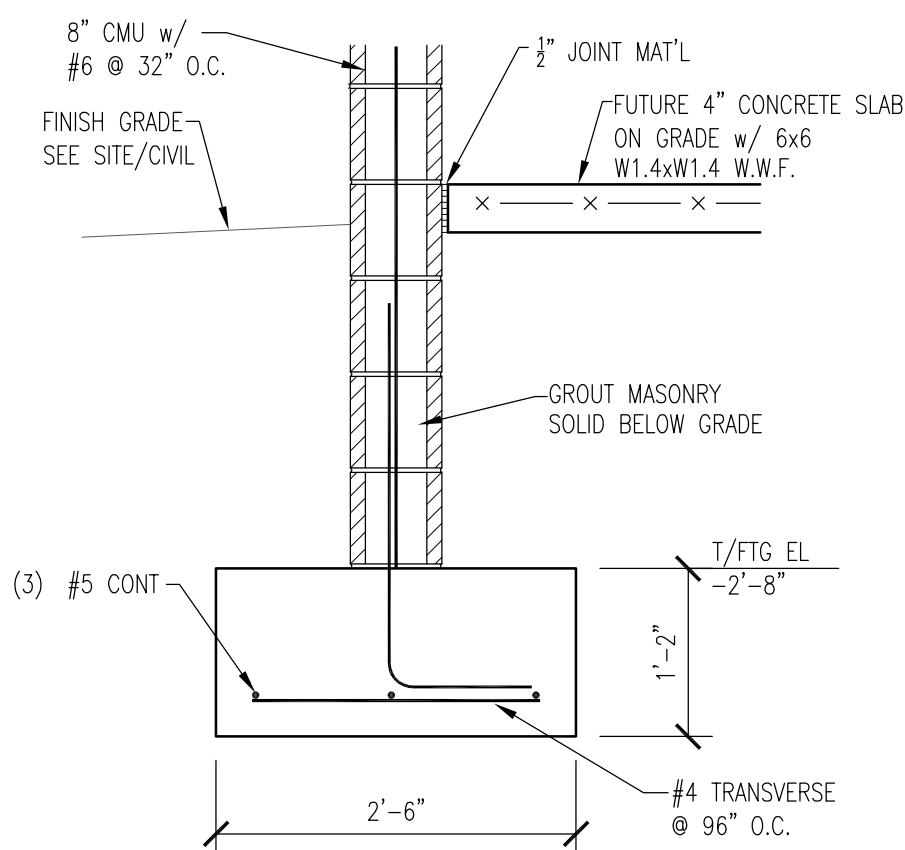


TYPICAL DETAILS

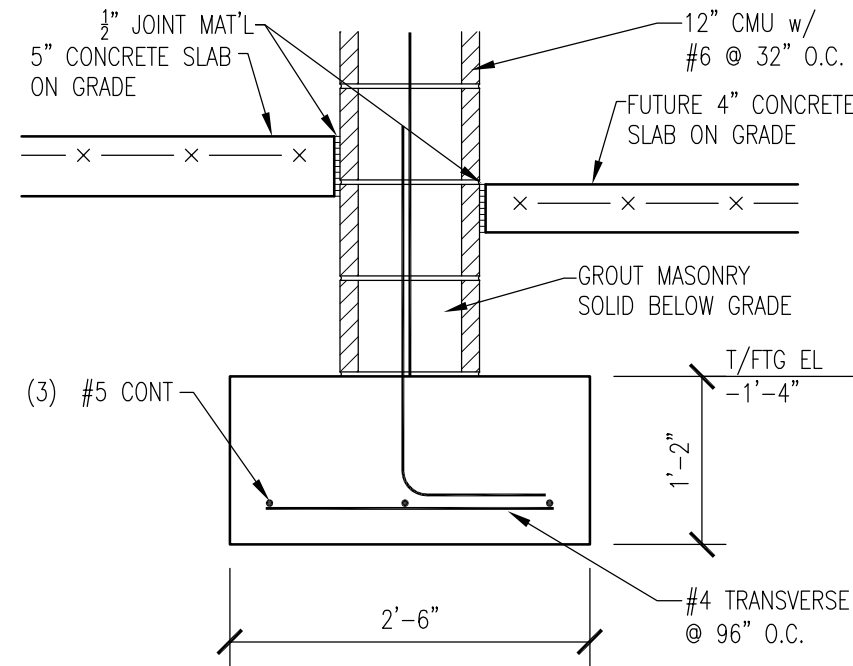
S.08



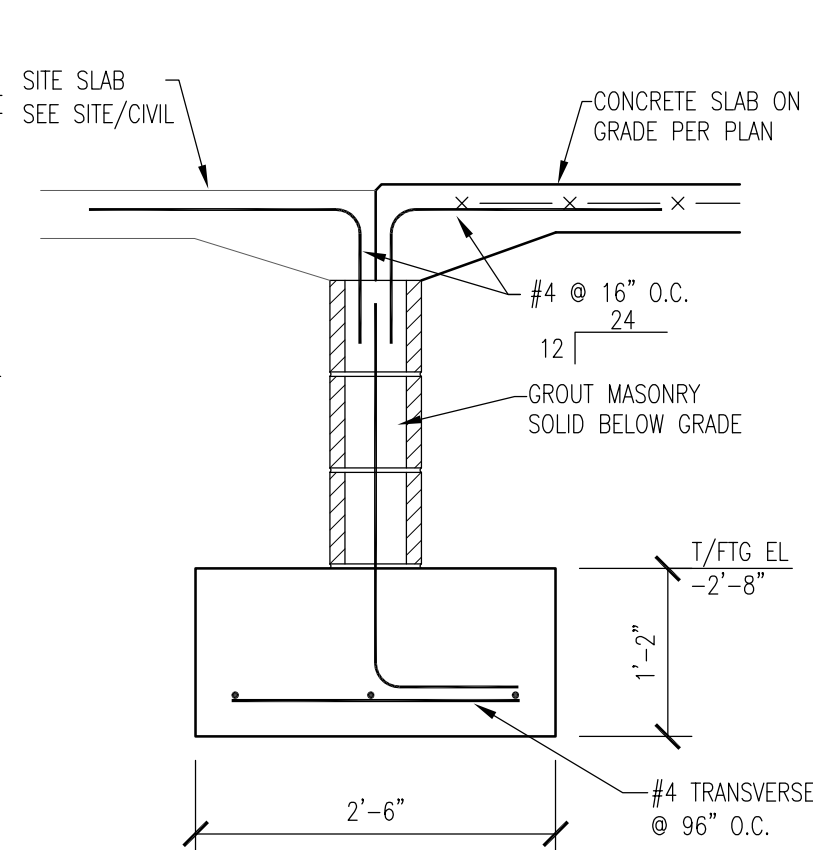
SECTION 1
3/4" = 1'-0"
S0.9



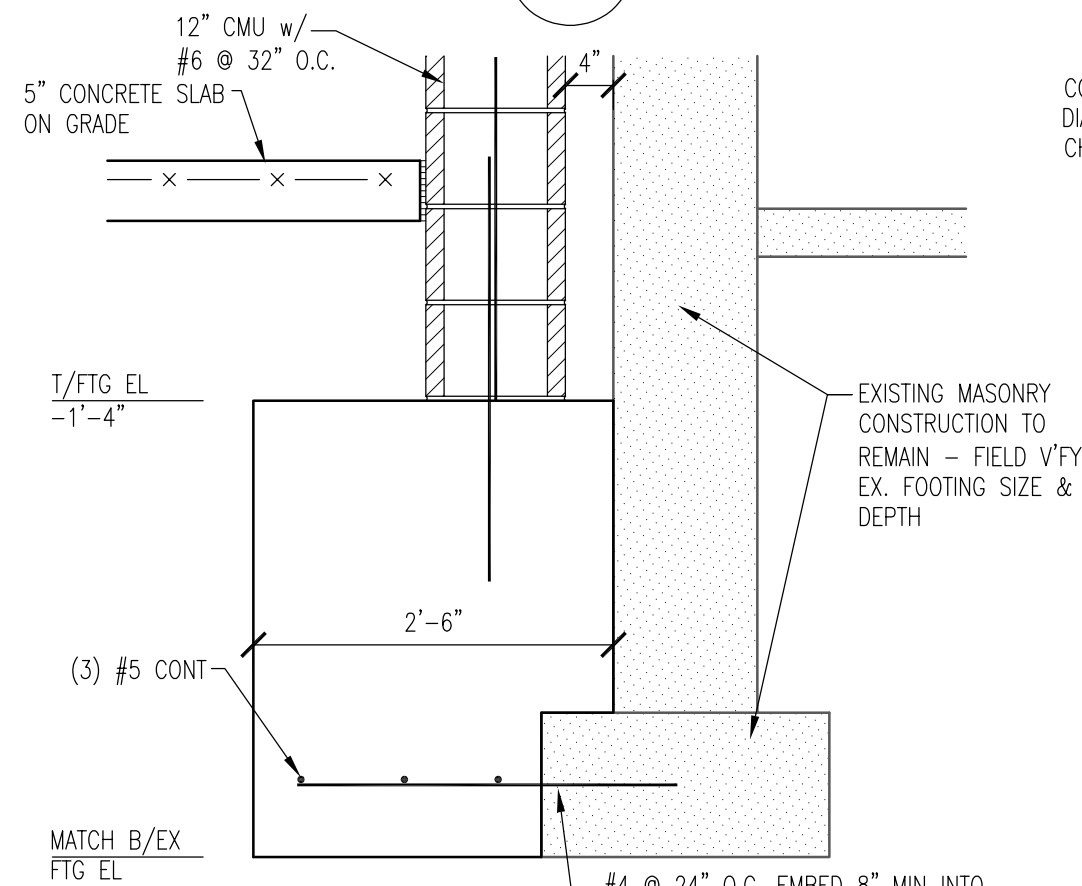
SECTION 2
3/4" = 1'-0"
S0.9



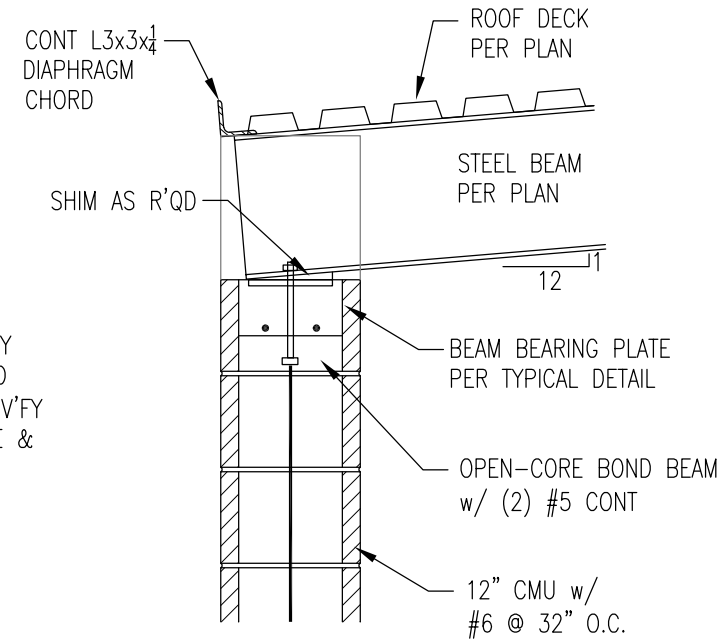
SECTION 3
3/4" = 1'-0"
S0.9



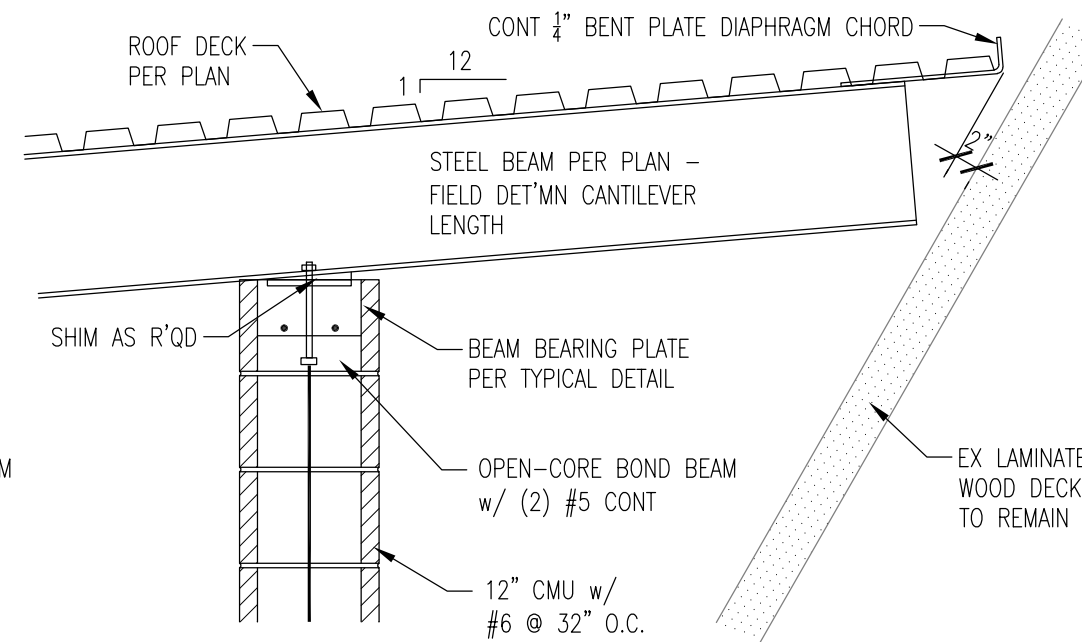
SECTION 4
3/4" = 1'-0"
S0.9



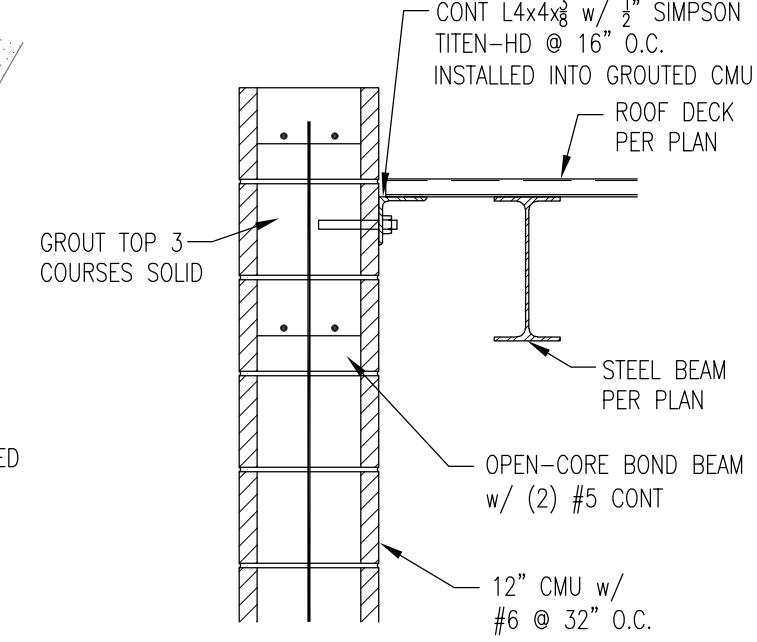
SECTION 5
3/4" = 1'-0"
S0.9



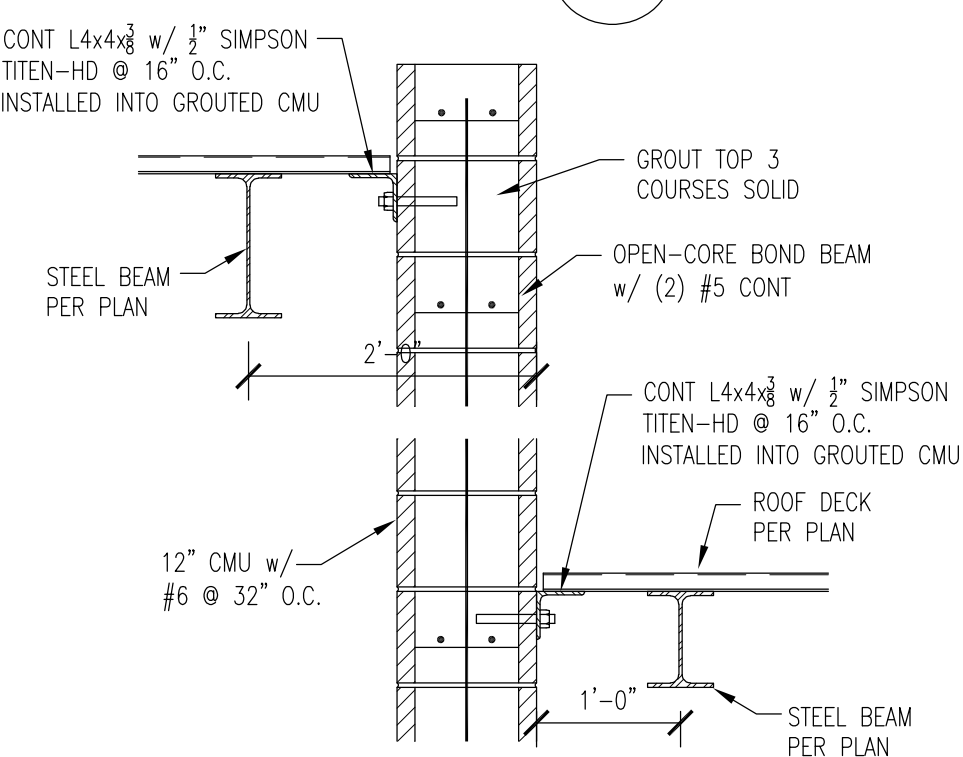
SECTION 6
3/4" = 1'-0"
S0.9



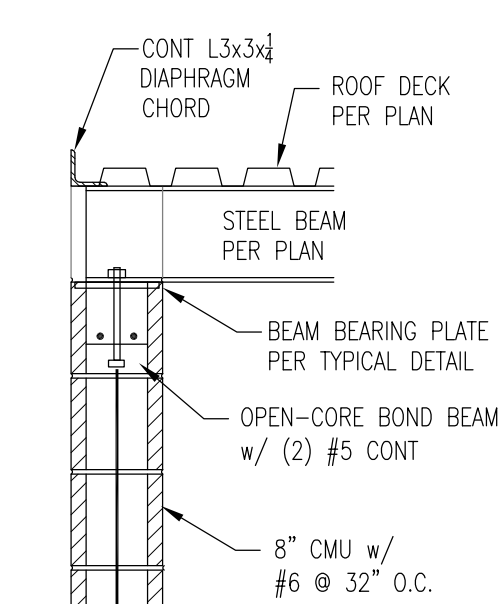
SECTION 7
3/4" = 1'-0"
S0.9



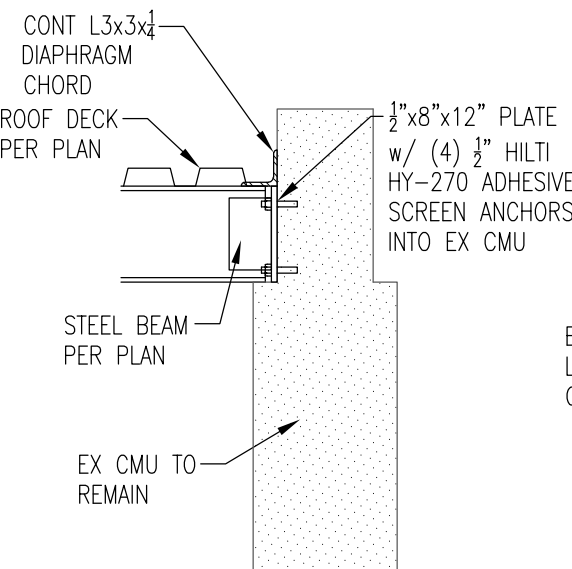
SECTION 8
3/4" = 1'-0"
S0.9



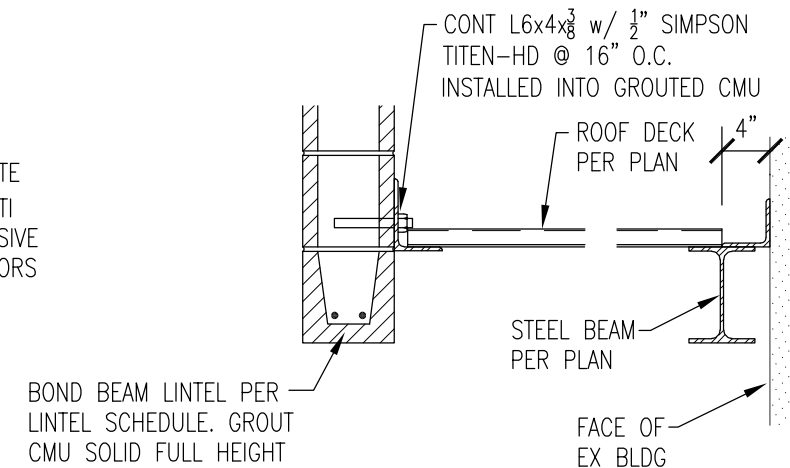
SECTION 9
3/4" = 1'-0"
S0.9



SECTION 10
3/4" = 1'-0"
S0.9



SECTION 11
3/4" = 1'-0"
S0.9



SECTION 12
3/4" = 1'-0"
S0.9

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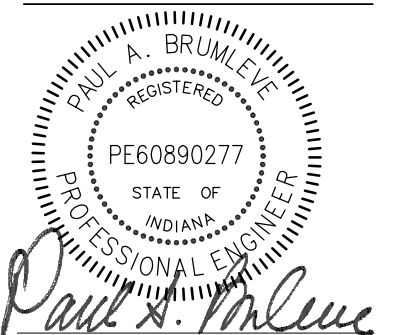
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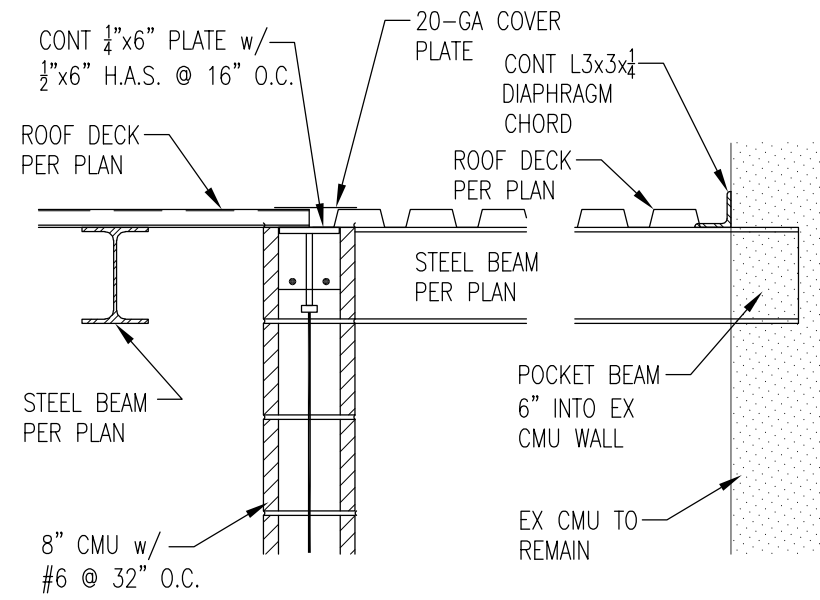
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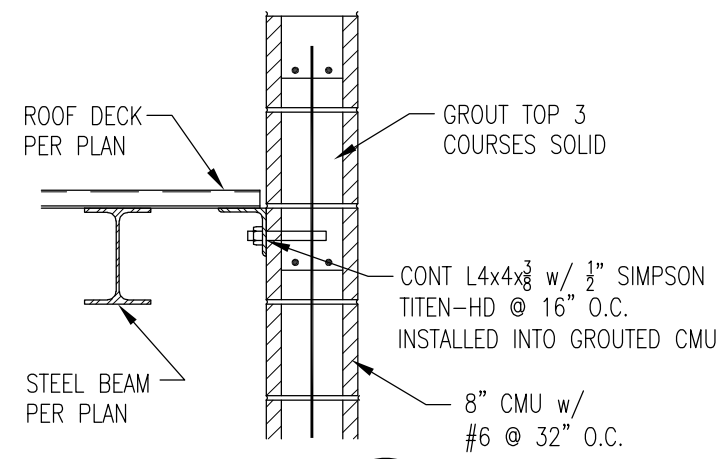


FOUNDATION & FRAMING SECTIONS

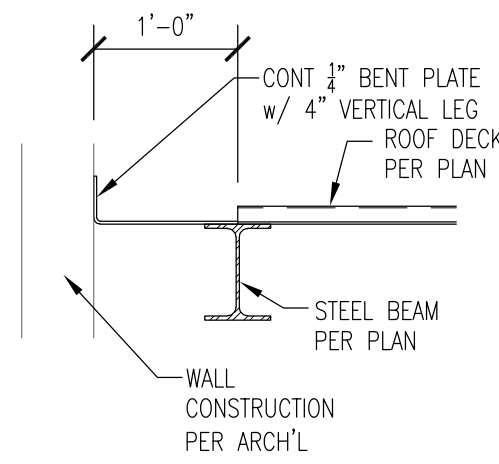
S.09



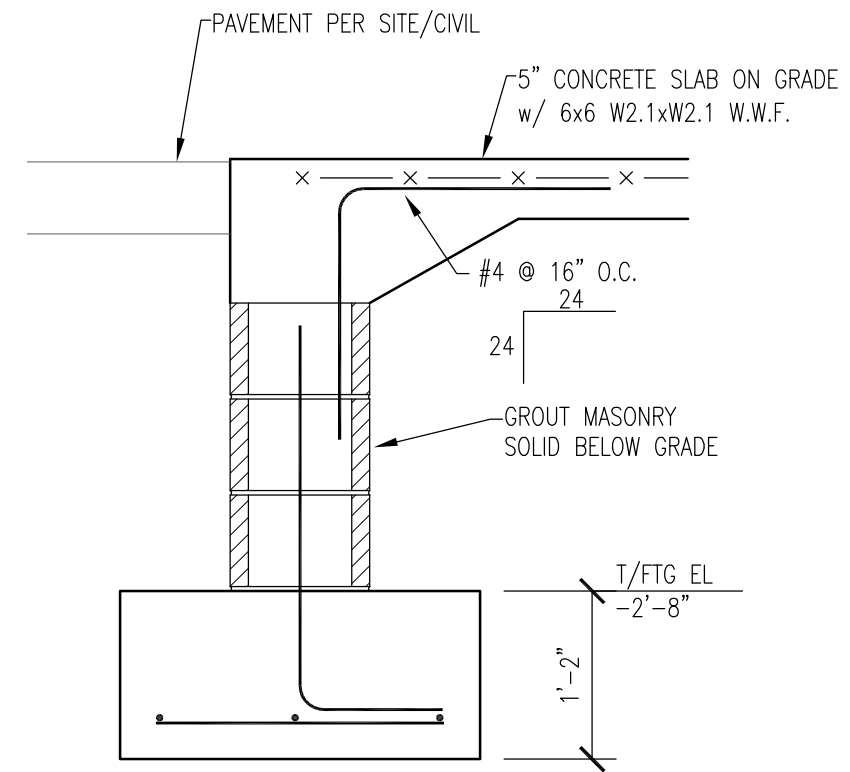
SECTION 1
3/4" = 1'-0"
S0.10



SECTION 2
3/4" = 1'-0"
S0.10



SECTION 3
3/4" = 1'-0"
S0.10



SECTION 4
3/4" = 1'-0"
S0.10

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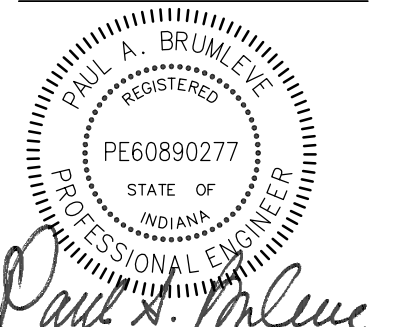
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